Environmental Impact Report / Environmental Impact Statement
for the

San Elijo Lagoon Restoration Project

Final
SCH# 2011111013

Prepared for:
U.S. Army Corps of Engineers
5900 La Place Court, Suite 100
Carlsbad, CA 92008

Prepared for:
County of San Diego Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego CA, 92123

Administrated by:
San Elijo Lagoon Conservancy
P.O. Box 230634
Encinitas, CA 92023-0634

San Elijo Lagoon RESTORATION
Reviving Your Wetlands

MOFFATT & NICHOL
AECOM

Volume 3 of 4
Appendices G-N

February 2016

Environmental Impact Report/Environmental Impact Statement
for the
San Elijo Lagoon Restoration Project
Volume 3 of 4

TABLE OF CONTENTS

APPENDICES

G Jurisdictional Wetland Delineation
H Marine Biological Resources Technical Report
I Cultural Resources Technical Report
J Traffic Impact Analysis
K Air Quality and GHG Emissions Calculations
L Noise Technical Appendix
M Geotechnical Data Report
N Surfing Study

APPENDIX G

JURISDICTIONAL WETLAND DELINEATION

JURISDICTIONAL DELINEATION REPORT FOR WATERS OF THE U.S. AND STATE OF CALIFORNIA

SAN ELIJO LAGOON RESTORATION PROJECT SAN DIEGO COUNTY, CALIFORNIA

Prepared for:

The San Elijo Lagoon Conservancy
P.O. Box 230634
Encinitas, CA 92023
Contact: Doug Gibson, Executive Director
(760) 436-3944 Fax: (760) 944-9606

Prepared by:

AECOM
1420 Kettner Boulevard, Suite 500
San Diego, California 92101
Contact: Joshua Zinn
(619) 233-1454 Fax: (619) 233-0952

July 2012

TABLE OF CONTENTS

Section **Page**

I. SUMMARY 1

II. INTRODUCTION 3
A. Project Location 3
B. Description of Project 3
No Project – Existing Conditions 6
Alternative 1A – Minimum Changes 6
C. Purpose of Assessment 10

III. REGULATORY FRAMEWORK 11
A. Federal Regulations 12
Clean Water Act 12
Executive Order 11990 13
B. State Regulations 13
Lake and Streambed Alteration Program 13
Porter-Cologne Water Quality Control Act 13
California Coastal Act 14
Keene-Nejedly Wetlands Preservation Act 14

IV. PROJECT SETTING 15
A. Riparian and Wetland Vegetation Communities 15
Southern Coastal Brackish Marsh (Holland Code 52200) 15
Southern Coastal Salt Marsh (Holland Code 52120) 18
Disturbed Wetland (Holland Code 11200) 21
Sandbar Willow Scrub (Holland Code 63000) 22
Southern Willow Scrub (Holland Code 63320) 22
B. Hydrology 23
C. Soils 29
Lagoon Water 33
Tidal Flats 33
Chino Soil Series 33
Coastal Beaches Soil Land Type 33
Lagoon Water Soil Land Type 33
Tidal Flats Soil Land Type 34

V. METHODOLOGY 34
A. Presurvey Investigations 34
B. Field Survey 35
Delineation of Federal Waters 36
Delineation of State Waters 50

VI. RESULTS 53
Jurisdictional Waters of the U.S. and State 56
Jurisdictional Waters of the U.S. – Special Aquatic Sites 56
Jurisdictional Determination for Waters of the U.S. 72
Electronic Waters Upload Sheets for Potential Jurisdictional Waters 75
Jurisdictional Waters of the State 75

VII. DISCUSSION 76
Requisite Permitting 76

VIII. REFERENCES CITED 77

ATTACHMENTS
A 2008 Supplement Wetland Determination Data Forms – Arid West Region (Version 2.0)
B Preliminary Jurisdictional Determination Form
C Electronic Waters Upload Sheet

LIST OF FIGURES

Figures **Page**

1 Regional Map 4
2 Project Vicinity Map 5
3 Survey Area and Mean High High Tide 7
4 Vegetation Communities within the Survey Area 19
5 Hydrologic Units Map 25
6 Hydrologic Subareas Map 27
7 Soil Series within the Survey Area 31
8 Field Data Points 39
9 Jurisdictional Delineation Map 57
10 Photopoint Locations 59
11 Representative Photographs 1 and 2 61
12 Representative Photographs 3 and 4 62
13 Representative Photographs 5 and 6 63
14 Representative Photographs 7 and 8 64
15 Representative Photographs 9 and 10 65
16 Representative Photographs 11 and 12 66
17 Representative Photographs 13 and 14 67
18 Representative Photographs 15 and 16 68
19 Representative Photographs 17 and 18 69
20 Representative Photographs 19 and 20 70
21 Representative Photographs 21 and 22 71

LIST OF TABLES

Table		Page
1	Proposed San Elijo Lagoon Restoration Project Alternatives	3
2	Inlet and Channel Dimensions Assumed for Various Restoration Alternatives	10
3	Riparian and Wetland Vegetation Communities Occurring within the Reserve	16
4	Hydrophytic Plant Species Observed within the Reserve	16
5	Hydric Soils Occurring within the Reserve	33
6	Survey Dates and Personnel Conducting the Formal Field Delineation at the Reserve	36
7	Survey Results for Potential Jurisdictional Waters of the U.S. and State in the Form of Wetland[a] Occurring within the Reserve	46
8	Potential Waters of the U.S. and State Occurring within the Reserve	54
9	Summary of Jurisdictional Waters of the U.S. and State Occurring within the Reserve	55
10	Summary of Exclusively Jurisdictional Waters of the State Occurring within the Reserve	76

I. SUMMARY

The San Elijo Lagoon Conservancy (SELC) is proposing to restore the ecologic functions and values of the San Elijo Lagoon (Lagoon) and adjacent wetland and upland habitats occurring within the San Elijo Lagoon Ecological Reserve (Reserve). The Reserve is owned and managed by the SELC, the California Department of Fish and Game (CDFG), and the County of San Diego Parks and Recreation Department (SDPRD). Development encroachment within the Reserve (including levees, flood control dikes, and regional transportation infrastructure placement within the Lagoon) and urbanization of surrounding watershed have altered the tidal inlet conditions and compromised the ecological functions and values of the Lagoon. This has resulted in the following:

- Sediment accumulation and reduced sediment scouring and transport
- Reduced tidal flushing, tidal circulation patterns, and tidal prism
- Increase in pollution from urban runoff and reduced access to tidal exchange between the ocean and the Lagoon
- Degraded water quality resulting in elevated bacteria levels (which can compromise public health and cause beach closures)
- Tidal mudflats transitioning to tidal salt marsh and brackish marsh
- Increased/ modified freshwater inputs and inflows
- Reduction in tidal habitat area and quality

The San Elijo Lagoon Restoration Project (SELRP) intends to restore the ecologic functions and values of the Lagoon and adjacent wetland and upland habitats within the Reserve with a balance of habitat types, taking into account regional priorities and current constraints placed on the Reserve by surrounding development activities. The project aims to enhance the tidal prism of the Lagoon by proposing modifications to hydrological constraints, including known infrastructure. The approximate target construction start date of the SELRP is 2015.

If no action is taken to restore the Lagoon and adjacent wetland and upland habitats, periodic changes in sedimentation and plant species composition will continue to contribute to the transition of the Lagoon from a predominantly tidal mudflat to a tidal salt marsh and freshwater riparian habitat. These habitat transitions within the Lagoon and adjacent wetlands would further restrict the tidal prism. The primary goal of the SELRP is to protect, restore, and then maintain, via adaptive

management, the Lagoon ecosystem and adjacent wetland and upland habitats to perpetuate native flora and fauna characteristics of coastal Southern California, as well as to restore, then maintain, local estuarine and brackish marsh hydrology. The goals of this proposed project can be further refined into three categories of objectives:

1. Physical restoration of Lagoon estuarine hydrologic functions

2. Biological restoration of habitat and species within the Lagoon

3. Management and maintenance to ensure long-term viability of the restoration efforts

As part of the environmental review process, this Jurisdictional Delineation Report (JDR) summarizes the latest guidance and methodology employed in conducting a formal delineation for jurisdictional waters of the U.S. and State of California (state) and the results of the fieldwork occurring within the survey area. The survey area for conducting the jurisdictional delineation is designated by the boundary of the Reserve. The approximate 1,000-acre Reserve (survey area) is cumulatively considered the project area (the limits of the proposed restoration and area of potential net ecological effects).

Within the Reserve, approximately 619.97 acres of potential jurisdictional waters of the U.S.[1,2] and state[3] have been formally delineated. Of these approximately 619.97 acres of delineated aquatic features, approximately 618.03 acres are potential jurisdictional waters of the U.S. Of these approximate 618.03 acres potential jurisdictional waters of the U.S. 464.56 acres are composed of vegetated wetlands (in the form of southern brackish marsh [131.37 acres], southern coastal salt marsh [262.11 acres],[4] disturbed wetland [1.15 acres], sandbar willow scrub [8.94 acres], and southern willow scrub [60.99 acres]) and approximately 153.47 acres are composed of other

[1] The official determination of absence or presence (including final acreages) of jurisdictional waters of the U.S. will be based on the U.S. Army Corps of Engineers (USACE)/U.S. Environmental Protection Agency (USEPA) jurisdictional determination process (see below).

[2] Jurisdictional waters of the U.S. are under the purview of USACE, with oversight by USEPA, and the Regional Water Quality Control Board (RWQCB). Jurisdictional waters of the U.S. include jurisdictional waters of the state. Federal and state jurisdictions do overlap, but would remain distinct for regulatory administration and permitting purposes.

[3] Jurisdictional waters of the state are under the purview of the California Coastal Commission (CCC), the California Department of Fish and Game (CDFG), and the RWQCB. State jurisdictions often exceed, in lateral extent and area, federal jurisdiction (see below). However, the Reserve presents distinct basin topography that resulted in the majority of federal and state jurisdictional extent to co-occur. Only the tidal inlet channel banks are exclusively potential jurisdictional waters of the state.

[4] The southern coastal salt marsh is composed of three components or salt marsh zones: low coastal salt marsh (4.74 acres), middle coastal salt marsh (137.43 acres), and high coastal salt marsh (119.94 acres).

nonwetland waters (in the form open water [40.15 acres], salt panne/open water [36.96 acres], tidal mudflat/open water [75.78 acres], and drainage features [0.58 acre]). Approximately 1.94 acres of potential jurisdictional waters of the state exclusively (composed of rip-rap channel bank) have been formally delineated within the Reserve.

II. INTRODUCTION

A. Project Location

The Reserve is located within San Diego County along the Pacific Coast, between the cities of Solana Beach and Encinitas, and extending inland to Rancho Santa Fe, California (Figure 1). The Reserve is traversed by Pacific Coast Highway (U.S. Route 101), the North County Transit District (NCTD) railroad, and Interstate 5 (I-5) (Figure 2). The Reserve is located entirely within the California Coastal Zone[5] (Figure 3).

B. Description of Project

SELC has identified five project alternatives, one that proposes no ecological restoration activities and four that would restore, to different degrees and resulting aquatic habitat distribution, the ecologic functions and values of the Lagoon and the adjacent wetland and upland habitats within the SELRP (Table 1). All restoration activities would occur within the Reserve or in immediately adjacent disturbed areas, unless otherwise specified. A full project description for all five project alternatives will be provided in the Draft Environmental Impact Report/Environmental Impact Statement for the SELRP, which is currently being prepared. Summary descriptions of the restoration project alternatives are provided below.

Table 1
Proposed San Elijo Lagoon Restoration Project Alternatives

Project Alternatives
No Project-Existing Conditions
Alternative 1A – Minimum Changes
Alternative 1B – Maximum Habitat Diversity, Existing Inlet Location
Alternative 2A – Maximum Habitat Diversity, New Inlet Location
Alternative 2B – Maximum Tidal Expression

[5] The California Coastal Act (CCA), which was passed by the California legislature in 1976, is the state law that governs coastal resources within California's jurisdiction. Under the CCA, California's coastal zone is defined as "that land and water area … extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line to the sea" (CCA Section 30103).

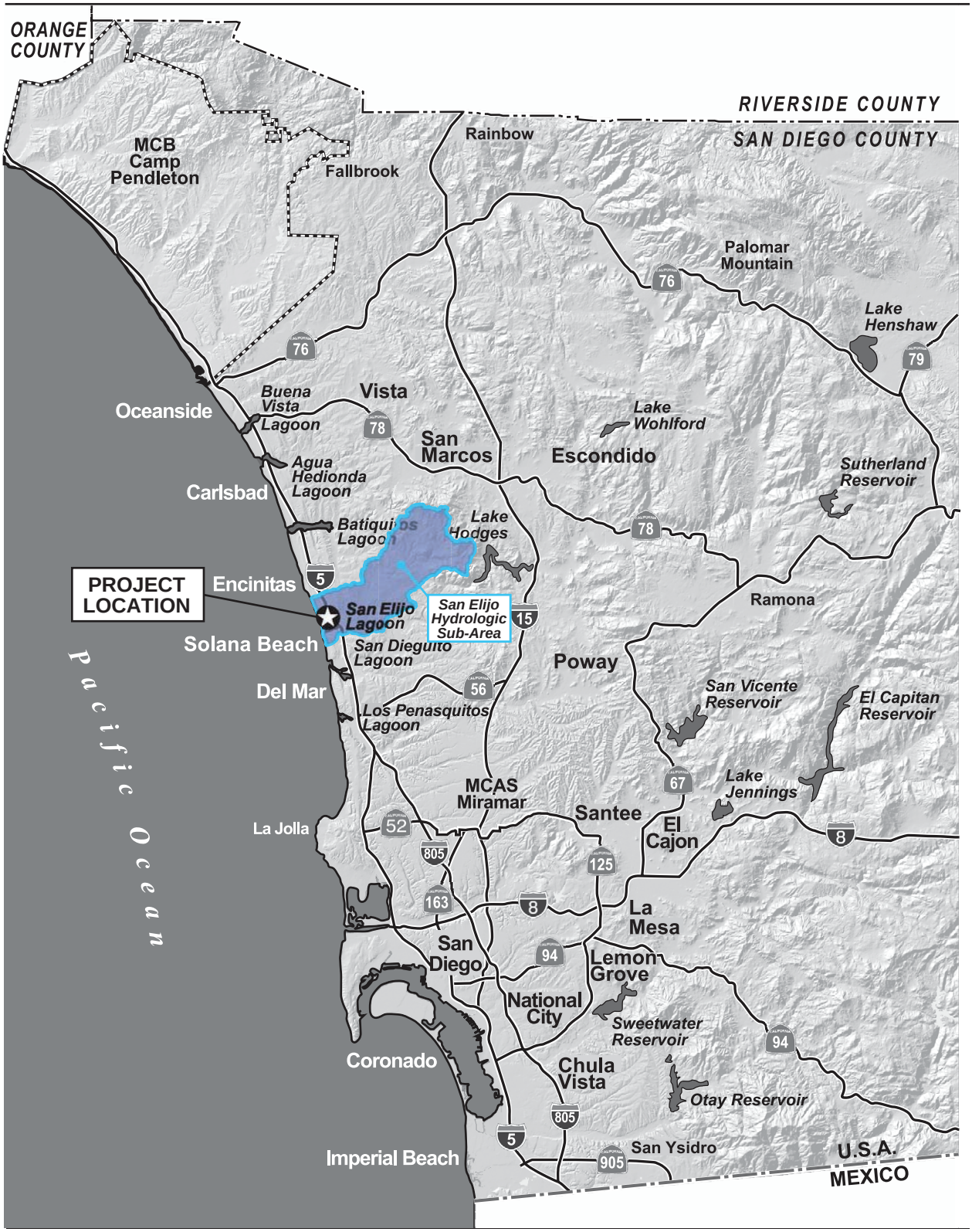


Figure 1
Regional Map

Path: P:\2009\09080064_SEL\RP_EIR\6.0 GIS\6.3 Layout\DJDJDR_Jan2011\Fig2_Vicinity.mxd, 01/13/11, SteinB

Source: ESRI Street Maps 2011: AECOM 2011

2,000 0 2,000 Feet

Scale: 1 = 24,000; 1 inch = 2,000 feet

Figure 2
Vicinity Map

No Project – Existing Conditions

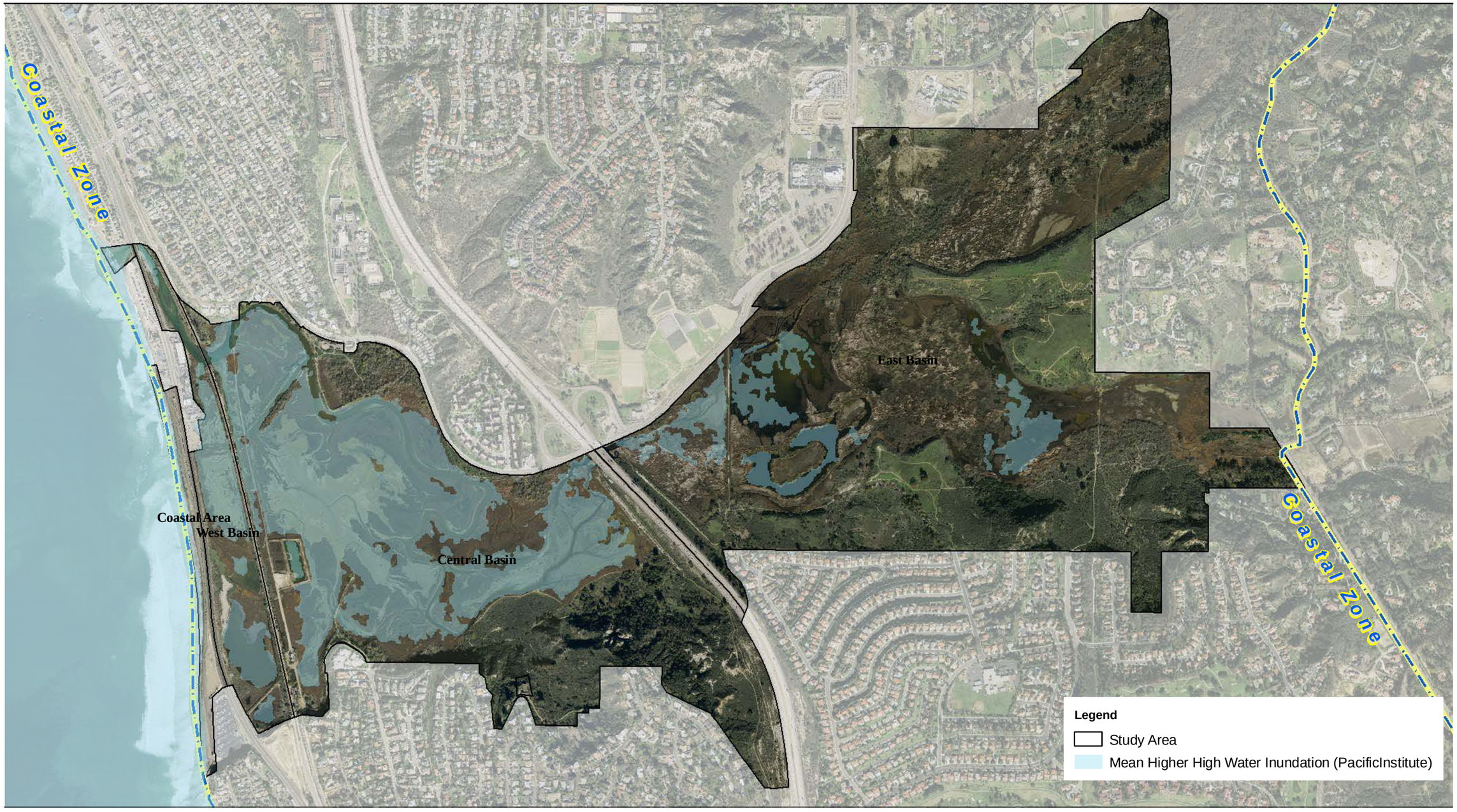
No Project assumes no changes would be made to the project site and existing conditions (including the continued transition from tidal mudflat and cordgrass marsh to high saltmarsh and freshwater marsh continue) may remain into perpetuity. The lagoon currently experiences mouth constriction and manual reopening annually, and sometimes more frequently. Tidal flushing is restricted, and water quality conditions are impaired for nutrients, bacteria, and sediment (RWQCB 2010). Habitat is distributed at elevations and locations that are related to relic closed mouth conditions and that are progressively transitioning to distributions more reflective of managed mouth conditions. For example, mudflat habitat is located too high for a full tidal lagoon because it formed when the mouth was closed and lagoon water levels were higher from impoundment. Now that the mouth is managed to be open, the mudflat is converting to vegetated marsh because hydrologic conditions are favorable for salt marsh plant growth.

Alternative 1A – Minimum Changes

Alternative 1A would provide minimal physical changes to the site, with the exception of enlarging the main feeder channel throughout the site and redirecting its course just west of I-5. The main tidal channel would also be extended farther into the East Basin and existing constricted channel connections would be cleared and enlarged. The inlet/undercrossing at Highway 101 would remain in the current location. No other infrastructure improvements are assumed to be made at the NCTD railroad trestle or at I-5. Existing habitat areas would essentially remain intact. The tidal prism of Alternative 1A would be slightly increased compared to existing conditions. A relatively small area of transitional habitat above tidal elevations would be created in the northwest portion of the Central Basin.

Alternative 1B – Maximum Habitat Diversity, Existing Inlet Location

Alternative 1B would provide a more substantial change to the existing site to create a greater diversity of habitats than currently exists. The existing tidal inlet would remain the source of seawater, and the main tidal channel would extend throughout the lagoon. A new subtidal basin off the main channel would be created in the Central Basin. The main feeder channel would be redirected just west of I-5 and extended farther into the East Basin. No infrastructure improvements are assumed at the NCTD railroad trestle, but the bridge under I-5 is assumed to be widened. Thus, the channel in the East Basin would be significantly enlarged in cross-sectional area to promote more tidal exchange east of I-5. The tidal prism of Alternative 1B would be significantly increased compared to Alternative 1A. Nontidal habitat areas would still exist in the East Basin. Several areas of transitional habitat above tidal elevations would be created in the western portion of the Central Basin.



Source: DigitalGlobe 2008; PacificInstitute 2000; AECOM 2010

1,050 525 0 1,050 Feet

Scale: 1 = 12,600; 1 inch = 1,050 feet

Figure 3
Survey Area and Mean Higher High Tide Inundation

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\JD\JDR_Jan2011\Fig3_SurvArea_MHHW.mxd, 01/13/11, SteinB

This page intentionally left blank.

Alternative 2A – Maximum Habitat Diversity, New Inlet Location

Alternative 2A would also provide changes to the existing site to create a greater diversity of habitats than presently exists. Seawater would enter the lagoon via a new (and wider) tidal inlet located south of the existing inlet and a new subtidal basin would be created just landward of the new inlet in the West and Central Basins. The main tidal channel would extend throughout the lagoon and be redirected just west of I-5, and extend into the East Basin. Infrastructure improvements are assumed at the NCTD railroad trestle, including the portion of the railroad directly parallel to the new inlet, and the bridge under I-5 is assumed to be widened. The channel in the East Basin would be identical to that for Alternative 1B. The tidal prism of Alternative 2A would increase compared to Alternative 1B. Nontidal habitat areas remain in the East Basin. Transitional habitat areas above tidal elevations would also be included in the Central Basin as with Alternative 1B.

Alternative 2B – Maximum Tidal Expression

Alternative 2B would provide the maximum level of change throughout the lagoon. As the largest-tidal prism alternative, it would require a new tidal inlet to be located south of the existing inlet. Extensive subtidal basins would exist in the West, Central, and East Basins of the Lagoon. Nearly the entire East Basin would become tidally influenced habitat area. A new and wider inlet would be constructed. Infrastructure improvements are assumed at the NCTD railroad trestle, including the portion of the railroad directly parallel to the new inlet, and the bridge under I-5 is assumed to be widened.

Summary of Inlet and Channel Dimensions

The dimensions of each channel cross-section at each of the existing infrastructure constraints are shown in Table 2. Alternative 1A retains the existing channel width at each infrastructure crossing but assumes significant deepening at each location for improved hydraulics. Existing infrastructure could remain in place but may need some form of protection to prevent undermining by increased channel depths. Alternatives 1B, 2A, and 2B assume wider and deeper channels at each infrastructure location for further improved hydraulics. All infrastructure would need to be replaced under Alternatives 1B, 2A, and 2B.

Table 2
Inlet and Channel Dimensions Assumed for Various Restoration Alternatives[a]

Alternative	Highway 101/Inlet		NCTD Railroad Trestle		I-5 Bridge	
	Bottom Width (ft)	Invert (ft_NGVD[b])	Bottom Width (ft)	Invert (ft_NGVD)	Bottom Width (ft)	Invert (ft_NGVD)
Existing	105	-0.87	165	-0.87	130	0.74
1A	105	-4.0	165	-5.5	130	-6.0
1B	130	-4.0	165	-5.5	260	-6.0
2A	200	-6.5	590	-7	260	-5.5
2B	200	-6.5	590	-7	260	-5.5

[a] Physical improvements to the NCTD railroad trestle and I-5 bridge over the lagoon would be implemented by others.
[b] National Geodetic Vertical Datum.

C. Purpose of Assessment

The purpose of performing a formal jurisdictional delineation is to identify the absence or the presence (including location, boundaries, types and acreages) of potential jurisdictional waters of the U.S. and state (including wetlands) occurring within the survey area (Reserve) that may be potentially altered and/or impacted by regulated activities (e.g., excavating, grading, and/or filling) related to the SELRP. Once the presence or absence of potential jurisdictional waters is ascertained, the results of this JDR will be verified by the following federal and state agencies for which these waters are under regulatory administration: the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Game (CDFG), and the California Coastal Commission (CCC).

Where it is determined that there would be regulated activities occurring within jurisdictional waters of the U.S. and state (including wetlands) related to the SELRP, this JDR provides the information necessary for the SELC to apply for and receive, including the following requisite authorizations, permits, and policy compliance (as applicable):

- Section 404 of the Clean Water Act (CWA) (as regulated by USACE and the U.S. Environmental Protection Agency [USEPA])[6]

[6] 40 Code of Federal Regulations (CFR) Part 230 (provided USACE determines that some or all of these delineated waters occurring within the survey area present a significant nexus with the Pacific Ocean and are, thus, under federal jurisdiction as administered by USACE). CWA Section 404(b)(1) Guidelines, established by USEPA, constitute the substantive environmental criteria used in evaluating activities regulated under Section 404 of the CWA.

- Section 401 of the CWA (as regulated by the RWQCB)[7]
- Section 10 of the Rivers and Harbors Act (RHA) as regulated by (USACE)[8]
- Executive Order 11990 (federal protection of wetlands)[9]
- Section 13000 *et seq.* of the California Water Code (CWC [the 1969 Porter-Cologne Water Quality Act]) (Porter-Cologne) (as regulated by the RWQCB)
- California Fish and Game Code (CFGC) Chapter 6 Section 1600 *et seq*. (as regulated by CDFG)[10]
- California Public Resource Code (CPRC) Division 20 Section 30000 *et seq*. (California Coastal Act) (as regulated by the CCC)[11]
- CPRC Division 5 Chapter 7 Section 5810 *et seq.* (preservation of wetlands)(as administered by CDFG and other relevant state resource agencies)[12]
- Executive Order W-59-93 (state policy guidelines for wetlands conservation)[13]

III. REGULATORY FRAMEWORK

Wetland and other aquatic features/environments/habitats occurring within California are regulated under the following federal and state laws, as applicable to the project.

7 CWA Section 401 would apply to this project if it has been determined by USACE/USEPA that some or all of these delineated waters occurring within the survey area are jurisdictional waters of the U.S.

8 RHA Section 10 jurisdiction extends over 'Navigable Waters' which are defined by "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use, to transport interstate or foreign commerce" (33 CFR 329).

9 42 Federal Register (FR) 26961 May 24, l977 (as amended by Executive Order 12608 52 FR 34617 September 9, 1987).

10 California Code of Regulations (CCR) Title 14, Division 1.

11 CCR Title 14, Division 5.5 and CPRC Sections 30600(a) and 30600(d).

12 The Keene-Nejedly California Wetlands Preservation Act of 1976 (see below).

13 August 23, 1993. Executive Order (EO) W-59-93 is a policy that established several statewide initiatives intended to reduce and eliminate loss of wetlands and to overall wetlands management in the state to ensure a net gain in the quantity, quality, and permanence of wetlands acreage and values in California. This EO is essentially California's "no net loss of wetlands" policy and not a state law.

A. Federal Regulations

Clean Water Act

Pursuant to Section 404 of the CWA, USACE is authorized to regulate any activity that would result in the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 Code of Federal Regulations (CFR) 328 (Definitions).[14] USACE, with oversight by USEPA, has the principal authority to issue CWA Section 404 Permits.

Pursuant to Section 401 of the CWA, the RWQCB certifies that any discharge into jurisdictional waters of the U.S. will comply with state water quality standards. The RWQCB, as delegated by USEPA, has the principal authority to issue a CWA Section 401 Water Quality Certification or Waiver.

Pursuant to Section 10 of the River and Harbors Act (RHA), the USACE is authorized to regulate any activity that would result in the obstruction or alteration of any navigable water of the U.S., including the excavation or filling of any such water. The USACE has the principal authority to issue RHA Section 10 Permits.[15]

---

[14] 51 FR 41250, November 13, 1986, as amended at 58 FR 45036, August 25, 1993.

[15] Based upon past surveys and studies of the San Elijo Lagoon and environs the vast majority of the entire survey area likely experienced tidal action in the past and prior to human alteration. Therefore, although tidal action does not currently occur within the entire survey area, this JDR considers almost the entire survey area meeting the definition of Navigable Waters (e.g. 'RHA Section 10 Waters' [33 CFR 329.4]). The aquatic features occurring within the survey area which do not meet the definition of Navigable Waters are the several small ephemeral drainages, originating in the surrounding hillsides that provide additional hydrological inputs to the Lagoon and small areas of southern willow scrub wetland, located within higher elevations and outside the basin, which are primarily influenced by Escondido Creek (and to a lesser extent, La Orilla Creek).

By 1898 the San Elijo Lagoon was significantly modified and natural tidal action was substantially reduced (T-Sheet 1898) (SCCWRP 2012). The State Lands Commission considers a 1934 map prepared by NOAA (Topographic Survey Map T-5411) as the best depiction of the general configuration of the historic natural bed and areas subject to tidal action in San Elijo Lagoon (NOAA 2012). The California Coastal Commission considers the San Elijo lagoon currently subject to tidal action that extends approximately 700-1,700 feet east beyond the I-5 bridge (CCC 2002).

Based upon the previous surveys and studies and the topographic configuration of the Lagoon basin it is assumed that the natural tidal extended over 2-miles inland prior to human alteration. In 1976 the State Lands Commission commissioned a Boundary Study and concluded that the natural bed of the Lagoon has from historical times, been subject to tidal influence. The Boundary Study also provided detailed information about tidal action in the San Elijo Lagoon, and stated that the Lagoon has historically been open to waters of the Pacific Ocean on a seasonal basis. Filed observations performed as part of the Boundary Study indicated that the waters within the Lagoon rise and fall in harmony with the tides on the ocean whether or not the mouth is

Executive Order 11990

Pursuant to Executive Order (EO) 11990, each federal agency is responsible for preparing implementing procedures for carrying out the provisions of the EO. The purpose of this EO is to "minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands." Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for any activity located in wetlands unless the head of the agency finds that there is no practical alternative to such activity; the proposed action includes all practical measures to minimize harm to wetlands that may result from such actions. In making this finding, the head of the agency may take into account economic, environmental, and other pertinent factors. Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands.

B. State Regulations

Lake and Streambed Alteration Program

Pursuant to Section 1600 *et seq*. of the CFGC, CDFG is authorized to regulate any activity that would alter the flow, bed, channel, or bank of streams and lakes. Jurisdictional waters of the state include the channel, bed, or bank of a lake, river, or stream. In practice, CDFG usually extends its jurisdictional limit to the top of the bank of a stream or lake, or to the continuous outer edge of its riparian extent, whichever is wider.[16]

Porter-Cologne Water Quality Control Act

Pursuant to Section 13000 *et seq*. of the CWC (the 1969 Porter-Cologne Water Quality Control Act [Porter-Cologne]), the RWQCB is authorized to regulate any activity that would result in discharges of waste and fill material to waters of the state (including saline waters), "isolated" waters and/or

open. The Boundary Study further concluded that the natural bed of the Lagoon continued to be subject to tidal action (SLC 1976; CCC 2002).

Over time development has altered tidal action and hydrologic inputs into the Lagoon. Urban development has changed Escondido Creek from an ephemeral to perennial stream and this hydroperiod alteration has changed the east basin of the Lagoon from being predominantly tidally influenced to more of a freshwater marsh (SELC 2005).

[16] Jurisdictional waters of the state include jurisdictional waters of the U.S. Federal and state jurisdictions do overlap, but would remain distinct for regulatory administration and permitting purposes.

wetlands (e.g., vernal pools and seeps), and groundwater within the boundaries of the state (CWC § 13050[e]). The RWQCB also adopts and implements water quality control plans (basin plans) that recognize and are designed to maintain the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, maintaining water quality, and addressing the water quality problems of that region.[17] Designated beneficial uses of state waters that may be protected against quality degradation includes preservation and enhancement of fish, wildlife, designated biological habitats of special significance, and other aquatic resources or preserves.[18]

California Coastal Act

Pursuant to Section 30000 *et seq.* of the CPRC, CCC regulates coastal resources within the Coastal Zone under jurisdiction of the California Coastal Act of 1976 (CCA) (as amended). CCC retains permit jurisdiction over any portion of a project that is in state waters, on land up to the mean high tide line (MHTL) (including submerged and tidelands), lands subject to the public trust, or at the discretion of CCC.[19] If development is proposed within these areas (e.g., the Coastal Zone), a Coastal Development Permit (CDP) issued by CCC is required (CCC 1994a, 1994b).[20, 21]

Keene-Nejedly Wetlands Preservation Act

Pursuant to the Keene-Nejedly Wetlands Preservation Act (Act), the California state legislature recognizes that the remaining wetlands of the state are of increasingly critical economic, aesthetic,

---

17 CWC Section 13050(j).

18 CWC Section 13050(f). Specific to species, uses of water that support habitats necessary, at least in part, for the survival of federal or state listed species, and the migration, reproduction, and early development of aquatic species are also evaluated under the basin plan (RWQCB 1994).

19 Tidelands are defined as "lands which are located between the lines of mean high tide and mean low tide" (14 CCR 13576[d]). Submerged lands are defined as "lands which lie below the line of mean low tide" (14 CCR 13576[e]). Public trust lands are defined as "all lands subject to Common Law Public Trust for commerce, navigation, fisheries, recreation, and other public purposes. Public trust lands, tidelands, submerged lands, the beds of navigable lakes and rivers, and historic tidelands and submerged lands that are presently filled or reclaimed, and which are subject to the public trust at any time" (14 CCR 13576[f]).

20 CCC can delegate responsibility of regulating the CCA to a city or county through the approval of their Local Coastal Program (LCP) (CCA Section 30500). However, CCC has oversight authority over all certified LCPs within California (CCA Section 30603).

21 The CCA allows diking, filling, or dredging/excavation of a wetland when restoration of that wetland is the main purpose of the project or similar resource-dependent activities such as enhancement. The CCA does specifically address enhancement as one of the state's basic goals in the coastal zone (CCA Section 30001.5 [a]). The CCC has found in previous project approvals that a wetland enhancement project, where the primary purpose of a project is to improve wetland habitat values, shall be considered, for purposes of complying with this section, "restoration," which is an allowable use (CCC 2001). Restoration is an allowable use under CCA Section 30233 (Allowable Use Number Seven), which has been subject to varying interpretations. In the strictest sense, projects undertaken solely for restoration purposes are beneficial, since the project should result in an increase in wetland acreage and function. Thus, in reviewing projects proposing strictly wetlands restoration, the CCC will focus on the net benefit or gain in wetland functions and habitat.

and scientific value to the people of California, and that the need exists for an affirmative and sustained public policy and program directed at their preservation, restoration, and enhancement so that wetlands will continue in perpetuity to meet the needs of the people. This Act allows both CDFG and the California Department of Parks and Recreation to acquire interests in real property to protect, preserve, and restore wetlands. Additionally, both departments can enter into operating agreements with cities, counties, and districts for the management and control of wetlands.

IV. PROJECT SETTING

A summary of the parameters within the survey area that affect the presence and extent of jurisdictional waters, including wetlands, is provided below.

A. Riparian and Wetland Vegetation Communities

There are five types of riparian and wetland vegetation communities occurring within the Reserve: southern coastal brackish marsh, southern coastal salt marsh,[22] sandbar willow scrub, southern willow scrub, and disturbed wetland. These five vegetation communities occurring within the Reserve, along with their delineated acreages, are summarized in Table 3 and are discussed in detail below. Hydrophytic plant species observed within the Reserve during formal field delineation efforts that are associated with wetland and riparian vegetation communities are listed in Table 4.[23] The riparian and wetland plant communities that were mapped within the Reserve during the formal field delineation efforts are based on formal field delineation and vegetation mapping methodologies (see Section 5, Methodology, below).

Southern Coastal Brackish Marsh (Holland Code 52200)

Coastal brackish marsh is dominated by perennial, emergent, herbaceous monocots up to 13 feet in height with vegetative cover often complete and dense. Coastal brackish marsh is similar to southern coastal salt marsh (Holland Code 52120) and to coastal and valley freshwater marsh (Holland Code 52420), with some plants characteristic of each. Because freshwater input salinity may vary considerably and may increase at high tide or during seasons of low freshwater runoff or both, coastal brackish marsh usually intergrades with coastal salt marshes toward the ocean and

[22] The southern coastal salt marsh occurring within the Reserve is composed of three components or salt marsh zones: low coastal salt marsh, middle coastal salt marsh, and high coastal salt marsh.

[23] Not all hydrophytic plant species observed within the survey area were recorded in the Wetland Determination Data Form – Arid West Region (Version 2.0) during the formal field delineation.

Table 3
Riparian and Wetland Vegetation Communities Occurring within the Reserve

Vegetation Community[a]	Acreage within the Survey Area (Acres)[b]
Southern Coastal Brackish Marsh	131.37
Southern Coastal Salt Marsh	262.11[c]
Disturbed Wetland	1.15
Sandbar Willow Scrub	8.94
Southern Willow Scrub	60.99
Total	**464.56**

[a] Riparian and wetland vegetation communities are described in this JDR by the Holland Classification System (Holland 1986 as modified Oberbauer et al. 2008) (see below).

[b] Acreage of the vegetation communities occurring within the survey area was determined from field mapping and by using ArcGIS.

[c] The 262.11 acres of southern coastal salt marsh is composed of three components or salt marsh zones: low coastal salt marsh (4.74 acres), middle coastal salt marsh (137.43 acres), and high coastal salt marsh (119.94 acres).

Table 4
Hydrophytic Plant Species Observed within the Reserve

Scientific Name	Common Name	Region 0 (California) Indicator Status[a]
Tree Species Growth Habit		
Populus fremontii ssp. *fremontii*	Fremont cottonwood	Facultative Wetland (FACW)
Salix exigua	narrow-leaf willow	Obligate (OBL)
Salix gooddingii	Goodding's black willow	OBL
Salix lasiolepis	arroyo willow	FACW
Salix laevigata [b]	red willow	FACW
Salix lucida ssp. *lasiandra*	shining willow	FACW
Shrub Species Growth Habit		
Arundo donax	giant reed	FACW
Baccharis salicifolia	mulefat	FACW
Isocoma menziesii var. *vernonioides*	coastal goldenbush	FACW
Juncus acutus ssp. *leopoldii*	Leopold's rush	FACW
Nicotiana glauca	tree tobacco	Facultative (FAC)
Tamarix parviflora	tamarisk	FAC
Herbaceous Species Growth Habit		
Agrostis viridis	water bent	OBL
Amblyopappus pusillus	pineapple weed	FACW
Ambrosia psilostachya	western ragweed	FAC
Anemopsis californica	yerba mansa	OBL
Apium graveolens	wild celery	FACW
Artemisia douglasiana	Douglas mugwort	FACW
Arthrocnemum subterminale	Parish's glasswort	OBL
Atriplex patula	fat hen	FACW
Bassia hyssopifolia	five-hook bassia	FAC
Batis maritima	saltwort	OBL
Bolboschoenus maritimus	prairie bulrush	OBL
Cakile maritima	European sea rocket	FACW
Carex spissa	San Diego sedge	FAC

Scientific Name	Common Name	Region 0 (California) Indicator Status[a]
Claytonia perfoliata	miner's lettuce	FAC
Conium maculatum	poison hemlock	FACW
Conyza canadensis	Canadian horseweed	FAC
Cotula coronopifolia	brass buttons	FACW
Crassula connata	pygmyweed	FAC
Cressa truxillensis	alkalai weed	FACW
Cynodon dactylon	Bermuda grass	FAC
Cyperus eragrostis	flatsedge	FACW
Cyperus involucratus	umbrella sedge	OBL
Distichlis spicata	salt grass	FACW
Eleocharis macrostachya	spikerush	FACW
Frankenia salina	alkali heath	FACW
Heliotropium curassavicum	salt heliotrope	OBL
Jaumea carnosa	marsh jumea	OBL
Leymus triticoides	creeping wild ryegrass	FAC
Limonium californicum	marsh rosemary	OBL
Lolium multiflorum	Italian ryegrass	FAC
Ludwigia peploides ssp. *peploides*	willow water weed	OBL
Lythrum hyssopifolia	hyssop loosestrife	FACW
Malvella leprosa	alkali mallow	FAC
Marrubium vulgare	horehound	FAC
Mimulus cardinalis	scarlet monkey flower	OBL
Oenothera elata ssp. h*irsutissima*	marsh evening primrose	FACW
Parapholis incurva	sicklegrass	OBL
Picris echioides	ox tongue	FAC
Plantago coronopus	buckhorn plantain	FAC
Plantago lanceolata	narrowleaf plantain	FAC
Pluchea odorata	salt marsh fleabane	OBL
Polypogon monspeliensis	rabbitsfoot grass	FACW
Rumex crispus	curly dock	FACW
Sarcocornia pacifica[c]	Pacific pickleweed	OBL
Salicornia depressa	Slender glasswort	OBL
Schoenoplectus californicus	California bulrush	OBL
Schoenoplectus americanus	chairmaker's bulrush	OBL
Sesuvium verrucosum	western sea purslane	FACW
Sonchus asper	spiney-leaf sow thistle	FAC
Spartina foliosa	California cordgrass	OBL
Suaeda nigra[d]	bush seepweed	FAC
Typha domingensis	southern cattail	OBL
Typha latifolia	broadleaf cattail	OBL
Urtica dioica ssp. *holosericea*	hoary nettle	FACW
Xanthium strumarium	cocklebur	FAC

[a] Based on the National List of Vascular Plant Species that Occur in Wetlands (Reed 1988) except where noted. OBL wetland species occur almost always (estimated probability >99%) under natural conditions in wetlands; FACW species usually occur in wetlands (estimated probability 67 to 99%) but occasionally are found in nonwetlands; FAC species are equally likely to occur in wetlands or nonwetlands (estimated probability 34 to 66%); Facultative Upland (FACU) species usually occur in nonwetlands (estimated probability 67 to 99%) but occasionally are found in wetlands (estimated probability 1 to 33%) under natural conditions in the region specified. Therefore, FACU is not considered a hydrophytic plant species for purposes of this delineation. If a species does not occur in wetlands in any region, it is not on the National List of Vascular Plant Species that Occur in Wetlands (Reed 1988). The September 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0)

(2008 Supplement) (Environmental Laboratory 2008) does not use ± facultative values.

[b] *Salix laevigata* is not on Reed 1988 but appears on the U.S. Fish and Wildlife Service 1996 National List of Vascular Plant Species that Occur in Wetlands (USFWS 1996). The 1996 National List is a draft revision of the National List of Plant Species That Occur in Wetlands: 1988 National Summary.

[c] *Sarcocornia pacifica* does not occur on either the 1988 or 1996 National List of Vascular Plant Species that Occur in Wetlands. However, *Sarcocornia pacifica* does occur as a synonym to *Salicornia virginica* in the Checklist of the Vascular Plants of San Diego County, 4th Edition (Simpson and Rebman 2006). Therefore, the wetland indicator status for *Sarcocornia pacifica* will be OBL (as applied to *Salicornia virginica* in the 1988 National List).

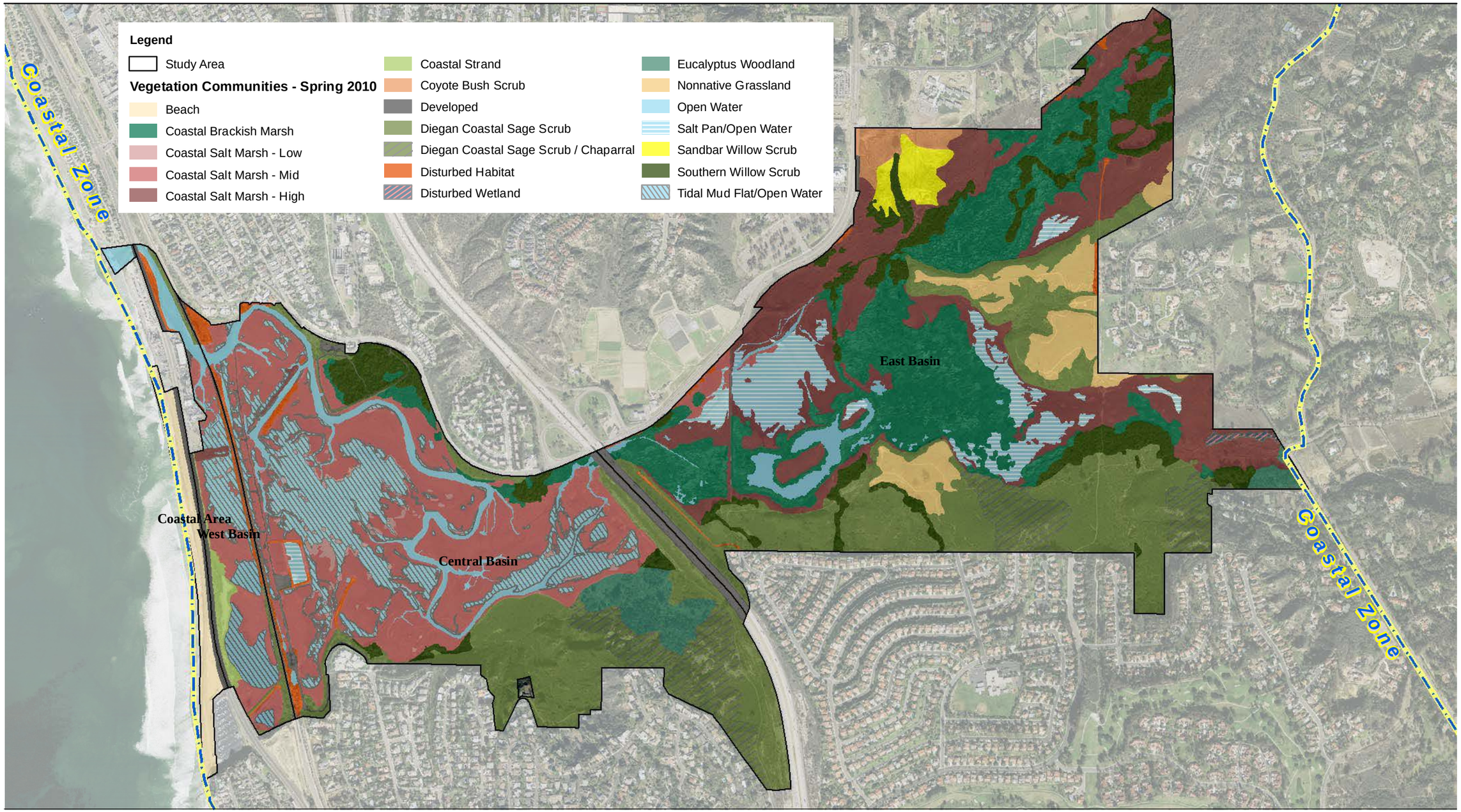
[d] *Suaeda nigra* does not occur on either the 1988, 1996, or 1998 National List of Vascular Plant Species that Occur in Wetlands. Additionally, the U.S. Department of Agriculture (USDA) Plants Database has determined that *Suaeda nigra* (as a synonym for *Suaeda moquinii* listed in the 1996 National List: 1996 Synonymy) does not occur in Region 0 where the Reserve is located. However, for this delineation, based on the occurrence of this plant species at the Reserve, a minimum wetland indicator of FAC will be applied. The 1998 National List is a draft revision of the 1996 National List of Plant Species that Occur in Wetlands.

occasionally with freshwater marshes at the mouths of rivers. Coastal brackish marsh usually occurs at the interior edges of coastal bays and estuaries or in coastal lagoons adjacent to several types of salt marshes. Coastal brackish marsh is most extensively developed around estuary bays and the mouths of river deltas (Holland 1986).

Based on vegetation mapping and the formal field delineation efforts within the Reserve, southern coastal brackish marsh is most extensive within the Central and East Basins of the Lagoon (Figure 4). Dominant plants within this community are California bulrush and chairmaker's bulrush, with these species forming pure stands more characteristic of freshwater marsh in some areas. However, salt marsh species, such as Pacific pickleweed, alkali-heath, Parish's glasswort, and marsh jumea, are dispersed throughout the brackish marsh in varying degrees of abundance.

Southern Coastal Salt Marsh (Holland Code 52120)

Southern coastal salt marsh is a highly productive association of herbaceous and suffrutescent (a plant that is woody only at the base) salt-tolerant hydrophytes that forms a moderate to dense cover and can reach a height of up to 3 feet. Most species are active in summer and dormant in winter (Holland 1986). Coastal salt marsh plants are distributed along distinct zones depending on such environmental factors as frequency and length of tidal inundation, salinity levels, and nutrient status (MacDonald 1977). In the higher littoral zone, there is much less tidal inflow, resulting in lower salinity levels, while soil salinity in the lower littoral zone is fairly constant due to everyday annual tidal flow (Adam 1990). This association is usually segregated horizontally with cordgrass nearest the open water; Bigelow's pickleweed (*Salicornia bigelovii*), pacific pickleweed, and saltwort at mid-littoral levels; and a richer mixture of species, including characteristic species such as coastal salt-grass, alkali-weed, marsh jaumea seepweed and alkali-heath at higher littoral levels (Holland 1986).



Source: DigitalGlobe 2008; AECOM 2010

1,050 525 0 1,050 Feet

Scale: 1 = 12,600; 1 inch = 1,050 feet

Figure 4
Vegetation Communities within the Survey Area

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\JD\JDR_Jan2011\Fig4_Veg.mxd, 01/13/11, SteinB

This page intentionally left blank.

Based on vegetation mapping and the formal field delineation efforts within the Reserve, approximately 262.11 acres of southern coastal salt marsh occur within the Lagoon. The southern coastal salt marsh is composed of three components or salt marsh zones: low-littoral coastal salt marsh (4.74 acres), middle-littoral coastal salt marsh (137.43 acres), and high-littoral coastal salt marsh (119.94 acres). Middle-littoral southern coastal salt marsh is most expansive within the western portion (middle and west basins), with small restricted islands of California cordgrass (low-littoral salt marsh) dispersed throughout. High-littoral salt marsh is most prevalent in the East Basin portion of the Lagoon (Figure 4).

Disturbed Wetland (Holland Code 11200)[24]

Disturbed wetlands occurring within San Diego County are composed of areas once permanently or periodically inundated by water that have been significantly altered or modified by human activity. This includes portions of wetlands with obvious artificial structures such as concrete lining, barricades, rip-rap, piers, or gates. Disturbed wetlands are often unvegetated, but may contain scattered native or nonnative vegetation. Examples include lined channels, Arizona crossings, detention basins, culverts, and ditches. Nonnative hydrophytic and upland species such as giant reed, tamarisk, myoporum (*Myoporum laetum*), eucalyptus (*Eucalyptus* sp.), tree tobacco, ice plant (*Carpobrotus edulis*), and a variety of annual grasses commonly occupy this vegetation community (or cover type) (Oberbauer et al. 2008).

Based on vegetation mapping and the formal field delineation efforts within the Reserve, the disturbed wetland community is represented by two areas:

A portion of the Reserve inlet (which is a graded levee and channel) located within the West Basin that has been armored by rip-rap (Figure 4). The vegetative cover of the rip-rap is estimated to be less than 5% absolute cover and is composed of upland herbaceous and shrub species that primarily occupy the spaces in between the rip-rap. The rip-rap occurring within the survey area ranges from approximately 1 to 3 feet in diameter. The majority of the rip-rap is not permanently submerged (where the maximum mean low low tide [MLLT] is at -2.29 feet (NGVD) and the maximum mean high high tide [MHHT] is at +3.04 feet NGVD (NOAA 2010a). Although all tidal action occurs within the lower extent (the toe) of the rip-rap, there has not been any natural biotic colonization of hydrophytic plant species along these armored banks.

[24] Although features can be delineated and defined as wetlands under the Holland Classification System (Holland 1986 as modified Oberbauer et al. 2008), they may not necessarily be considered as jurisdictional waters of the U.S. or state based upon not meeting the regulatory definitions of jurisdictional waters of the U.S. or state (see below).

A small area in the East Basin of the Lagoon (west of the intersection of La Orilla Road and El Camino Real in Rancho Santa Fe) that is dominated by myoporum (Figure 4).

Sandbar Willow Scrub (Holland Code 63000)

Sandbar willow scrub is similar to mulefat scrub (Holland Code 63310) and southern willow scrub (Holland Code 63320, see below). Sandbar willow can be a dominant species in willow scrub communities and is common in mixed riparian forests. Sandbar willow is moderately shade tolerant. These willows require root access to the water table within 6.5 feet, which typically places them on low-elevation floodplains. With this proximity to the channel, they can contend with physical battering and long-duration floods. They have multiple, small-diameter stems (most less than 10 inches) that bend or break under high flows. They can re-sprout easily from branches that break off, which makes sandbar willows easy to plant for restoration using cuttings. They are adapted to coarse and medium grain soils, and require bare gravel or sand substrate that is moist to germinate and develop. Sandbar willows grow as erect, small shrubs in willow scrub communities and as small trees in mixed riparian forests. They can reach up to 25 feet in height. They spread quickly through root sprouting. Sandbar willow frequently forms a wide patch of several small-diameter stems. Sandbar willow thickets and sandbar willows in mixed riparian forests create ideal nesting substrate for many songbirds. The leaves of sandbar willows attract multiple insects, and both leaves and branches make good foraging material for grazing animals.

Based on vegetation mapping and the formal field delineation efforts within the Reserve, sandbar willow scrub occurs within a disturbed area of the northeastern portion of the Reserve (east of the intersection of Manchester Avenue and South El Camino Real) (Figure 4). The area of disturbed sandbar willow scrub appears to have been graded in the past and is now being colonized by sandbar willow, mulefat, and arroyo willow.

Southern Willow Scrub (Holland Code 63320)

Southern willow scrub is a dense, broad-leaved, winter-deciduous riparian thicket dominated by several species of willows in association with mulefat. Scattered individuals of cottonwood and California sycamore may exist as canopy emergents. This is an early seral community that requires periodic flooding for its maintenance (Oberbauer et al. 2008). In the absence of periodic flooding, this community would develop into a riparian woodland or forest.

Based on vegetation mapping and the formal field delineation efforts within the Reserve, southern willow scrub is encountered throughout the Lagoon and Reserve. Dominant species are arroyo

willow, red willow, and Goodding's black willow. Common understory species are mulefat, tarragon (*Artemisia dracunculus*), and coyote brush (*Baccharis pilularis*) (Figure 4).

B. Hydrology

The majority of the project area occurs within the San Luis Rey–Escondido Watershed (Hydrologic Unit Code [HUC] 18070303)—with approximately 15 acres occurring within the San Diego Watershed (HUC 18070304)—and is located within the RWQCB San Diego Region 9, San Diego Hydrologic Basin Planning Area. The project area spans two watersheds—the Carlsbad Hydrologic Unit (904.00) and the San Dieguito Hydrologic Unit (905.00) (Figure 5)—and two Hydrologic Areas—Escondido Creek (904.4) (which has the most influence on the Reserve in terms of fresh water and urban runoff inputs) (SELC 2005) and Solana Beach (905.1) (with approximately 15 acres occurring within the Solana Beach Hydrologic Area). The overwhelming majority of the Reserve is located within the approximate 20,375-acre San Elijo Hydrologic Subarea (904.61), with approximately 15 acres occurring within the Rancho Santa Fe Hydrologic Subarea [905.11]) (Figure 6).

The climate of the Reserve and its surrounding watershed(s) is characterized as Mediterranean and typically has hot, dry summers, and cooler, wetter winters. Average annual precipitation ranges from less than 8 inches per year along the Pacific Ocean to 18 inches per year in the mountains of the coastal range (NOAA 2010b; RWQCB 1994). Average annual rainfall for Lindbergh Field (located approximately 16.5 miles south of the Reserve) is 10.41 inches (SDCWA 2010). Average annual rainfall for Oceanside Marina (located approximately 16 miles north of the Reserve) is 10.51 inches (WRCC 2010).

The San Elijo Hydrologic Subarea receives an average annual rainfall of approximately 12.30 inches (CSU Sacramento 2010). The Rancho Santa Fe Hydrologic Subarea receives an average annual rainfall of approximately 12 inches (CSU Sacramento 2010). Rain events primarily occur November to March, with a majority of the annual precipitation falling during a few storms in close proximity to each other. Rainfall patterns are subject to extreme variations from year to year and longer term wet and dry cycles (NOAA 2010b; RWQCB 1994).

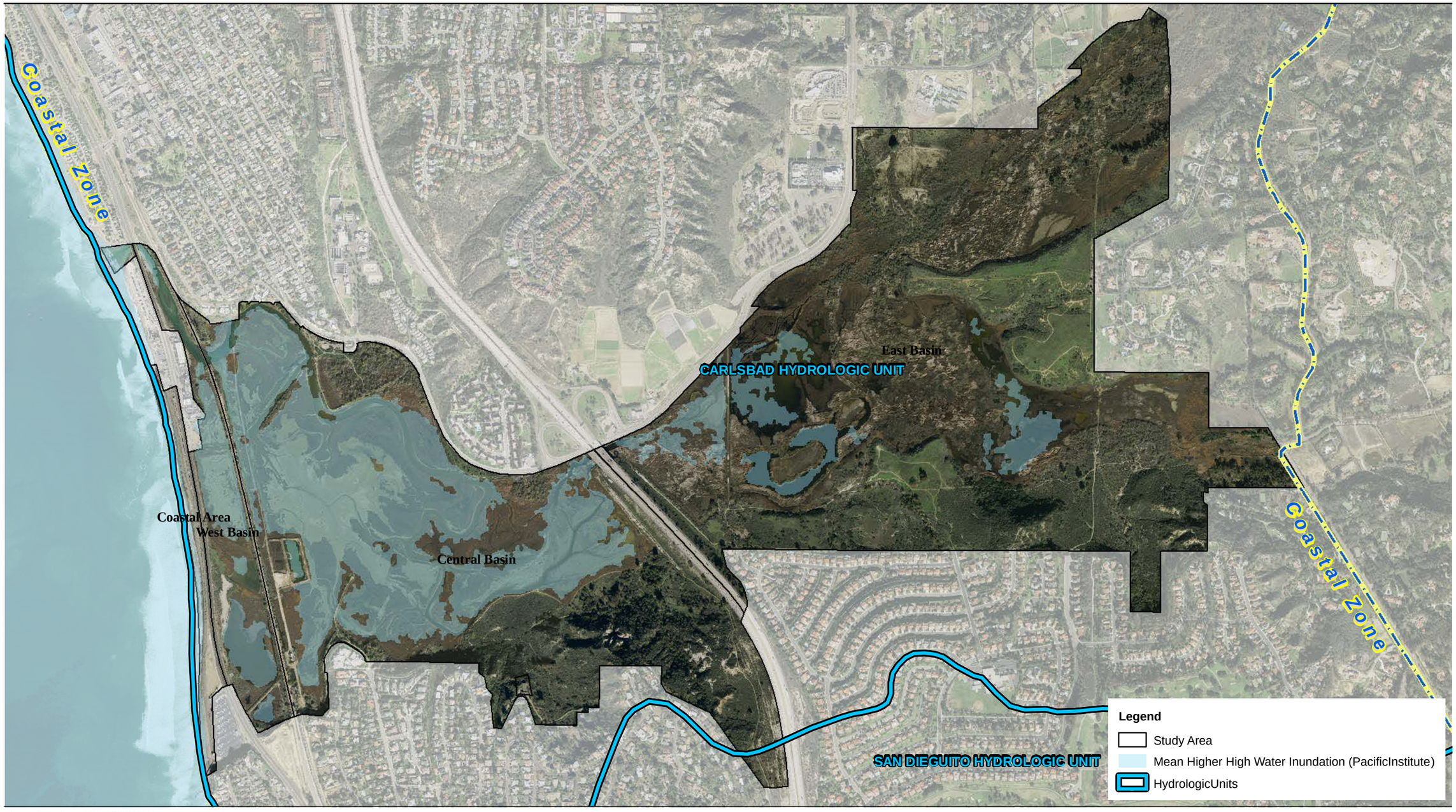
The San Elijo and Rancho Santa Fe Hydrologic Subareas (watersheds) drain a highly urbanized region located almost entirely west of I-15 in coastal San Diego County. These watersheds are still experiencing significant land development. The degree of imperviousness within these watersheds can be used to consider the condition and health of the aquatic resources within them, which are

often used as a measure for determining the amount of stress a watershed is experiencing (Shilling et al. 2005). The major receiving water within the San Elijo Hydrologic Subarea is the Lagoon.

The San Elijo Hydrologic Subarea may be considered the most diverse, with respect to habitat, within the Escondido Creek and Solana Beach Hydrologic Areas (SELC 2005). The Lagoon is a fragile aquatic ecosystem that supports diverse native fauna and flora (including listed species [SELC 2005; AECOM 2011]). The Lagoon is especially sensitive to the effects of pollutants due to restricted or intermittent tidal flushing (Project Clean Water 2010). The Lagoon is considered an "impaired waterbody" by USEPA and occurs on the CWA 303(d) list[25] for eutrophic, indicator bacteria (e.g., coliform), sedimentation/siltation, and erosion (RWQCB 2010).

The Lagoon is divided into three distinct basins, connected to the Pacific Ocean by a narrow tidal inlet channel located within the northwest portion of the Lagoon (Figure 6). The West Basin, bordered by development infrastructure, coastal strand, and the Pacific Ocean, contains the Lagoon inlet (which is maintained) and tidal area, which is located between U.S. Route 101 and the NCTD railroad dike and trestle bridge. The Central Basin is located between the NCTD railroad dike and trestle bridge and I-5, and contains shallow open water, tidal mudflats, coastal salt marsh, a flood control dike, and sinuous dredged channels. The Central and East Basins of the Lagoon were formed by the construction of the large embankment that supports I-5, with a small channel allowed under the overpass that extends across Manchester Boulevard on the northern side of the Lagoon. The East Basin is composed of shallow fresh and brackish wetlands such as high coastal salt marsh. A low road dike embankment further subdivides the eastern basin with a small weir built into it and two pipe under-drains near the northern end of the road (Figure 6). Coastal bluffs and residential development border the southern edge of the Lagoon. Directly adjacent to the northern edge of the Lagoon are Manchester Boulevard and residential and institutional development. Directly adjacent to the eastern edge of the Lagoon are residential developments (AECOM 2010; CERES 2010; Lanton et al. 2002; County of San Diego 1996; USDA 1993).

[25] Under section 303(d) of the CWA, states are required to develop lists of impaired waters. A state's 303(d) impaired waters list is composed of all waters where the state has identified that required pollution controls are not sufficient to attain or maintain applicable water quality standards. The law requires that states establish a prioritized schedule for waters on the lists, and develop Total Maximum Daily Loads (TMDLs) for the identified waters based on the severity of the pollution and the sensitivity of the uses to be made of the waters, among other factors (40Code of Federal Regulations §130.7[b][4]) (USEPA 2009).



Source: DigitalGlobe 2008; AECOM 2010

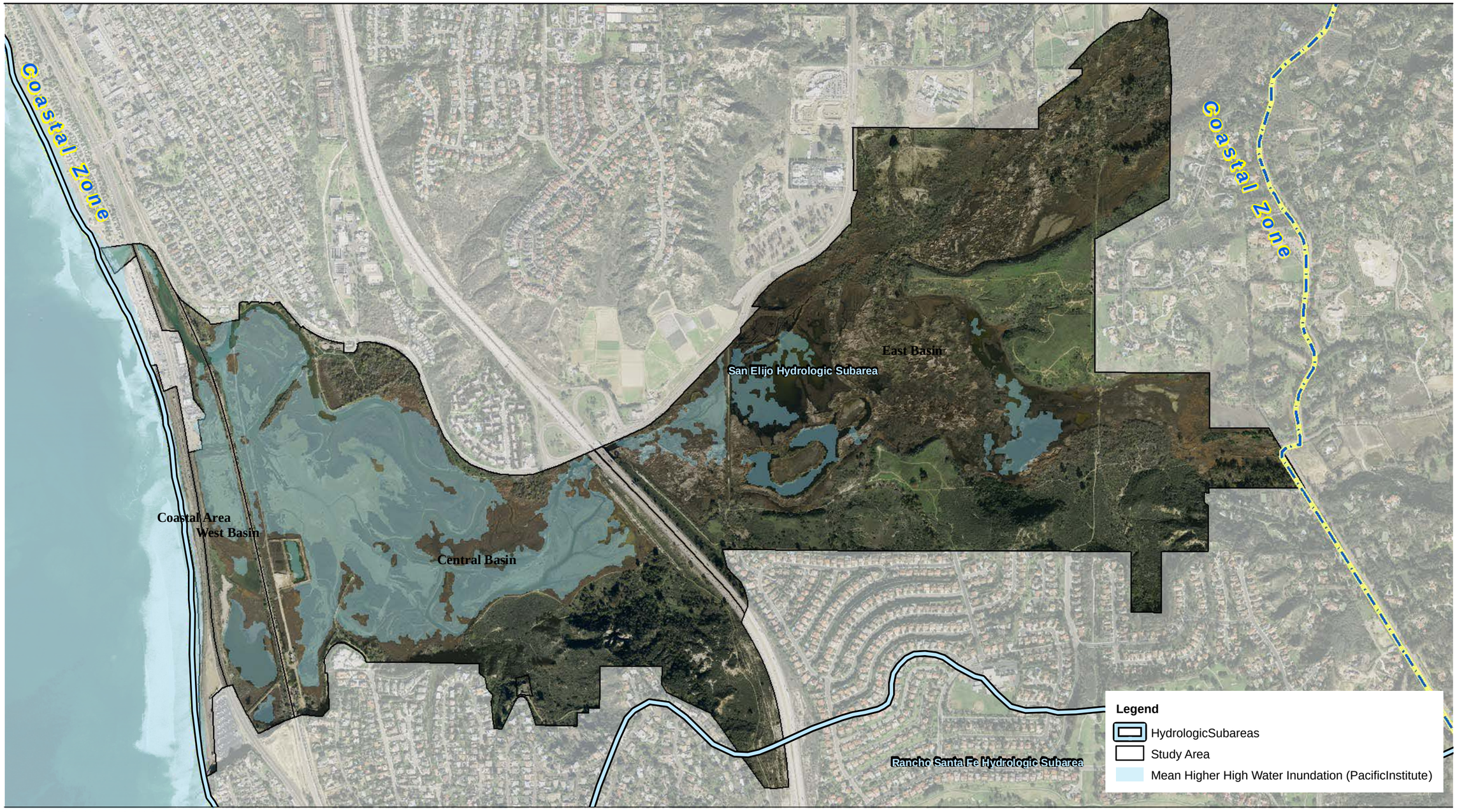
1,050 525 0 1,050 Feet

Scale: 1 = 12,600; 1 inch = 1,050 feet

Figure 5
Hydrologic Units Map

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\JD\JDR_Jan2011\Fig5_HU.mxd, 01/13/11, SteinB

This page intentionally left blank.



Source: DigitalGlobe 2008; AECOM 2010

1,050 525 0 1,050 Feet

Scale: 1 = 12,600; 1 inch = 1,050 feet

Figure 6
Hydrologic Subarea Map

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\JD\JDR_Jan2011\Fig6_HSA.mxd, 01/13/11, SteinB

This page intentionally left blank.

Direct surface freshwater inputs into the Lagoon are primarily from two main tributaries: Escondido Creek (a third order stream) and La Orilla Creek (a second order stream) (SELC 2005).[26] Three minor first order ephemeral stream/drainage features (which are incidental to residential development and urban storm water runoff) located within the southern portion of the Central Basin also provide direct surface water inputs into the Lagoon. Continued development within the surrounding watersheds has lead to hydromodification of and altered Escondido Creek's (and, to a lesser extent, La Orilla Creek's) lower reaches from ephemeral to perennial (USGS 2010). The spatial flow profile of these additional riverine waterflows has changed the East Basin of the Lagoon from being predominantly tidally influenced to more of a freshwater marsh with increased riparian habitat (USDA 1993). Hydromodification impacts upstream have lead to siltation in the Lagoon inlets and, as a result, inflow capacity has been reduced (SELC 2005; WRECO 2006). The ecological effects of increased urban runoff have been compounded by the obstructions to natural flow courses caused by the three major transportation corridors that traverse the Reserve and frequent natural closures or restrictions of the ocean inlet from sedimentation (AECOM 2010; Lanton et al. 2002). Since 2001, the SELC has conducted regular tidal circulation maintenance of the Lagoon via intermittent dredging of the inlet to the ocean (SELC 2010).

C. Soils

Only those soils and soil land types[27] within the Reserve that are listed as hydric by the National Resource Conservation Service (NRCS), have diagnostic hydric properties and/or features, have hydric inclusions, meet the criteria and/or definition for a hydric soil, or have the potential for being hydric by definition are addressed herein. All soil series and their respective phases occurring within the three survey areas are mapped, and all soils listed on the National List of Hydric Soils (NRCS 2010a) are highlighted in Figure 7.

[26] A first order stream does not have any other stream feeding into it and are usually found in the headwater systems of a watershed. The confluence of two first order streams forms a second order stream. The confluence of two second order streams forms a third order stream. Provided no hydromodification has occurred, within the Southern California region, first and second order streams (which are the lowest order streams) are naturally and commonly ephemeral and intermittent in flow regimes (Mount 1995).

[27] In most areas surveyed, there are places where the soil material is so rocky, so shallow, dynamic, or so severely eroded that it cannot be classified by soil series. These places are shown on the San Diego County soil map and are described in the survey (Bowman 1973). While still technically considered a soil, these soil materials are called soil land types (not soil series) and are given descriptive names outside the system of soil taxonomy. For example, a soil land type recognizes and names the soil and landscape properties that are not used as criteria in soil taxonomy (e.g., escarpments, inundation, deposition, gullying, and erosion). Therefore, a soil land type is a functional unit that may be designed and designated according to the purpose of the soil survey. Lagoon water is not considered a soil and may be classified as a land type in the San Diego Area (Bowman 1973).

The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as "a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (NRCS 2010b).[28] The NTCHS definition identifies general soil properties that are associated with wetness. Additionally, specific criteria that identify those estimated soil properties unique to hydric soils have been established by NTCHS (NTCHS 1995).[29] Therefore, hydric soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Hydric soil definitions and NTCHS-approved hydric soil criteria are used to generate hydric soil lists (Environmental Laboratory 2008). The National Hydric Soils List (NRCS 2010a), primarily used as an off-site assessment tool during presurvey investigations, contains a listing of soils that have a probability of being hydric. Hydric soil indicators are primarily morphological indicators used for field identification of hydric soils and/or soils meeting the hydric soil definition. These hydric soil indicators are a subset of the NTCHS *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 6.0* (USDA 2006). Hydric soil indicators are not intended to replace or relieve the requirements contained in the definition of a hydric soil.

Therefore, a soil that meets the definition and/or criteria of hydric can be considered hydric whether or not it exhibits diagnostic field indicators (e.g., the presence of mottles or gleying [redoximorphic features]) at the point of subsurface investigation. If hydric soil indicators are absent and indicators of understory and/or herbaceous hydrophytic vegetation and wetland hydrology are simultaneously present within an appropriate landscape setting, then, by definition, the presence of a problematic soil would be justified as meeting the criteria to be considered as a hydric soil (Environmental Laboratory 2008).[30]

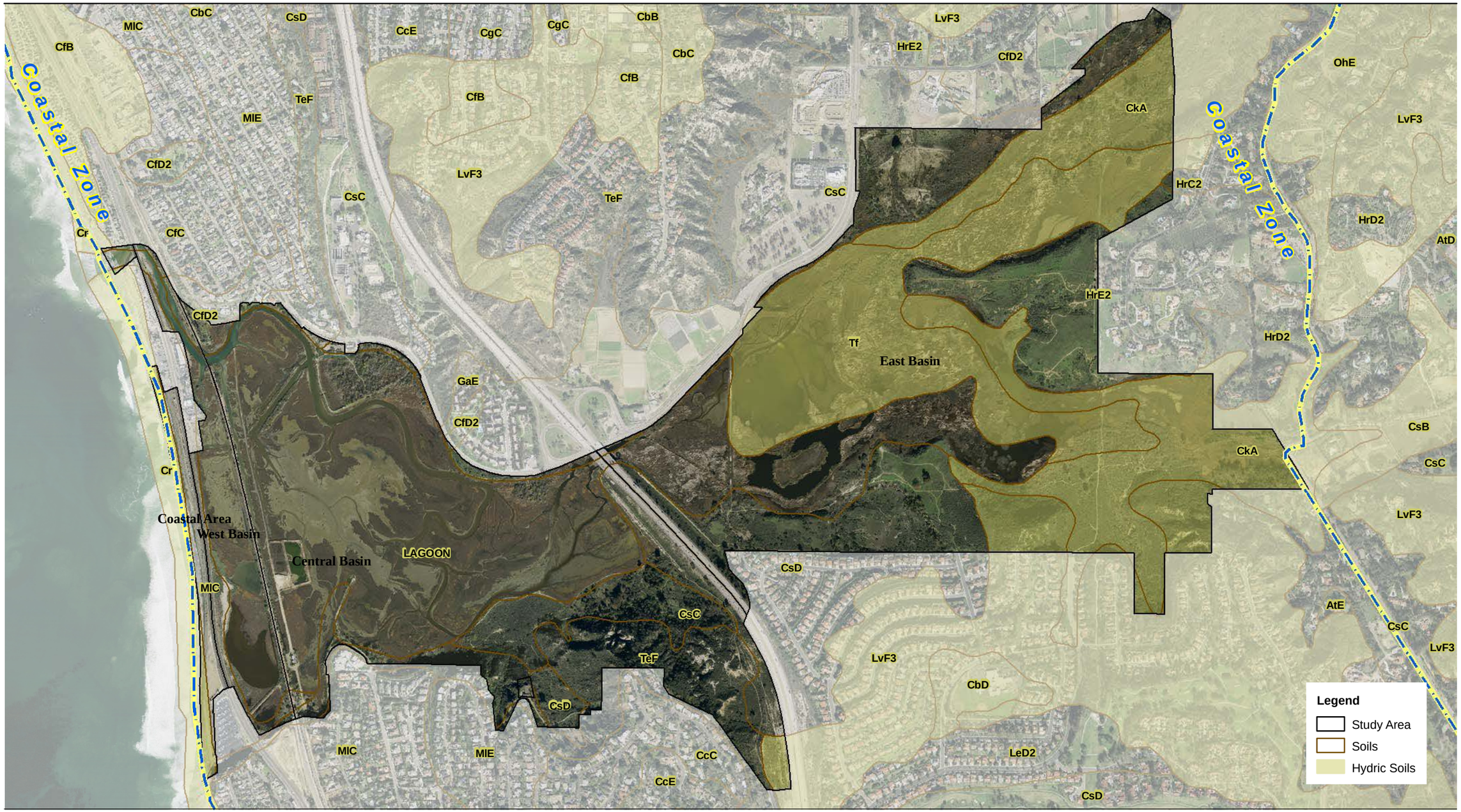
One soil series, with its respective phase, and three soil land types that occur within the Reserve are listed on the National List of Hydric Soils (NRCS 2010a) but are not listed on the local hydric soil list (SCS 1992) (Table 5).

---

[28] Also published in FR 59 35680–35681 July 13, 1994.

[29] Also published in FR 60 10349 February 24, 1995.

[30] Specific guidance germane to riparian areas (in the arid west), which generally exhibit a hydrophytic overstory and lack a hydrophytic understory in places throughout their extent, is found in the 2008 Supplement: Chapter 5, page 85, "Problematic hydrophytic vegetation; Description of the problem," pages 90–91, paragraph c, which emphasizes the presence of a hydrophytic understory. If the soils are lacking hydric soil indicators (such as entisols) and/or wetland hydrology is problematic, more emphasis should be placed on the understory, which may be more indicative of current wetland or nonwetland conditions.



Source: DigitalGlobe 2008; AECOM 2010

1,050 525 0 1,050 Feet

Scale: 1 = 12,600; 1 inch = 1,050 feet

Figure 7
Soil Series within the Survey Area

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\JD\JDR_Jan2011\Fig7_Soil.mxd, 01/13/11, SteinB

This page intentionally left blank.

Table 5
Hydric Soils Occurring within the Reserve

Hydric Soil Series/Land Type	Soil Phase/Soil Land Type/Soil Map Unit Name
Chino	silt loam, saline, 0 to 2% slopes
Coastal Beaches	soil land type
Lagoon Water	soil land type
Tidal Flats	soil land type

Chino Soil Series

The Chino soil series consists of moderately well-drained fine sandy loams derived mainly from granitic rocks. These soils are on alluvial fans and terraces and are found to occupy basins and flood plains at elevations of near sea level to 3,100 feet and have slopes which range from 0 to 5% (Bowman 1973; NRCS 2010b). Chino silt loam, saline, 0 to 2% slopes, is on the National List of Hydric Soils (NRCS 2010a). During field investigation, it was observed that this soil series occurring within the survey area generally conformed to the 1973 soil survey description.

Coastal Beaches Soil Land Type

The Coastal Beaches soil series occurs as gravelly and sandy beaches along the Pacific Ocean where the shore is washed and rewashed by ocean waves. Part of this land type is likely to be covered with water during high tide and stormy periods. This soil series supports no vegetation (Bowman 1973). During field investigation, it was observed that this soil series occurring within the survey area conformed to the 1973 soil survey description.

Lagoon Water Soil Land Type

Although not considered a soil and not mapped as one by the Soil Survey of the San Diego Area, California (Bowman 1973), daily tidal action temporarily removes surface water and exposes layers of mud and estuarine silts, clays, marine animal detritus, and riverine fluvial sediments. This mudflat is within the intertidal zone and is exposed approximately twice daily and can be considered as a land type (when exposed by tidal action). The mudflat occurring within the survey area presents two primary hydric soil features: muck and elevated levels of hydrogen sulfide. During field investigation, it was observed that this soil series occurring within the survey area generally conformed to the 1973 soil survey description.

Tidal Flats Soil Land Type

The Tidal Flats soil series occurs as level areas that are periodically covered with tidal water. These areas are essentially barren. The higher parts that are seldom covered during high tide support sparse salt-tolerant vegetation. The texture ranges from clay to very fine sand. Typically, this soil has an excess of soluble salts (Bowman 1973). During field investigation, it was observed that this soil series occurring within the survey area generally conformed to the 1973 soil survey description.

V. METHODOLOGY

This jurisdictional delineation applied both a presurvey investigation field reconnaissance and field surveys to determine the presence (type, area, and extent) or absence of jurisdictional waters of the U.S. and state.

A. Presurvey Investigations

Prior to conducting the field investigation for a formal jurisdictional delineation, an AECOM ecologist reviewed and identified areas with topographical configurations, vegetative signatures, previously mapped vegetation communities and riparian areas, wetlands, waters, and/or hydric soils that may suggest the potential or presence of wetlands at the time of the study. This information was evaluated by consulting the following available sources:

- 7.5-minute U.S. Geologic Survey (USGS) Encinitas (1975) and Rancho Santa Fe (1983) topographic quadrangles
- 2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the Reserve (NAIP 2009)
- The web-based National Wetlands Inventory (NWI) Interactive Wetlands Mapper (USFWS 2010)
- The web-based California Environmental Resources Evaluation System (CERES) California Wetlands Information System Wetland Databases and Inventories (CERES 2010)
- The web-based Natural Resource Conservation Service Web Soil Survey (NRCS 2010a)
- The web-based National List of Hydric Soils (NRCS 2010b)
- The Soil Survey of San Diego County (Bowman 1973)

- The web-based San Diego County Water Authority (SDCWA 2010)
- The web-based San Diego County Watershed Network (SDSU 2010)
- The web-based Project Clean Water San Diego Watersheds (Project Clean Water 2010)
- The web-based California Watershed Network (CWN 2010)
- The web-based California Watershed Portal (Cal/EPA 2010)
- The web-based Digital Watershed (USEPA 2010a)
- The web-based National Weather Service Climate Office (NOAA 2010b)
- The web-based San Diego County Geographic Information Systems (GIS) site (SANDAG 2010)
- The web-based Western Regional Climate Center (WRCC 2010)
- The web-based San Diego County Flood Control District (SDFCD 2010)
- The web-based National Oceanic and Atmospheric Administration (NOAA) tides and currents database (NOAA 2010c)
- The web-based State Coastal Zone Boundaries (NOAA 2010d)

B. Field Survey

An AECOM ecologist initially conducted a general field reconnaissance of the Reserve (survey area) identifying areas (including the limits) supporting potential state and federal jurisdictional waters (including wetlands). After the initial field reconnaissance was completed, a formal delineation of jurisdictional waters (including wetlands) occurring within the survey area was conducted by two AECOM ecologists at high tide and low tide.

The AECOM ecologists involved in the formal field delineation recorded the presence (including extents, types, and boundaries) of potential jurisdictional aquatic features of the U.S. and state with a Trimble XH subfoot accuracy Global Positioning System (GPS) handheld unit. At the close of each field day, all acquired field data were submitted to AECOM San Diego's GIS specialists for post-field processing using Trimble GPS Analyst (Version 2.1) GIS software. Post-field analysis to code, define, designate, and edit all acquired GPS field data representing jurisdictional waters occurring within the survey area was conducted in tandem with an AECOM GIS specialist and the

ecologist who performed the fieldwork. The dates, AECOM personnel, and type of activity conducted for this formal jurisdictional delineation are listed in Table 6.

Table 6
Survey Dates and Personnel Conducting the Formal Field Delineation at the Reserve

Dates	Personnel	Activity
January 20, 2010	Joshua Zinn	Pre field analysis and survey
January 21, 2010	Joshua Zinn	General reconnaissance of Reserve at low tide
January 22, 2010	Joshua Zinn	General reconnaissance of Reserve at high tide
January 26, 2010	Lindsay Teunis and Joshua Zinn	Field survey and formal delineation fieldwork
January 27, 2010	Lindsay Teunis and Joshua Zinn	Field survey and formal delineation fieldwork
January 28, 2010	Lindsay Teunis and Joshua Zinn	Field survey and formal delineation fieldwork
February 02, 2010	Joshua Zinn	Groundtruthing and formal delineation fieldwork
February 18, 2010	Joshua Zinn	Groundtruthing and formal delineation fieldwork

Delineation of Federal Waters

Jurisdictional waters of the U.S. include those waters listed in 33 CFR 328 (Definitions of Waters of the United States). All waters of the U.S. were delineated to their jurisdictional limits as defined by 33 CFR 328.4 (Limits of Jurisdiction). The survey area that was formally delineated has the potential for the presence of, at a minimum, three types of federally regulated waters (wetlands, "other waters," and tidal waters[31]), warranting field assessments composed of the following:

Formal delineations for waters of the U.S. in the form of wetlands based on the three-parameter method.[32] The three-parameter method for identifying and delineating wetlands is outlined in and in accordance with federal guidance and procedure following the *Corps of Engineers Wetlands Delineation* (1987 Manual) (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (2008 Supplement) (Environmental Laboratory 2008).[33]

[31] Waters that are subject to the ebb and flow of the tide (33 CFR 328.3[a][1]).

[32] The three-parameter method requires the simultaneous presence (co-occurrence) of wetland hydrology, hydric soil, and hydrophytic vegetation for an area to be classified as a wetland (Environmental laboratory 1987).

[33] The 1987 Manual and 2008 Supplement are guidance documents for delineating jurisdictional waters in the form of wetlands only.

Formal delineations for waters of the U.S. in the form of other nonwetland waters based on field indicators to define and identify the jurisdictional lateral extent of the ordinary high water mark (OHWM) as defined by 33 CFR 238.3(e), federal guidance and procedures outlined in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley 2008),[34] *Distribution of Ordinary High Water Mark (OHWM) Indicators and their Reliability in Identifying the Limits of "Waters Of The United States" in Arid Southwestern Channels* (Lichvar et al. 2006), and other relevant federal guidance and procedural documents (see below).

Formal delineations for waters of the U.S. in the form of nonwetland tidal waters based on field indicators to define and identify the jurisdictional lateral extent of the mean high tide line (MHTL),[35] as defined by 33 CFR 328.3(d) and tidal waters as defined by 33 CFR 328.3(f) using tidal data (NOAA 2010a; PacificInstitute 2010) and other relevant federal regulations, guidance, and procedural documents (see below).

This jurisdictional delineation applied the three field methodologies in routine delineating of waters of the U.S., as described below.

Methodology One: Formal Delineations for Waters of the U.S. in the Form of Wetlands

The field routine method for delineating jurisdictional waters of the U.S. in the form of wetlands as specified in the 1987 Manual and the 2008 Supplement was used. The on-site field investigation involved inspection of the Reserve to identify areas that satisfy the three wetland parameters: the concurrence of a predominance of hydrophytic (wetland) vegetation, wetland hydrology, and hydric soils. To make a determination that an area is a wetland, the 1987 Manual requires that, under "normal circumstances,"[36,37] a minimum of one primary wetland indicator or two secondary indicators be confirmed for each of the three wetland parameters.

---

34 Datasheets from this field delineation manual were used as guidance documents for this delineation and are not included in this JDR.

35 Although USACE limits of jurisdiction for tidal waters extends to the high tide line (33 CFR 328.4[a][1]), 33 CFR 328.3(d), and 33 CFR 328.3(f), this delineation uses Mean High High Tide Line (MHHTL) for both federal and state jurisdictional limits of tidal features as the MHHTL is the more accurate and available tidal data.

36 Pursuant to the 1987 Manual and 33 CFR 328.3(b), while "normal circumstances" have not been defined by regulation, USACE previously provided guidance on this subject in two expired "normal circumstances" Regulatory Guidance Letters (RGLs) (RGLs 82-2 and 86-9). Please refer to RGL 05-06 for applicability of expired RGLs.

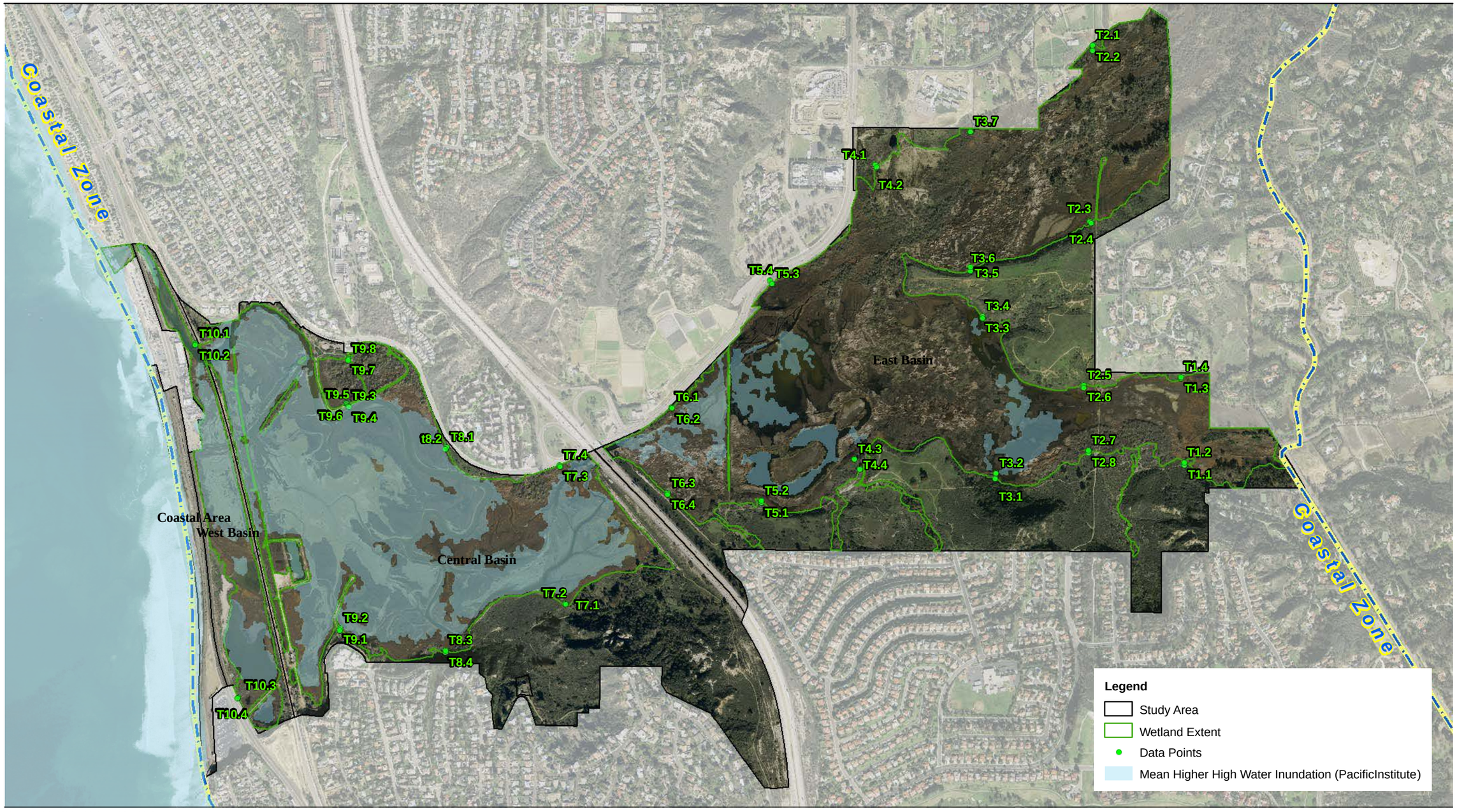
37 Clarification of the phrase "normal circumstances" as it pertains to "cropped wetlands," RGL 90-7 dated September 26, 1990. "Normal circumstances" has been defined as "the soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed." The determination of whether normal circumstances exist in a disturbed area "involves an evaluation of the extent and relative permanence of the physical alteration of

The jurisdictional delineations for potential jurisdictional areas in the form of federally defined wetland within the Reserve that were formally delineated were conducted in accordance with the 1987 Manual's Part IV (Methods), Section D (Routine Determinations), and Subsection 2 (Onsite Inspection Necessary): "Areas Greater Than Five Acres in Size." Obvious upland areas were not mapped as part of this analysis, as they did not represent wetland and/or riparian communities that warranted a formal jurisdictional delineation. Upland areas were surveyed and mapped for drainage features if it was determined that the drainage features presented field evidence of tidal influence (MHTL and indicators of OHWM) (see Methodology Two, below).

Ten transects composed of a cumulative total of 51 field data points were completed throughout the Reserve for the field delineation effort, and the findings outlined in this report (Figure 8). Where feasible, the baseline for establishing transect (and field data point) locations was situated within the survey boundary in potential nonjurisdictional (i.e., upland and/or nonwetland) habitat so that the initial observation points of each transect were likely outside wetland boundaries or on either side of the potential jurisdictional waters (i.e., wetland or "other waters" [e.g., open water and/or tidal mudflat]), and extended across the potential jurisdictional features to potential nonjurisdictional habitat on the opposite side. This baseline placement ensured that the outer observation point for each transect was also located in nonwetland and/or nonaquatic habitat, allowing for accurate demarcation of the limits of potential jurisdictional areas.

The routine determination method requires an examination for the presence of wetland indicators for hydrophytic vegetation, hydric soils, and wetland hydrology. With the exception of some atypical situations, USACE guidelines for delineating wetlands (e.g., 1987 Manual and 2008 Supplement) require co-occurrence of positive wetland indicators for each parameter (e.g., hydrophytic vegetation, wetland hydrology, and hydric soil). Observation points were selected along each of the 10 delineation transects as different vegetation communities, surface hydrology, and/or topographical changes were encountered along each transect. The primary wetland vegetation and aquatic cover types occurring within the Lagoon are southern coastal salt marsh, southern brackish marsh, tidal mudflat, open water, and riparian scrub. The Lagoon also presents, to a much lesser extent, upland cover types such as disturbed habitat and developed areas.

wetlands hydrology and hydrophytic vegetation" and consideration of the "purpose and cause of the physical alterations to hydrology and vegetation."



Source: DigitalGlobe 2008; AECOM 2010

1,050 525 0 1,050 Feet

Scale: 1 = 12,600; 1 inch = 1,050 feet

Figure 8
Field Data Points

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\JD\JDR_Jan2011\Fig8_DataPts.mxd, 01/28/11, SteinB

This page intentionally left blank.

Observation points (field data points) were located in obvious wetland and nonwetland areas to determine the wetland/nonwetland boundary. Hydrophytic understory or herbaceous vegetation primarily occurred only in tidal and riparian-influenced areas and three Lagoon basins that present topographic relief, creating distinct vegetation signatures concomitant with the hyper-local topography of the Lagoon. The 51 field data points were selected along the 10 delineation transects areas on the basis of differences in grade (e.g., basin feature), presence of potential wetland hydrology, and changes in dominant vegetative species (e.g., transition from Diegan coastal sage scrub, nonnative grassland, rip-rap, and disturbed habitat to southern coastal salt marsh/brackish marsh or tidal mudflat, riparian scrub, and/or open water).

A positive wetland determination was made for those observation points that exhibited positive wetland field indicators for each of the three parameters: hydrophytic vegetation, wetland hydrology, and hydric soils. A positive determination for potential nonwetland jurisdictional waters of the U.S. was made for areas that did not meet all three parameters for federally defined wetland but met the definitions of other waters of the U.S.[38] (see Methodology Two and Three, below).

Although the 2008 Supplement also uses the three-criteria method outlined in the 1987 Manual, it identifies specific sections of the 1987 Manual that are replaced by 2008 Supplement guidance (see Table 1 of the 2008 Supplement) that must be used within applicable land resource regions as outlined in the 2008 Supplement (the Reserve is within Region C [Mediterranean California]). Therefore, the 2008 Supplement takes precedence over the 1987 Manual for applications in the Arid West Region, and states the following in Chapter 4:

The Arid West is characterized by extended dry seasons in most years and by extreme temporal and spatial variability in rainfall, even in "normal" years. Many wetlands in the region are dry for much of the year and, at those times, may lack hydrology indicators entirely. Therefore, *lack of an indicator is not evidence for the absence of wetland hydrology*. [Italics in the original.]

In Chapter 5:

In general, wetland determinations on difficult or problematic sites must be based on the best information available to the field inspector, interpreted in light of his or her personal experience and knowledge of the ecology of wetlands in the region. [Italics in the original.]

[38] 33 CFR 328.3(a-f) (51 FR 41250, November 13, 1986, as amended at 58 FR 45036, August 25, 1993).

In accordance with the 1987 Manual and the 2008 Supplement (including other relevant federal guidance and procedural documents), the following wetland delineation methodology and criteria, primary field indicators, and best professional judgment were used in conducting a formal jurisdictional delineation for the Reserve. Wetland indicator sampling was conducted along the gradient between uplands and wetlands to identify the location of the waters/wetland boundary. Field data points (sample points) were placed in a representative waters/wetland area and an adjacent upland area for the collection of data pertinent to assessment of the mandatory technical criteria. Field data were recorded in the 2008 Supplement Wetland Determination Data Forms – Arid West Region (Version 2.0), which is appropriate for application of both the 1987 Manual and the 2008 Supplement "routine" method. Copies of the Arid West Region data forms completed during the surveys are included in Attachment A to this JDR.[39]

Hydrophytic Vegetation

In addition to the jurisdictional delineations described in this JDR, AECOM conducted vegetation communities mapping within the Reserve between February 5 and February 25, 2010 (AECOM 2010) (Figure 4). AECOM conducted rare plant surveys within the Reserve between March 26 and June 4, 2010 (AECOM 2010). Vegetation mapping and rare plant surveys were confirmed in GIS in June 2010, and refined to include results of wetland field delineation and riparian vegetation mapping surveys conducted during spring 2010. The minimum mapping unit used for this delineation was 0.01 acre for vegetation communities.

Biological field surveys for this JDR used the latest San Diego Regional Holland Code Classification System (Holland 1986) as modified by Oberbauer (Oberbauer 1996, revised 2005) and the Draft Vegetation Communities of San Diego (Oberbauer et al. 2008) for identifying riparian and wetland vegetation communities occurring within the Reserve during the formal field delineation efforts. Where a vegetation community contains a mixture of component and indicator species from two or more Holland vegetation communities, the indicator species that appears with the greatest vegetation coverage (absolute dominance based on percent cover) is used to identify the vegetation community (County of San Diego 2008).

All observation points were surveyed to determine the dominance of hydrophytic vegetation. An area was determined to support hydrophytic vegetation if more than 50% of the dominant species were listed as Obligate (OBL), Facultative Wetland (FACW), or Facultative (FAC) species on the

[39] The 1987 Manual and 2008 Supplement are guidance documents for delineating jurisdictional waters in the form of wetlands only. Nonwetland waters (e.g., tidal mudflat) were delineated within the survey area using the definition of "high tide line" (33 CFR 238.3[d]) and 40 CFR 230.3(s), and relevant procedural guidance.

U.S. Fish and Wildlife Service (USFWS) *National List of Plant Species That Occur in Wetlands: California (Region 0)* (1988 National List) (Reed 1988). For hydrophytic plants observed within the Reserve but not listed in the 1988 National List, the *National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary* (1996 National List) and the *National List of Vascular Plant Species that Occur in Wetlands: 1998 National Summary* (1998 National List) were consulted. The 1996 National List is still under review by USACE, USEPA, USFWS, and the National Resource Conservation Service. The 1998 National List is a draft revision of the 1996 National List of Plant Species that Occur in Wetlands.

Vegetation was assessed using the "50/20 Rule" to determine dominant species. By definition, dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50% of the total dominance measure (e.g., basal area or areal coverage) for the stratum, plus any additional species that individually comprise 20% or more of the total dominance measure for the stratum (Tiner 1999).[40] All observation points were also surveyed for the presence of surface wetland hydrological field indicators such as inundation, saturation, water marks, drift lines, drainage patterns, and sediment deposits occurring within a hydrophytic vegetation community.

Hydric Soils

The USDA Soil Survey of the San Diego Area, California (Bowman 1973), may not reflect current field conditions. It is likely that some soils investigated for that study have been transformed through human intervention since the 1973 soil survey was published. Soils that underlie the Reserve (with an emphasis on soils occurring within the Lagoon) have been transformed significantly or extensively as a result of human activity (e.g., development encroachment and sedimentation). Therefore, the formal delineation fieldwork included examining soils in the survey area compared to the 1973 Soil Conservation Service (SCS) survey for San Diego County (Bowman 1973).

All soil pits (field data points for soil inspection and observation) were dug to a depth of 20 inches below natural grade or to the point of obstruction (e.g., compaction or rock barriers) if a 20-inch-

[40] The 50/20 Rule is a dominance ratio. When using the 50/20 Rule, greater than 50% of the plants must be facultative, facultative wet, or obligate wet species. In addition, the cumulative total of all dominant plants must be equal to or greater than 50% of the areal coverage of the plot, and any plant species that equals or exceeds 20% of the total percentage areal coverage of the plot is also considered a dominant plant. If no plant species equals or exceeds 20% of the cumulative total areal coverage of the plot, then the dominant plants are the plants that, when ranked in decreasing order of abundance and summed, immediately exceed 50% of the plot's areal coverage when added together (Federal Interagency Committee for Wetland Delineation 1989).

deep soil pit was not possible. Soil pits were located in obvious wetland and nonwetland areas to determine the wetland/nonwetland boundary and the presence or absence of hydric soil. In most instances, additional soil pits were dug between observation points to accurately determine the wetland/nonwetland boundary. Subsurface soil taken from soil pits was analyzed visually for redoximorphic features using *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils* (USDA 2006). A field diagnostic test for determining the presence or absence of iron reduction and identifying aquatic conditions using α, α' Dipyridyl was also applied in select areas where hydric soil indicators or conditions were not obvious. The soil test pits were also evaluated for the presence of subsurface wetland hydrology indicators such as soil saturation, oxidized root channels, and other hydric soil indicators.

Distinct redoximorphic features (hydric soil field indicators) were not present within the eastern portion of the Reserve that supported ephemeral drainages and the small wetland scrub riparian systems that depend on these ephemeral drainages.[41] As noted above, the general absence of hydric soil field indicators should not exclude the soils occurring within the Reserve from being considered as hydric where the field indicators for understory and/or herbaceous hydrophytic vegetation and wetland hydrology are simultaneously present. The three ephemeral drainage features are almost exclusively underlain by fluvial sediments, which can be considered in the Entisol soil order. Entisols occurring within San Diego County are considered hydric and are primarily represented by the Riverwash soil land type and Tujunga soil series (both are exclusively related to riverine features) (Bowman 1973; NRCS 2010a; SCS 1992). Entisols are young soils that primarily originate from sediments and alluvium that show little alteration of the parent material from which they were derived, and that exhibit little pedogenesis (soil formation process). Since entisols are associated with fluvial processes, they are dynamic and do not have the ability to develop buried soil horizons, which, in turn, contribute to *in situ* development of redoximorphic features when conditions are hydric over the appropriate temporal frame.[42]

---

[41] Specific guidance germane to riparian areas in the arid west, which generally exhibit a hydrophytic overstory and lack a hydrophytic understory in places throughout their extent, is found in the 2008 Supplement: Chapter 5, page 85, "Problematic hydrophytic vegetation; Description of the problem," pages 90–91, paragraph c, which emphasizes the presence of a hydrophytic understory. If the soils are lacking hydric soil indicators (such as entisols) and/or wetland hydrology is problematic, more emphasis should be placed on the understory, which may be more indicative of current wetland or nonwetland conditions. These small ephemeral drainage features support a small hydrophytic understory.

[42] Specific guidance germane to entisols (or soils that generally lack hydric field indicators) is found in the 2008 Supplement: Chapter 5, page 96, "Problematic hydric soils; Soils with faint or no indicators," page 88(3); procedure, page 98–99 1–4(b)(3). Areas underlain by Tujunga or Riverwash soils would be considered wetland (but not necessarily jurisdictional until the determination process) by USACE criteria and guidance when hydrophytic herbaceous vegetation *and* indicators of wetland hydrology are simultaneously present.

Wetland Hydrology

Wetland hydrology is essentially a result of watershed-driven processes of hydrological inputs from precipitation that provide sufficient groundwater and/or surface flows to support hydrophytic plants. The formation, persistence, size, and function of wetlands are controlled by hydrologic processes within the watershed. Water sources from continual inputs (e.g., immediate proximity to a hydrological feature such as a lake, a river, the ocean, and/or a wet climate) and the ability to retain or slow down water flow are necessary for the creation and existence of wetlands. Distribution and differences in wetland type, vegetative composition, and soil type are caused primarily by geology, topography, and climate. Hydrologic processes occurring in wetlands are the same processes that occur in uplands and are collectively referred to as the hydrologic cycle. Major components of the hydrologic cycle are precipitation, surface-water retention, surface-water flow, groundwater flow, and evapotranspiration. Wetlands and uplands continually receive or lose water through exchange with the atmosphere, streams, and groundwater. Wetland hydrology is a result of a favorable topographic and geologic setting and an adequate or persistent supply of water (USGS 1996).

USACE has set a quantitative wetland hydrology threshold as it applies to all types of non-tidal wetlands (Environmental laboratory 1987).[43] Specifically, an area has wetland hydrology if it is inundated or saturated to the surface continuously for at least 5% of the growing season in most years (50% probability of recurrence).[44,45] Additionally, the hydrology requirements for a wetland can be defined as follows: on average, an area must be inundated or the soils saturated to the surface in more than half the years (1 out of 2, 5 out of 10, or 50 out of 100) for more than 5% of the growing season to conclude with reasonable certainty that the area has wetland hydrology (Environmental Laboratory 1987). In Region 0 (where the Reserve is located), the growing season is 365 days per year (year-round). By using this protocol, the limit of non-tidal jurisdictional wetlands can be empirically identified using a minimum of 10 years of climactic data (to represent normal conditions). However, USACE has not applied a discrete metric process to define either the lateral or longitudinal limits of the tidal inlet channel and/or braided tidal channel networks within the Lagoon. Therefore, the limits and immediate influence of the MHHT (see footnote 26, above) (Figure 3) will represent the extent of wetland hydrology occurring within tidally influenced portion of the Reserve.

[43] Criteria, limits, and thresholds for tidal wetland hydrology are not defined in the 1987 Manual.

[44] The growing season in Southern California is estimated to be 365 days a year; therefore, an area has wetland hydrology if it is inundated or saturated to the surface continuously for 18 days.

[45] The 2008 Supplement provides no quantitative information for the start of a "growing season." The end of the growing season is still based on the 28°F (-2.2°C) air temperature threshold as reported in Climate Analysis for Wetlands (WETS) tables.

All observation and investigative points were surveyed for the presence of wetland hydrological field indicators such as tide lines, inundations, saturation, water marks, drift lines, drainage patterns, and sediment deposits occurring within the Reserve. Areas that have hydrophytic vegetation and hydric soils generally also have wetland hydrology unless the hydrologic regime has changed due to natural events or human activities (NRC 1995). Wetland hydrology for the Reserve was also determined following guidance outlined in Chapter 5 of the 2008 Supplement (Environmental Laboratory 2008) (Difficult Wetland Situations in the Arid West: Wetlands That Periodically Lack Indicators of Wetland Hydrology).

The results of the pre field surveys and site reconnaissance for the survey area in supporting wetlands are listed in Table 7.

Table 7
Survey Results for Potential Jurisdictional Waters of the U.S. and State in the Form of Wetland[a] Occurring within the Reserve

Vegetation Community	Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Potential Federal Waters	Potential State Waters	Comments
Southern Coastal Brackish Marsh	+	+	+	Yes	Yes	Confirm federal jurisdictional status with Jurisdictional Determination (JD)
Southern Coastal Salt Marsh	+	+	+	Yes	Yes	Confirm federal jurisdictional status with JD
Sandbar Willow Scrub	+	+	+	Yes	Yes	Confirm federal jurisdictional status with JD
Southern Willow Scrub	+	+	+	Yes	Yes	Confirm federal jurisdictional status with JD
Disturbed Wetland	+/-	+/-	+/-	Yes/No	Yes	Confirm federal jurisdictional status with JD

[a] The federal definition of wetlands outlined in 33 CFR 328.3(b), 40 CFR 230.3(t), the 1987 Manual, and the 2008 Supplement.

Methodology Two: Formal delineations for waters of the U.S. in the form of other nonwetland waters

OHWM indicators were used to delineate the lateral jurisdictional extent of potential waters of the U.S. The three ephemeral drainage features/channels occurring within the Reserve are defined with

connectivity to the Lagoon (therefore, all flow indirectly into the Pacific Ocean). Because of the hydrological connectivity and established OHWM, these drainage features/channels are considered to be potential waters of the U.S. The lateral jurisdictional limits established for the OHWM of the drainages features/channels occurring within the Reserve, pursuant to CFR 328.3(e), are the scour lines and/or water marks within their respective channel banks established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

Lateral jurisdictional limits were established for all drainage features/channels occurring within the Reserve in conjunction with field verification for a determination of the OHWM, which provides an acceptable estimate for the lateral jurisdictional limits. The OHWM of the three drainage features occurring within the Reserve was identified on the basis of the following:

- Water marks within their respective channel banks established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the banks;
- Scour and shelving, local deposition, distinct and indistinct terraces, and changes in the character of soil;
- The presence of developed longitudinal bars within channel margins;
- Type, abundance, and relative age of vegetation and/or destruction of terrestrial vegetation, and the presence and absence of litter and debris within the channels;
- Channel configuration, estimated streamflow behavior, and other subtle geomorphic evidence indicative of regular flow levels;
- Consideration of precipitation patterns and lack of consistent flow;
- Geomorphic OHWM indicators (e.g., surface relief, fluvial deposition of sand, cobblebars, benches, crested ripples, particle size distribution, mudcracks, and gravel sheets); and
- Pattern and location of relictual channels and discontinuous drainage features.

The lateral limits of jurisdiction specified by a technically defensible method such as the portion of the drainage features/channels supporting an OHWM would indicate a sufficiency to carry the mean annual flow, as determined through the extrapolation of field indicators and rainfall data. Lateral jurisdictional limits were established for all three drainage features/channels occurring within the Reserve in conjunction with field verification for a determination of the OHWM, which provides an

acceptable estimate for the lateral jurisdictional limits (and other waters of the U.S. existing within this limit).

The limits of waters of the U.S. in non-tidal waters is defined in 33 CFR Part 328.4 (c)(1-3) as follows:

1. In the absence of adjacent wetlands, the jurisdiction extends to the OHWM; or

2. When adjacent wetlands are present, the jurisdiction extends beyond the OHWM to the limit of the adjacent wetlands; or

3. When the water of the U.S. consists only of wetlands, the jurisdiction extends to the limit of the wetland.

The Preamble to the USACE November 13, 1986, Final Rule, Regulatory Programs of the Corps of Engineers, Federal Register Volume 51, No. 219, page 41217, further discussed the proper interpretation of 33 CFR Part 328.4 (c)(1) as follows:

> Section 328.4: *Limits of Jurisdiction.* Section 328.4 (c)(1) defines the lateral limit of jurisdiction in non-tidal waters as the OHWM, provided the jurisdiction is not extended by the presence of wetlands. Therefore, it should be concluded that, in the absence of wetlands, the upstream limit of Corps jurisdiction also stops when the OHWM is no longer perceptible.

In addition, Regulatory Guidance Letter (RGL) 88-06, issued June 27, 1988, discussed the OHWM as follows:

> OHWM: The OHWM is the physical evidence (shelving, debris lines, etc.) established by normal fluctuations of water level. For rivers and streams, the OHWM is meant to mark the within-channel high flows, not the average annual flood elevation that generally extends beyond the channel.[46]

[46] RGL 05-06 (Expiration of Regulatory Guidance Letters). Unless superseded by specific provisions of subsequently issued regulations or RGLs, the guidance provided in RGLs generally remains valid after the expiration date as discussed in the Federal Register (FR) notice on RGLs of March 22, 1999, FR Vol. 64, No. 54, page 13783.

RGL 05-05, issued December 7, 2005, discusses the field practice and practicability of identifying, determining, and applying the OHWM for non-tidal waters under Section 404 of the CWA (and under Sections 9 and 10 of the Rivers and Harbors Act of 1899), and states the following:

> Where the physical characteristics are inconclusive, misleading, unreliable, or otherwise not evident, districts may determine OHWM by using other appropriate means that consider the characteristics of the surrounding areas, provided those other means are reliable.[47] Such other reliable methods that may be indicative of the OHWM include, but are not limited to, lake and stream gage data, elevation data, spillway height, flood predictions, historic records of water flow, and statistical evidence.

Many stream channels in arid regions are dry for much of the year and, at times, may lack hydrology indicators entirely or exhibit relic OHWM features from exceptional hydrological events. RGL 05-05 further states the following:

> When making OHWM determinations, districts should be careful to look at characteristics associated with ordinary high water events that occur on a regular or frequent basis. Evidence resulting from extraordinary events, including major flooding and storm surges, is not indicative of OHWM. For instance, a litter or wrack line resulting from a 200-year flood event would, in most cases, not be considered evidence of an OHWM.

The criteria for frequency and duration of the OHWM have not been defined under the CWA or under any guidance from USACE for field delineators; therefore, identifiable field indicators and characteristics of OHWM, best professional judgment, interpretation of 33 CFR 328.3(e), and appropriate RGLs were applied to determine the jurisdictional extent of the OHWM within the six survey areas.

<u>Methodology Three: Formal delineations for waters of the U.S. in the form of nonwetland tidal waters</u>

Lateral jurisdictional limits were established for the Lagoon tidal inlet channel occurring within the Reserve in conjunction with field verification for a determination of MHHT and/or OHWM (see

[47] In some cases, the physical characteristics may be misleading and would not be reliable for determining the OHWM. For example, water levels or flows may be manipulated by human intervention for power generation or water supply. For such cases, consider using other appropriate means to determine the OHWM (RGL 05-05).

above), which provides an acceptable estimate on the lateral jurisdictional limits (and other waters of the U.S. existing within this limit [e.g., tidal mudflat, see below]). The actual lateral limits are specified by using field verification of indicators and, if applicable, the extrapolation of flood data to determine the portion of the channel that is sufficient to carry the mean annual tidal flow through the drainage feature. The MHHT of the Lagoon tidal inlet channel within the survey area was based on NOAA tidal data (NOAA 2010a). The maximum MLLT is at –2.29 feet (NGVD) and the maximum MHHT is at +3.04 feet NGVD (NOAA 2010a).

The OHWM of the Lagoon tidal inlet channel within the Reserve was identified based on graded channel and rip-rapped configuration; tidal action; streamflow behavior; local deposition; the type, abundance, and relative age of vegetation; and other subtle geomorphic evidence indicative of regular flow levels within at least the last 10 years of regional climactic and tidal conditions. The limits of tidal waters of the U.S. are defined in 33 CFR Part 328.4 (b)(1-2) as follows:

(1) Extends to the high tide line, or

(2) When adjacent non-tidal waters of the U.S. are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.[48]

Delineation of State Waters

CDFG

Jurisdictional waters of the state include those waters listed in CFGC Section 1600 *et seq*. Section 1601(a) is based on Title 14 California Code of Regulations (CCR) 720, which designates waters of the state regulated by CDFG to be as follows:

> "all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams, and streambeds which may have intermittent flows of water."[49]

[48] 33 CFR Part 328.4(c) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters: (1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or (2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands. (3) When the water of the United States consists only of wetlands, the jurisdiction extends to the limit of the wetland.

[49] The California Code of Regulations (14 CCR 1.72) defines a stream as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

In practice, CDFG usually extends its jurisdictional limit to the top of a stream, the bank of a lake, or the outer edge of the riparian vegetation, whichever is wider. Riparian habitats do not always have identifiable hydric soils or clear evidence of wetland hydrology as defined by USACE. Therefore, CDFG wetland boundaries often extend beyond USACE wetland boundaries, which sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Jurisdictional boundaries under CFGC Section 1600 *et seq.* (CDFG's Lake and Streambed Alteration Program) may encompass an area that is greater than that under the jurisdiction of USACE. Lateral jurisdictional extent for waters of the state were mapped either to the head of the graded and rip-rapped bank or the edge of the radically limited riparian canopy (whichever was wider), as applicable, along the Lagoon tidal inlet channel.

In conjunction with adopting a wetlands policy on March 9, 1987, the California Fish and Game Commission assigned CDFG the task of recommending a wetlands definition. CDFG determined the USFWS wetland definition and classification system, which is based on the *Classification of Wetland and Deepwater Habitats of the United States* (Cowardin et al. 1979) to be the most biologically valid. Therefore, CDFG only requires the presence of one parameter (e.g., wetland hydrology, hydric soils, or hydrophytic vegetation) for an area to qualify as a jurisdictional water of the state in the form of a wetland. The Cowardin method (Cowardin et al. 1979) requires care to avoid falsely positive conclusions (e.g., concluding that an area with no transitional relation to the aquatic system is a wetland based on presence of vegetation equally apt to be found in wetland or nonwetland circumstances).

CCC

The CCA applies a broader definition of what constitutes a "wetland" than does USACE.[50] As the primary wetland consultant to CCC, CDFG essentially relies on the USFWS wetland definition and classification system, which, as stated above, is based on *Classification of Wetland and Deepwater Habitats of the United States* (Cowardin et al. 1979). Jurisdictional wetland delineations within the Coastal Zone are conducted based on the one-parameter[51] method outlined in CDFG/USFWS guidance documents and classification manual(s) to define the presence and jurisdictional extent of state wetlands.

[50] Defining a wetland as "land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils *or* to support the growth of hydrophytic vegetation." The definition also recognizes wetlands as areas where vegetation is lacking and/or the soils are poorly developed/absent as a result of fluctuations in sea level, wave action, or water flow (14 CCR 13577[b]).

[51] The presence of at least one of three wetland parameters: wetland hydrology, hydric soil, or hydrophytic vegetation.

Wetlands found in the Coastal Zone are regulated under the CCA and the federal Coastal Zone Management Act, and are within jurisdiction of CCC. Under the CCA, wetlands are defined as follows:

> "land within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens" (Public Resources Code [PRC] §30121).

However, additional classification for wetlands occurring in California is used by CCC under the CCR. Under these provisions wetlands are defined as follows:

> "land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent drastic fluctuations of surface water levels, wave action, water flow, turbidity, or high concentration of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetland or deepwater habitats" (14 CCR 13577).

Jurisdictional waters of the state have been delineated pursuant to the guidance outlined within *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone*, Chapter 1, Section IV (Wetland Identification and Delineation); Chapter 3, Section IIB (Definition and Classification of Wetlands by California State Agencies) (CCC 1994a). Sections 30121 and 13577(b) of the CCA provide the definition for a jurisdictional wetland occurring within the Coastal Zone. Based on these regulatory definitions, the project site has the potential for presence of at least two types of jurisdictional wetlands occurring within the Coastal Zone: (1) marine and (2) estuarine wetlands.

In the Coastal Zone, CCC, with the assistance of CDFG, is responsible for determining the presence of wetlands subject to regulation under the CCA. CCC and CDFG only require the presence of one criterion (e.g., wetland hydrology, hydric soils, or hydrophytic vegetation) for an area to qualify as a wetland within the Coastal Zone. A wetland occurring within the Coastal Zone would qualify as an

Environmentally Sensitive Habitat Area (ESHA).[52] An ESHA is defined in the CCA as "an area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities." The CCA states the following:

> "Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas."[53]

RWQCB

For jurisdictional aquatic features occurring within the Reserve, RWQCB jurisdiction was mapped identically as noted above for CCC, CDFG, and USACE jurisdiction. Therefore, all delineated aquatic features occurring within the survey area are under RWQCB jurisdiction. If it is determined that temporary ponded or swale features present "beneficial use," as outlined in the *Water Quality Control Plan for the San Diego Basin* (Basin Plan) (RWQCB 1994), these features may be considered jurisdictional.

VI. RESULTS

Potential jurisdictional waters (including wetlands) occurring within the Reserve were delineated and mapped based on federal and state delineation guidance, methodology, and regulatory framework and code, as outlined above. The extent and distribution of the collective area of jurisdictional waters of the U.S. and state occurring within the Reserve is 619.97 acres (Table 8) (Figure 9).[54] The Reserve has the potential for the presence of at least three types of potential jurisdictional waters of the U.S. and state in the form of wetland, tidal waters, and other nonwetland waters (e.g., OHWM) (Table 9).

The total area of the different types of wetlands within the survey area, the extent of federal and state jurisdictional waters, and a general discussion of these regulated areas is provided below. The results were mapped on a current color aerial photograph at a scale of 1 inch = 200 feet. The

[52] CPRC Section 30107.5.

[53] CPRC Section 30240. Once an ESHA has been identified, regardless of whether degraded, a high level of constraint applies that typically requires a minimum of a 100-foot buffer along with potential restoration activities. In addition, no use is allowed within the ESHA unless that use is resource dependent.

[54] CCC, CDFG, RWQCB, and USACE jurisdictions do overlap within the survey area but would remain distinct for any requisite permitting with each respective agency.

Wetland Determination Data Forms – Arid West Region completed for this project are included as Attachment A to this report.[55]

Table 8
Potential Waters of the U.S. and State Occurring within the Reserve[a]

Type of Jurisdictional Waters of the U.S.[b] and State	Type of Habitat (Holland 1986 and Oberbauer et al. 2008)[c]	Type of Habitat (Cowardin et al. 1979)	Area of Aquatic Resource (acres)[d]
Jurisdictional Waters of the U.S.[e]			
Wetland	Southern Coastal Brackish Marsh (52200)	Estuarine; Intertidal; Emergent, Persistent, Regularly Flooded, Mesosaline	131.37
Wetland	Southern Coastal Salt Marsh (52120)	Estuarine; Intertidal; Emergent, Persistent, Regularly Flooded, Mixohaline	262.11[f]
Wetland	Disturbed Wetland (11200)	Palustrine; Scrub/Shrub Broad-leaved, Deciduous, Seasonally Flooded, Fresh	1.15
Wetland	Sandbar Willow Scrub (63000)	Palustrine; Scrub/Shrub Broad-leaved, Deciduous, Seasonally Flooded, Fresh	8.94
Wetland	Southern Willow Scrub (63320)	Palustrine; Scrub/Shrub Broad-leaved, Deciduous, Seasonally Flooded, Fresh	60.99
Other Waters	Drainage Features/ Nonvegetated Channel (64200)	Riverine; Unconsolidated Bottom, Sand, Intermittently Flooded, Fresh	0.58 (3640 linear feet)
Tidal Waters	Open Water/ Subtidal Estuary (64131)	Estuarine; Subtidal; Unconsolidated Bottom, Mud, Mixohaline	40.15
Other Waters	Open Water/Saltpan (64300)	Palustrine; Unconsolidated Bottom; Mud, Temporarily Flooded Saturated, Hyperhaline	36.96
Tidal Waters	Open Water/Tidal Mudflat (64300)	Estuarine; Subtidal; Unconsolidated Bottom, Mud, Regularly Flooded, Mixohaline	75.78
		Subtotal Jurisdictional Waters of the U.S.	*618.03*
Jurisdictional Waters of the State			
Rip-Rapped Banks (Tidal Inlet Banks)	Disturbed Wetland (11200)	Riverine; Tidal; Artificial Substrate Irregularly Exposed, Mixohaline	1.94
Subtotal Jurisdictional Waters of the State			1.94
		Grand Total Jurisdictional Waters	**619.97**

[a] Based on the total area of potential waters of the U.S. (including wetlands) delineated within the Reserve. Potential jurisdictional waters occurring within the Reserve are relevant to CCC, CDFG, RWQCB, and USACE

[55] The 1987 Manual and 2008 Supplement are guidance documents for delineating jurisdictional waters in the form of three-parameter wetlands only. Riverine/Tidal waters delineated within the survey area used OHWM defined in 33 CFR Part 328.4(b)(1-2) and 33 CFR 328.3(e) and identified in RGL 05-05 and 88-06.

regulatory administration (i.e., will require permitting and authorization of a proposed regulated activity to occur within jurisdictional aquatic features).

[b] Final acreages for jurisdictional waters of the U.S. will be based on the Jurisdictional Determination (JD) process per the March 30, 2007, U.S. Army Corps of Engineers Jurisdictional Determination Form Guidebook; the June 5, 2007, Approved JD Form; the June 5, 2007, Joint Guidance Memorandum; and RGL 08-02 and December 2, 2008, Guidance Memorandum. At the time of writing the formal JDR, no formal JD process (of a significant nexus [SNX] to a traditional navigable waterway [TNW]) for these delineated waters has been undertaken by USACE. A JD will need to be performed for this jurisdictional delineation to confirm that USACE will assert jurisdiction over potential jurisdictional waters delineated in this report. For this jurisdictional delineation, per RGL 08-02 (4)(a), the applicant (e.g., the SELC) has elected to use a Preliminary JD in the interest of expeditiously obtaining Section 404 permit authorization (see below).

[c] The *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) does not provide classifications for abiotic features. These habitat codes are based on Holland's descriptions suggested by Oberbauer et al. (2008). Disturbed habitats are included as jurisdictional aquatic features.

[d] Jurisdictional waters acreage of the survey area was determined by using ArcGIS. All acreages are rounded to the nearest hundredth (which may account for minor rounding error).

[e] Jurisdictional waters of the U.S. include jurisdictional waters of the state and are under the purview of USACE and CDFG.

[f] The 262.11 acres of southern coastal salt marsh is composed of three components or salt marsh zones: low coastal salt marsh (4.74 acres), middle coastal salt marsh (137.43 acres), and high coastal salt marsh (119.94 acres).

Table 9
Summary of Jurisdictional Waters of the U.S. and State Occurring within the Reserve

Type of Jurisdictional Waters of the U.S. and State	Regulatory Authority	Area (acres)
Jurisdictional Waters of the U.S.[a]		
Other Waters	CCC, CDFG, RWQCB, and USACE	37.54
Tidal Waters	CCC, CDFG, RWQCB, and USACE	115.93
Wetland	CCC. CDFG, RWQCB, and USACE	464.56
Subtotal Jurisdictional Waters of the U.S.		618.03
Jurisdictional Waters of the State		
Tidal Inlet Bank	CCC, CDFG, and RWQCB	1.94
Subtotal Jurisdictional Waters of the State		1.94
	Grand Total Jurisdictional Waters	**619.97**

[a] Jurisdictional waters of the U.S. include jurisdictional waters of the state and are under the purview of CCC, CDFG, RWQCB, and USACE.

Jurisdictional Waters of the U.S. and State

Total jurisdictional waters of the U.S. and state are listed for each wetland habitat and other waters of the U.S. (in the form of wetland, tidal waters or other nonwetland waters) in Table 8. In addition to using the latest San Diego Regional Holland Code Classification System, riparian and wetland habitats have been classified according to *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). This classification system incorporates a hierarchical structure of systems, subsystems, and classes to identify wetland and habitat types. Hydrophytic vegetation was dominant within the wetland areas. The hydrophytic vegetation occurring within the survey area is vegetation typically associated with waters, wetlands, and riparian habitat occurring within this vicinity of California. Photo point locations and representative delineation photos are included in Figure 10. Detailed field photos documenting the formal delineation and ambient Reserveconditions at the time of the formal delineation are included in Figures 11 through 21. A summary of the jurisdictional waters of the U.S. and state, with the corresponding regulatory authority, occurring within the survey area, is provided in Table 9.

Jurisdictional Waters of the U.S. – Special Aquatic Sites

Wetlands, mudflats, and vegetated shallows[56] are considered a Special Aquatic Sites. [57] Under the 404(b)(1) guidelines (40 CFR 230 Subpart E), Special Aquatic Sites are subject to greater protection than other jurisdictional waters of the U.S. because of their significant contribution to the overall environment.[58]

[56] Special Aquatic Sites are those sites identified in 40 CFR 230 Subpart E. They are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region 40 CFR 230.3(q-1). Also see 40 CFR 230.10(a)(3) (45 FR 85344, December 24, 1980, as amended at 58 FR 45037, August 25, 1993). Within the Reserve all wetlands (40 CFR 230.41), mud flats (40 CFR 230.42), and vegetated shallows (40 CFR 230.43) are considered Special Aquatic Sites.

[57] AECOM aquatic ecologists did not conduct eelgrass (*Zostera marina*) surveys as a component of the field delineation or botanical surveys.

[58] CCC has recognized wetlands and mudflats as "environmentally sensitive habitat areas" (ESHA) outlined in Section 30107.5 of the CCA, and development considerations adjacent to ESHAs are outlined in Section 30240 of the CCA.

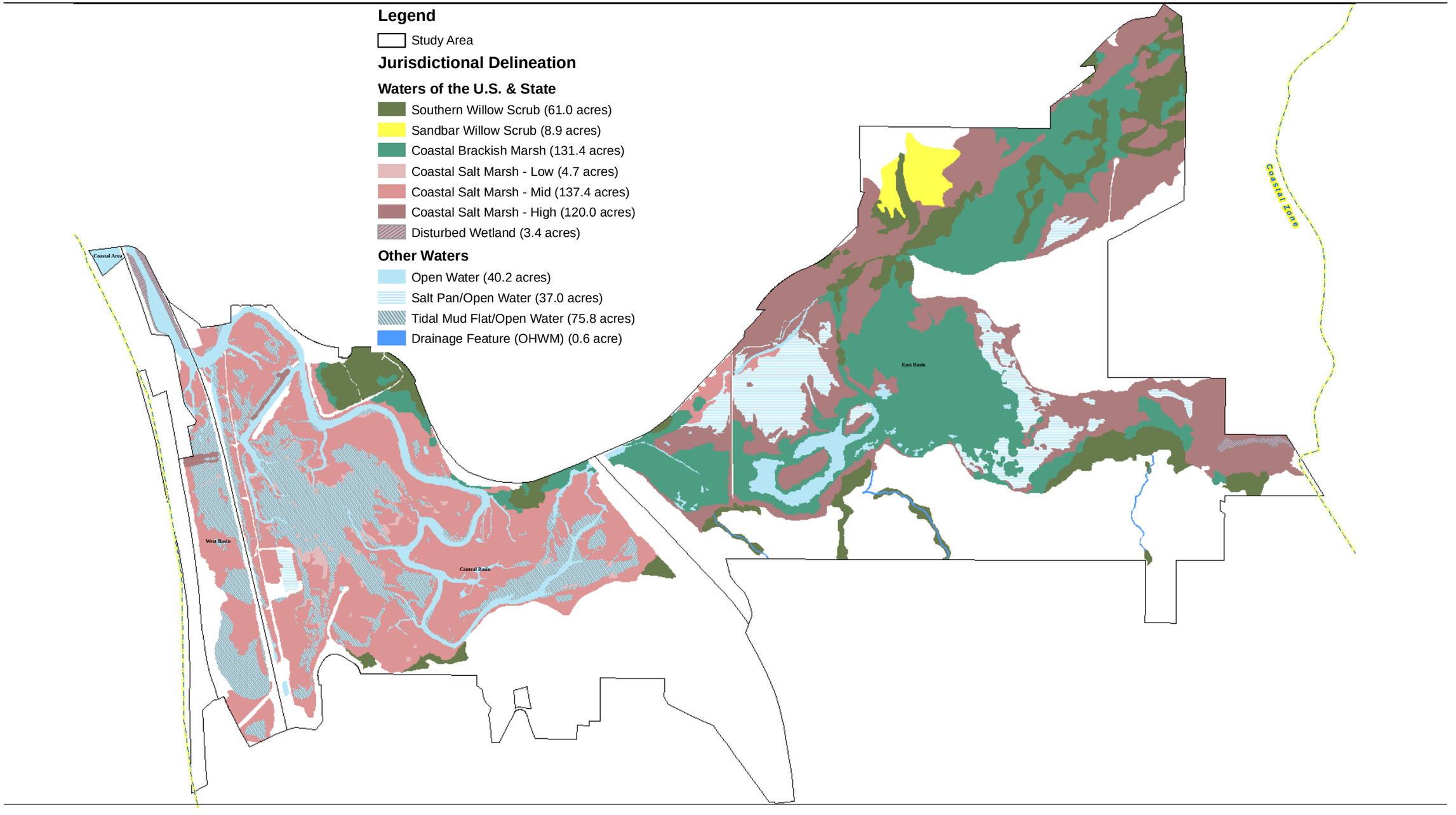
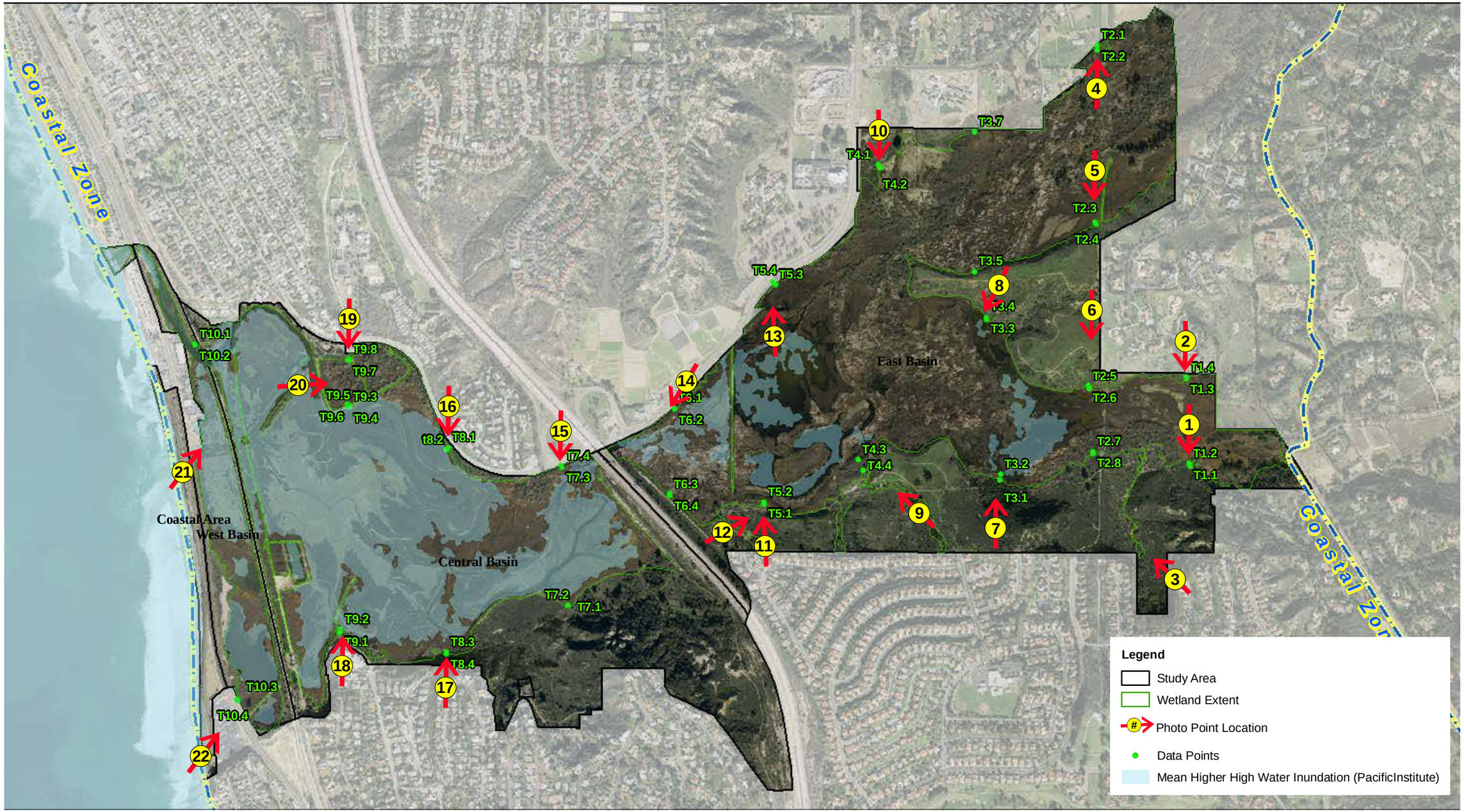


Figure 9
Jurisdictional Delineation Map

This page intentionally left blank.



Source: DigitalGlobe 2008; AECOM 2010

1,050 525 0 1,050 Feet

Scale: 1 = 12,600; 1 inch = 1,050 feet

Figure 10
Photopoint Locations

This page intentionally left blank.

Photograph 1 - Looking south at datapoints T1.1 (coastal sage scrub upland) and T1.2 (southern willow/riparian scrub). Note abrupt upland –wetland transition of coastal sage scrub to southern willow/riparian scrub.

Photograph 2 - Looking south at datapoints T1.4 (coastal sage scrub upland) and T1.3 (southern coastal saltmarsh wetland). Note abrupt upland –wetland transition of coastal sage scrub to southern coastal saltmarsh wetland.

Figure 11
Representative Photographs 1 and 2

Photograph 3 - Looking northwest of headwaters of drainage feature and associated southern willow scrub.

Photograph 4 - Looking north at datapoints T2.1 (coastal sage scrub upland) and T2.2 (southern coastal saltmarsh wetland). Note abrupt upland –wetland transition of coastal sage scrub to southern coastal saltmarsh wetland.

Figure 12
Representative Photographs 3 and 4

Photograph 5 - Looking south at datapoints T2.3 (southern coastal saltmarsh wetland) and T2.4 (coastal sage scrub upland) and. Note abrupt upland –wetland transition of coastal sage scrub to southern coastal saltmarsh wetland.

Photograph 6 - Looking south at datapoints T2.5 (nonnative grassland upland) and T2.6 (southern coastal saltmarsh wetland). Note abrupt upland –wetland transition of coastal sage scrub to southern coastal saltmarsh wetland.

Figure 13
Representative Photographs 5 and 6

Photograph 7 - Looking north at datapoints T3.1 (coastal sage scrub upland) and T3.2 (southern coastal brackish marsh wetland). Note abrupt upland –wetland transition of coastal sage scrub to southern coastal brackish marsh wetland.

Photograph 8 - Looking southwest at datapoints T3.3 (southern coastal saltmarsh wetland) and T3.4 (coastal sage scrub). Note abrupt upland –wetland transition of coastal sage scrub to southern coastal saltmarsh wetland.

Figure 14
Representative Photographs 7 and 8

Photograph 9 - Looking northwest at datapoints T4.3 (southern coastal saltmarsh wetland) and T4.4 (coastal sage scrub/nonnative grassland upland). Note abrupt upland – wetland transition of coastal sage scrub/nonnative grassland upland to southern coastal saltmarsh wetland.

Photograph 10 - Looking south at datapoints T4.1 (nonnative grassland) and T4.2 (southern willow scrub wetland). Note abrupt upland –wetland transition of nonnative grassland to southern willow scrub wetland.

Figure 15
Representative Photographs 9 and 10

Photograph 11 - Looking north at datapoints T5.1 (coastal sage scrub/nonnative grassland) and T5.2 (southern coastal saltmarsh wetland). Note abrupt upland –wetland transition of coastal sage scrub/nonnative grassland upland to southern coastal saltmarsh wetland.

Photograph 12 - Looking northeast at overview of area and datapoints T5.1 (coastal sage scrub/nonnative grassland) and T5.2 (southern coastal saltmarsh wetland). Note abrupt upland –wetland transition of coastal sage scrub/nonnative grassland upland to southern coastal saltmarsh wetland.

Figure 16
Representative Photographs 11 and 12

Photograph 13 - Looking north at datapoints T5.3 (southern coastal saltmarsh wetland) and T5.4 (nonnative grassland/disturbed upland). Note abrupt upland –wetland transition of southern coastal saltmarsh wetland to nonnative grassland/disturbed upland.

Photograph 14 - Looking southwest at datapoints T6.1 (nonnative grassland/disturbed upland) and T6.2 (southern coastal brackish wetland). Note abrupt upland –wetland transition of nonnative grassland/disturbed upland to southern coastal barckish wetland.

Figure 17
Representative Photographs 13 and 14

Photograph 15 - Looking south at datapoints T7.4 (coastal sage scrub/disturbed upland) and T7.3 (southern coastal saltmarsh wetland). Note abrupt upland –wetland transition of coastal sage scrub/disturbed upland to southern coastal saltmarsh wetland.

Photograph 16 - Looking south at datapoints T8.1 (nonnative grassland upland) and T8.2 (southern coastal saltmarsh wetland). Note abrupt upland –wetland transition of coastal sage scrub/disturbed upland to southern coastal saltmarsh wetland.

Figure 18
Representative Photographs 15 and 16

Photograph 17 - Looking north at datapoints T8.4 (coastal sage scrub/nonnative grassland) and T8.3 (southern coastal brackish wetland). Note abrupt upland –wetland transition of coastal sage scrub/nonnative grassland upland to southern coastal brackish wetland.

Photograph 18 - Looking north at datapoints T9.1 (coastal sage scrub/nonnative grassland) and T9.2 (southern coastal brackish wetland). Note abrupt upland –wetland transition of coastal sage scrub/nonnative grassland upland to southern coastal saltmarsh wetland.

Figure 19
Representative Photographs 17 and 18

Photograph 19 - Looking south at datapoints T9.3 (southern coastal saltmarsh wetland) and T9.4 (nonnative grassland/disturbed habitat). Note abrupt upland –wetland transition of nonnative grassland/disturbed habitat (which has been constructed for the SELER interpretive center walkway) to southern coastal brackish wetland.

Photograph 20 - Looking west at datapoints T9.7 (southern willow scrub wetland) and T9.8 (coastal sage scrub). Point of investigation is near freshwater outfall providing freshwater inputs to area next to SELER interpretive center. Note abrupt upland –wetland transition of coastal sage scrub/nonnative grassland upland to southern willow scrub wetland.

Figure 20
Representative Photographs 19 and 20

Photograph 21 - Looking northeastat overview of tidal inlet channel.

Photograph 22 - Looking northeastat at datapoints T10.3 (southern coastal saltmarsh wetland) and T10.4 (coastal sage scrub/ nonnative grassland). Note abrupt upland –wetland transition of coastal sage scrub/nonnative grassland to southern coastal saltmarsh wetland.

Figure 21
Representative Photographs 21 and 22

Jurisdictional Determination for Waters of the U.S.

All waters and wetlands (including final acreages and types) delineated within the Reserve are considered potential waters of the U.S. prior to a formal jurisdictional determination (JD) performed by USACE/USEPA. The final JD issued by USACE may remove portions of delineated waters from being considered as jurisdictional and/or may include additional waters not initially considered as jurisdictional during the field delineation (and, thus, not included in this JDR).

Determining whether the delineated potential waters of the U.S. (including wetlands) are, in fact, jurisdictional and under the regulatory administration of USACE, including the final acreages and types of waters of the U.S. (including wetlands) within the Reserve, is primarily based on the procedural changes and guidance outlined by the following:[59]

a. The June 5, 2007, USACE/USEPA Memorandum Re: Jurisdiction Following The U.S. Supreme Court Decision In *Rapanos v. United States* on the interpretation of the *Rapanos* Supreme Court case for making a Jurisdictional Determination (JD) for waters of the U.S. (including wetlands) (USEPA/USACE).[60,61] This memorandum provides guidance to USEPA and USACE on implementing the *Rapanos* Supreme Court decision.

b. The June 5, 2007, USEPA/USACE Memorandum for the Field: Coordination on JDs under the CWA in light of *SWANCC* and *Rapanos* Supreme Court decisions.[62] This memorandum outlined procedures that replace the coordination procedures contained in the January 2003 USEPA/USACE guidance implementing the *SWANCC* decision (but leaves the remainder of that guidance unaffected) and articulates new coordination procedures for JDs affected by *Rapanos* (USEPA/USACE).[63]

c. The May 5, 2007, USACE *Jurisdictional Determination Form Instructional Guidebook* (USACE/USEPA 2007) and the Approved JD Form.

---

59 This delineation followed these procedural guidance documents to ascertain the jurisdictional status of all delineated waters (including wetlands) occurring within the three survey areas.

60 "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*" (June 5, 2007).

61 126 S. Ct 2208 (2006). This case was consolidated with *Carabell v. United States*.

62 "Memorandum for Director of Civil Works and US EPA Regional Administrators" (June 5, 2007).

63 "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*" (June 5, 2007).

d. The June 5, 2007, USACE RGL 07-01. Practices for Documenting Jurisdiction under CWA Section 404 (and Rivers and Harbors Act [RHA] CWA Sections 9 and 10). This RGL provides coordination requirements for Approved JDs and outlines a consistent approach for making, documenting, and approving JDs in a timely manner by USACE. This RGL also outlines the differences between Approved JDs and Preliminary JDs.

e. The January 28, 2008, Coordination Memorandum. This memorandum outlined the process for coordinating JDs with USEPA and USACE.

f. The June 26, 2008, USACE RGL 08-02. This RGL primarily explains the goals of a Preliminary JD and differences between Approved JDs and Preliminary JDs. This RGL provides guidance on when an Approved JD is required and when a landowner, permit applicant, or other "affected party" can decline to request and obtain an Approved JD and elect to use a Preliminary JD instead.[64,65] This RGL also outlines that it is the goal of USACE that every JD requested by an affected party should be completed within 60 calendar days of receiving the request.[66]

g. The December 2, 2008, USACE Guidance Memorandum Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States* and *Carabell v. United States*. This guidance incorporates revisions to the USEPA/USACE Memorandum originally issued on June 6, 2007, after careful consideration of public comments received and based on the agencies' experience in implementing the *Rapanos* decision.

h. The December 2, 2008, USACE Response to Comments "Clean Water Act Jurisdiction Following The Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* Guidance" issued June 5, 2007.

i. The December 2, 2008, USACE Questions and Answers Regarding the Revised *Rapanos & Carabell* Guidance.

---

64 Generally, Approved JDs should be used to support individual permit applications, but applicants should be made aware of their option to elect to use a Preliminary JD wherever applicants feel doing so is in their best interest (RGL 08-02 [paragraph 4(h)]).

65 RGL 08-02 (paragraph 4) outlines that Preliminary JDs cannot be appealed.

66 RGL 08-02 (paragraphs 4[a] and 5[a]).

As of this writing, this JDR presents 618.03 acres of potential waters of the U.S. (including wetlands). The final acreages of waters of the U.S. (including wetlands), delineated within the Reserve, will be based on the JD process, per the USACE/USEPA Guidance and procedure for *Rapanos* (see above).

Preliminary JD Form for Potential Jurisdictional Waters of the U.S.

Based on RGL 08-02, the permit applicant may elect to use a Preliminary JD (PJD) to voluntarily waive or set aside questions regarding CWA jurisdiction over a particular site, usually in the interest of allowing the landowner, permit applicant, or other "affected party"[67] to move ahead expeditiously to obtain CWA Section 404 permit authorization where applicants determine that is in their best interest to do so.

PJDs are non-binding advisements that potential waters of the U.S. (including wetlands) *may* be present within a project site and, therefore, should be assumed to be jurisdictional by USACE.[68] A Preliminary JD is not appealable under the USACE appeal process because it is not an official JD.[69] If a PJD is received by USACE, an Approved JD can always be requested by the applicant at a later time, if necessary. PJDs cannot be used for determining whether a site has no potential waters or aquatic features, no potential jurisdictional waters of the U.S. (including wetlands), geographically isolated waters and/or wetlands, or some jurisdictional and some non-jurisdictional waters.

This JDR and one PJD Form (Attachment B) is meant to provide assistance and support to USACE (Los Angeles District [LAD], San Diego Field Office)[70] to determine that 618.03 acres of delineated aquatic features (in the form of wetlands and other waters) "may be" waters of the U.S. and, thus, under its regulatory administration.[71] For this jurisdictional delineation, a PJD Form was prepared to present the following:

- 403.57 acres of potential jurisdictional waters of the U.S. (in the form of wetlands) directly abutting and/or adjacent to "relatively permanent waterways" (RPW) that present a

[67] As defined in RGL 08-02 and at 33 CFR 331.2, "affected party" means a permit applicant; landowner; or a lease, easement, or option holder (i.e., an individual who has an identifiable and substantial legal interest in the property) who has received an Approved JD or permits denial, or has declined a proffered individual permit.

[68] RGL 08-02 Paragraph 4 and 33 CFR 331.2.

[69] RGL 08-02 Paragraph 2(a)(1) and Paragraph 2(b)(1).

[70] The USACE district engineer retains the discretion to use an Approved JD in any other circumstance where he or she determines that it is appropriate given the facts of the particular case (RGL 08-02 [4][c]).

[71] Sections 4 and 7 of RGL 02-08.

"significant nexus" (SNX) by flowing directly or indirectly to a "traditionally navigable water" (TNW) (the Pacific Ocean).

- 214.46 acres of potential jurisdictional waters of the U.S. (in the form of other waters) as RPWs that flow directly or indirectly into a TNW (the Pacific Ocean).

The completed Preliminary JD Form for this jurisdictional delineation is located in Attachment B.

Electronic Waters Upload Sheets for Potential Jurisdictional Waters

A separate electronic version of the Waters Upload Sheet (collectively containing all formally delineated potentially jurisdictional waters of the U.S.) is provided on CD-ROM in Attachment C of this JDR. This electronic file is provided so that USACE can automatically populate the data fields in its Operations Regulatory Module (ORM) database.

Jurisdictional Waters of the State

The extent and distribution of the collective area of exclusively jurisdictional waters of the state occurring within the Reserve area is 1.94 acres (Figure 9). Based on the survey results, the state jurisdictional limits within the Reserve are the same for CCC, CDFG, and RWQCB.[72]

Areas under the jurisdiction of CCC, CDFG, and RWQCB include the 618.03 acres of USACE jurisdictional waters of the U.S. composed of both wetland and nonwetland waters, as summarized in Table 9, as well as an additional 1.94 acres of non-USACE jurisdictional riparian area (in the form of disturbed/developed channel bank). A summary of exclusively jurisdictional waters of the state occurring within the survey area is provided in Table 10. Lateral jurisdictional extent for waters of the state were mapped either to the head of the graded and rip-rapped bank or the edge of the radically limited riparian canopy (whichever was wider), as applicable, along the Lagoon tidal inlet channel.

[72] These three state jurisdictions encompass and overlap USACE jurisdiction (see above).

Table 10
Summary of Exclusively Jurisdictional Waters of the State
Occurring within the Reserve[a]

Form of Jurisdictional Water of the State	Regulatory Authority	Type of Habitat	Area (acres)
Riparian Extent	CC, CDFG, and RWQCB	Disturbed/Developed Channel Bank	1.94
		Total	**1.94**

[a] This 1.94 acres presents exclusively jurisdictional waters of the state and is relevant to CCC, CDFG, and RWQCB regulatory administration only (i.e., will require permitting by the requisite state resource agencies if there will be impacts to these waters [as defined by CCC Section 30000 *et* seq., CFGC Section 1600 *et seq*. and CWC Section 13000 *et seq*., respectively] resulting from a proposed regulated activity).

VII. DISCUSSION

Requisite Permitting

A total of approximately 618.03 acres of potential jurisdictional waters of the U.S. and state and 1.94 acre of potential jurisdictional waters of the state exclusively, occurs within the Reserve.[73] Impacts to riparian habitats, wetlands, and other jurisdictional waters of the U.S. and state (that would result from a regulated activity from the project) require authorizations, certifications, and permits by the following federal and state resource agencies:

1. CCC, CPRC Division 20. Section 30000 *et seq.* Coastal Development Permit

2. CDFG, CFGC, Chapter 6 Section 1600 *et seq*. Lake and Streambed Alteration Agreement

3. USACE, CWA Section 404 permit for discharge (placement) of dredged or fill material within waters of the U.S. (Special considerations and/or discretions by the USACE for 404 authorization may apply to this project.)

4. RWQCB, CWA Section 401 state water quality certification/waiver for an action that may result in degradation of waters of the state

5. USACE, RHA Section 10 permit for any work in, over, or under navigable waters of the United States

[73] Both state and federal jurisdictions overlap but will remain distinct for their respective permitting requirements if impacts, as a result of a regulated activity, were to occur toward them.

VIII. REFERENCES CITED

Adam, P.

1990 *Saltmarsh Ecology*. Cambridge University Press. New York.

AECOM

2010 Formal Jurisdictional Delineation for the San Elijo Lagoon Ecological Reserve. January.

2011 Draft Biological Technical Report/Biological Assessment for the San Elijo Lagoon Restoration Project San Diego County, California. January.

Bowman, R.

1973 *Soil Survey of the San Diego Area, California.* Prepared by the U.S. Department of Agriculture, Soil Conservation Service and Forest Service in Cooperation with the University of California Agricultural Experiment Station; the U.S. Department of the Interior, Bureau of Indian Affairs; and the Department of the Navy, U.S. Marine Corps.

California Coastal Commission (CCC)

1994a Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone. Available at http://www.coastal.ca.gov/wetrev/wettc.html.

1994b *Land Form Alteration Policy Guidance.* (This report was prepared by the staff of the California Coastal Commission as part of a Project of Special Merit for the Office of Coastal Resource Management, National Oceanic and Atmospheric Administration. It has not been approved by the CCC). Available at http://www.coastal.ca.gov/landform/title-tc.html.

2001 Adopted Findings, Revised Staff Report, California Department of Fish and Game Fay Slough Wildlife Area Project. July.

2002 Staff Recommendation on Map of Post-LCP Certification Jurisdiction, City of Encinitas. December. Available at: http://www.coastal.ca.gov/sd/Th6a-1-mm3.pdf. Accessed May.

California Environmental Protection Agency (Cal/EPA)

2010 California Watershed Portal. Available at http://cwp.resources.ca.gov/browser/.

California Environmental Resources Evaluation System (CERES)

2010 Available at http://ceres.ca.gov/wetlands/geo_info/so_cal/san_elijo.html. Accessed December.

California State University (CSU) Sacramento

2010 Office of Water Programs Water Quality Planning Tool. Available at http://www.water-programs.com/wqpt.htm.

California Watershed Network (CWN)

2010 Available at http://www.watershednetwork.org/.

County of San Diego

1996 San Elijo Lagoon Area Enhancement Plan.

2008 *Biological Mapping Requirements.* Available at http://www.co.sandiego.ca.us/dplu/docs/z004.pdf.

Cowardin, L., V. Carter, F. Golet, and E. LaRoe

1979 *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Department of Interior. U.S. Fish and Wildlife Service. FWS/OBS-79/31. December 1979.

Environmental Laboratory

1987 *Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.

2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). September.

Federal Interagency Committee for Wetland Delineation

1989 *Federal Manual for Identifying and Delineation Jurisdictional Wetlands*. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative Technical Publication. 76 pp. plus appendices.

Holland, R. F.

1986 *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Nongame-Heritage Program, State of California, Department of Fish and Game. Sacramento, California. 157 pp.

Laton, W.R., J. Foster, O. Figueroa, K. Voorhis, S. Hunt, and R. Perez

2002 Sediment Quality and Depositional Environment of San Elijo Lagoon. California State University, Fullerton. April.

Lichvar, R. W., D. C. Finnegan, M. P. Ericsson., and W. Ochs

2006 Distribution of Ordinary High Water Mark (OHWM) indicators and their reliability in identifying the limits of "Waters of the United States" in arid southwestern channels. USACE ERDC/CRREL TR-06-5.

Lichvar, R. W., and S. M. McColley

2008 A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual. USACE ERDC/CRREL TR-08-12. August.

MacDonald, K. B.

1977 Terrestrial Vegetation of California. Coastal Salt Marsh. Pp. 263–294. John Wiley and Sons. New York.

Mount, J. F.

1995 California Rivers and Streams: The Conflict Between Fluvial Process and Land Use. University of California Press.

National Agriculture Imagery Program (NAIP)

2009 Available at http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=prog&topic=nai.

National Oceanic and Atmospheric Administration (NOAA)

2010a Tidal data for the survey area. Available at http://tidesandcurrents.noaa.gov/coop_menu.shtml?stn=9410230%20La%20Jolla,%20CA&type=Bench%20Mark%20Sheets. Accessed January and December.

2010b National Weather Service Climate Office. Available at http://www.nws.noaa.gov/om/.

2010c Tides and Currents Database. Available at http://tidesandcurrents.noaa.gov/.

2010d State Coastal Zone Boundaries. Available at http://coastalmanagement.noaa.gov/mystate/docs/StateCZBoundaries.pdf.

2012 NOAA Historical Shoreline Survey. Available at: http://specialprojects.nos.noaa.gov/tools/shorelinesurvey.html. Accessed May.

National Research Council (NRC)

1995 *Wetlands: Characteristics and Boundaries*. National Academy Press, Washington, D.C.

Natural Resource Conservation Service (NRCS)

2010a National List of Hydric Soils. Available at http://soils.usda.gov/use/hydric/.

2010b Web Soil Survey. Available at http://websoilsurvey.nrcs.usda.gov/app/.

National Technical Committee for Hydric Soils (NTCHS)

1995 Criteria for Hydric Soils, USDA-NRCS Hydric Soils of the United States. Introduction. Available at http://www.statlab.iastate.edu/soils/hydric/intro.html.

Oberbauer, T.

1996 Terrestrial Vegetation Communities in San Diego County Based on Holland's Descriptions. San Diego Association of Governments, San Diego, California, 6 pp. October.

2005 *Terrestrial Vegetation Communities in San Diego County Based on Holland's Descriptions*. Department of Planning and Land Use County of San Diego, San Diego, California. 6 pp. March.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge

2008 Draft Vegetation Communities of San Diego County. Based on Preliminary Descriptions of the Terrestrial Natural Communities of California, Robert F.

Holland, Ph.D., October 1986. March. Department of Planning and Land Use County of San Diego, San Diego, California, 75 pp. March.

Pacific Institute

2010 Mean Higher High Water Surface Metadata. Available at: http://www.pacinst.org/reports/sea_level_rise/files/mhhw_2000.html#4. Accessed November.

Project Clean Water

2010 Project Clean Water. Available at http://www.projectcleanwater.org/.

Reed, P. B., Jr.

1988 National List of Plant Species that Occur in Wetlands: California (Region 0). U.S. Fish and Wildlife Service Biological Report 88 (26.10).

Regional Water Quality Control Board (RWQCB)

1994 *Water Quality Control Plan for the San Diego Basin*. Available at http://www.swrcb.ca.gov/rwqcb9/programs/basinplan.html.

2010 303d List for Region 9: Clean Water Act Section 303(d) List of Water Quality Limited Segments and Section 305(b) Surface Water Quality Assessment. Available at http://www.swrcb.ca.gov/rwqcb9/water_issues/programs/303dlist.html.

San Diego Association of Governments (SANDAG)

2010 SanGIS. Available at http://www.sangis.org/sangisinteractive/viewer/viewer.asp.

San Diego County Flood Control District (SDCFCD)

2010 Available at http://www.co.san-diego.ca.us/flood_control/.

San Diego County Water Authority (SDCWA)

2010 Available at http://www.sdcwa.org/manage/conservation.phtml.

2010 San Diego County Watershed Network. Available at http://map.sdsu.edu/group2001/group3/index.htm.

San Elijo Lagoon Conservancy (SELC)

2005 The Escondido Creek Watershed Restoration Action Strategy. November.

2010 San Elijo Lagoon Conservancy. *What We Do: Habitat Restoration-Inlet Maintenance.* Available at http://www.sanelijo.org/inlet.html. Accessed December.

Shilling, F., S. Sommarstrom, R. Kattelmann, B. Washburn, J. Florsheim, and R. Henly

2005 California Watershed Assessment Guide. Prepared for the California Resources Agency. July.

Simpson and Rebman

2006 Checklist of the Vascular Plants of San Diego County 4th Edition. San Diego Natural History Museum and San Diego State University. Available at http://www.sdnhm.org/research/botany/sdplants/index.html.

Soil Conservation Service Field Office (SCS)

1992 Official List of Hydric Soil Map Units for the San Diego Area, California.

State Lands Commission (SLC)

1976 Approval of the San Elijo Boundary Study. Available at: http://archives.slc.ca.gov/Meeting_Summaries/1976_Documents/02-26-76/Items/022676C43.pdf

The Southern California Coastal Water Research Project (SCCWRP)

2012 U.S. Coast Survey Maps of California Southern California Coast T-Sheets (1851-1889). T-Sheet 1898. Available at: http://www.caltsheets.org/socal/index.html. Accessed May.

Tiner, R.

1999 Wetland Indicators. A Guide to Wetland Identification, Delineation, Classification, and Mapping. Lewis Publishers. Boca Raton, Florida.

U.S. Department of Agriculture (USDA)

1993 Escondido Creek Hydrologic Area Project Report San Diego, California September.

2006 Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 6.0. Washington, D.C.

U.S. Environmental Protection Agency (USEPA)

1996 National List of Vascular Plant Species that Occur in Wetlands Available at http://library.fws.gov/Pubs9/wetlands_plantlist96.pdf or http://www.spl.USACE. army.mil/co/regulatory/plants/region0_dbf or http://www.nwi.fws.gov/bha/.

2009 TMDL Program Results Analysis Fact Sheet: Introduction to Clean Water Act (CWA) Section 303(d) Impaired Waters Lists. USEPA Office of Water. July.

2010a Digital Watershed. Available at http://www.iwr.msu.edu/dw/.

2010b National Wetlands Inventory. Division of Habitat and Resource Conservation. Wetlands Geodatabase. Available at http://wetlandsfws.er.usgs.gov/NWI/. Accessed May 2010.

U.S. Geologic Survey (USGS)

1996 U.S. Geological Survey Water-Supply Paper 2425. National Water Summary on Wetland Resources: Wetland Hydrology, Water Quality, and Associated Functions.

2010 The National Hydrography Dataset \\ussdg2fp001\gisdata\sd_basemap\ geodatabase\nhd_socal.mdb. Accessed December.

Western Regional Climate Center (WRCC)

2010 Western U.S. COOP Station Map. Available at: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5023 and http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6377. Accessed December.

WRECO

2006 Interstate 5 Bridge at San Elijo Lagoon Sedimentation Study Report San Diego, California. November.

This page intentionally left blank.

ATTACHMENT A

2008 SUPPLEMENT WETLAND DETERMINATION DATA FORMS — ARID WEST REGION (VERSION 2.0)

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T1.1

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): C - Mediterranean California Lat: 33.0100467 Long: -117.2436824 Datum: NAD 83

Soil Map Unit Name: Chino silt loam, saline, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within the east basin of the SELER at the base of a slope and at a trail area populated by coastal sage scrub. Please refer to Figure 11, Photo 1 to review field datapoints (e.g., T1.1 [upland] and T1.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Artemisia californica*	15	Yes	UPL
2. *Heteromeles arbutifolia*	10	Yes	UPL
3. *Ceanothus verrucosus*	5	No	UPL
4. *Baccharis pilularis*	5	No	Not Listed
5. *Rhus integrifolia*	5	Yes	UPL
Total Cover:	40 %		
Herb Stratum			
1. *Bromus carinatus*	10	Yes	UPL
2. *Foeniculm vulgare*	5	Yes	FACU
3. *Carduus pycnocephalus*	≤5	No	UPL
4. *Erigeron foliosus var. foliosus*	≤5	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	15 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 35 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species	50	x 5 =	250
Column Totals:	55 (A)		270 (B)

Prevalence Index = B/A = 4.91

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Heavy coastal sage scrub duff layer at the point of investigation.

SOIL

Sampling Point: T1.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	N/A	N/A	N/A				N/A	Duff layer
4-20	10YR 3/3	100	N/A				Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil is mapped as Chino silt loam, saline, 0 to 2 percent slopes and listed as hydric by the NRCS National List of Hydric Soils. Herbaceous understory is composed of upland vegetation. Negative α,α-dipyridyl test (confirming the absence of ferrous iron [Fe++] and therefore indicating soil reducing conditions are not present). No additional requirements or wetland parameters are met to consider this soil as hydric. However, based upon NRCS listing soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at base of slope there is no evidence of surface hydrology, no rills or gullies are present at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T1.2

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.01012252 | Long: -117.2436924 | Datum: NAD 83

Soil Map Unit Name: Chino silt loam, saline 0 to 2 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within the east basin of the SELER at the edge of cismontane alkaline marsh. Please refer to Figure 11, Photo 1 to review field datapoints (e.g., T1.1 [upland] and T1.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Juncus acutus ssp. leopoldii*	25	Yes	FACW
2. *Baccharis pilularis*	15	Yes	Not Listed
3.			
4.			
5.			
Total Cover:	40 %		
Herb Stratum			
1. *Frankenia salina*	35	Yes	FACW
2. *Jaumea carnosa*	5	No	OBL
3. *Oxalis pes-caprae*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	45 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	60	x 2 =	120
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species	15	x 5 =	75
Column Totals:	85 (A)		220 (B)

Prevalence Index = B/A = 2.59

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Datapoint taken at the edge of cismontane alkaline marsh.

SOIL

Sampling Point: T1.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100	N/A				Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil is mapped as Chino silt loam, saline, 0 to 2 percent slopes and listed as hydric by the NRCS National List of Hydric Soils. At the point of investigation the soil presents entisol characteristics (recently deposited fluvial sediments) and there are often no hydric field indicators present for this soil as outlined by the NTCHS Field Indicators of Hydric Soils in the United States. Guidance for soil lacking hydric indicators is found in the 2008 Arid West Region (Version 2.0) Supplement Chapter 3, page 27 and states that 'a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators'. Chino silt loam can also be considered hydric by definition because it is on the NRCS Hydric Soils list and both hydrophytic vegetation and wetland hydrology are simultaneously present at the point of investigation. Additional guidance used for soil lacking hydric indicators is found in the 2008 Supplement: Chapter 5; soils with faint or no indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ◉	No ○	Depth (inches): Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is heavily influenced by La Orilla Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Sand is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T1.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.0126192 | Long: -117.2438285 | Datum: NAD 83

Soil Map Unit Name: Chino silt loam, saline, 0 to 2 percent slopes | NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Point taken at base of slope within the east basin of the SELER at northern extent of wetland near salt panne. Please refer to Figure 11, Photo 2 to review field datapoints (e.g., T1.4 [upland] and T1.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Juncus acutus ssp. leopoldii*	10	No	FACW
2. *Isocoma menziesii*	10	Yes	FACW
3. *Tamarix sp.*	5	Yes	FACW
4.			
5.			
Total Cover:	25 %		
Herb Stratum			
1. *Frankenia salina*	80	Yes	FACW
2. *Distichlis spicata*	10	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	90 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	115	x 2 =	230
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	115 (A)		230 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Datapoint taken at the edge of cismontane alkaline marsh.

SOIL

Sampling Point: T1.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A				silt loam	Small gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil is mapped as Chino silt loam, saline, 0 to 2 percent slopes and listed as hydric by the NRCS National List of Hydric Soils. At the point of investigation the soil presents entisol characteristics (recently deposited fluvial sediments) and there are often no hydric field indicators present for this soil as outlined by the NTCHS Field Indicators of Hydric Soils in the United States. Guidance for soil lacking hydric indicators is found in the 2008 Arid West Region (Version 2.0) Supplement Chapter 3, page 27 and states that 'a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators'. Chino silt loam can also be considered hydric by definition because it is on the NRCS Hydric Soils list and both hydrophytic vegetation and wetland hydrology are simultaneously present at the point of investigation. Additional guidance used for soil lacking hydric indicators is found in the 2008 Supplement: Chapter 5; soils with faint or no indicators

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is heavily influenced by La Orilla Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Non riverine Wetland Hydrology Indicators. Silt loam is saturated at base of hill near salt panne.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T1.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25,T13S, R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.01267573 | Long: -117.2438338 | Datum: NAD 83

Soil Map Unit Name: Chino silt loam, saline, 0 to 2 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No (●)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within the east basin of the SELER at the base of a slope populated by nonnative grassland. Please refer to Figure 11, Photo 2 to review field datapoints (e.g., T1.4 [upland] and T1.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	20	Yes	FACW
2. *Artemisia californica*	10	Yes	UPL
3. *Cylindropuntia sp.*	5	No	UPL
4. *Opuntia sp.*	5	No	UPL
5.			
Total Cover:	40 %		
Herb Stratum			
1. *Hirschfelidia incana*	5	No	UPL
2. *Foeniculum vulgare*	10	Yes	UPL
3. *Distichlis spicata*	5	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	20 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	25	x 2 =	50
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	35	x 5 =	175
Column Totals:	60 (A)		225 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Nonnative grassland.

SOIL

Sampling Point: T1.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10 YR 3/4	100	N/A				Silt loam	large gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil is mapped as Chino silt loam, saline, 0 to 2 percent slopes and listed as hydric by the NRCS National List of Hydric Soils. Herbaceous understory is composed of upland vegetation. Negative α,α-dipyridyl test (confirming the absence of ferrous iron [Fe++] and therefore indicating soil reducing conditions are not present). No additional requirements or wetland parameters are met to consider this soil as hydric. However, based upon NRCS listing soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 2.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 24 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.02254369 | Long: -117.2470805 | Datum: NAD 83

Soil Map Unit Name: Chesterton fine sandy loam, 9 to 15 percent slopes, eroded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken at the toe of short slope, with heavy duff layer, within the east basin of the SELER. Please refer to Figure 12, Photo 4 to review field datapoints (e.g., T2.1 [upland] and T2.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acacia melanoxylon*	25	Yes	UPL
2.			
3.			
4.			
Total Cover:	25 %		
Sapling/Shrub Stratum			
1. *Isocoma menziesii var. vernonioides*	15	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	15 %		
Herb Stratum			
1. *Hirschfelida incana*	25	Yes	UPL
2. *Urtica dioica ssp. holosericea*	15	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	40 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	30	x 2 =	60
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	80 (A)		310 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Nonnative grassland/riparian scrub trail area.

SOIL

Sampling Point: T 2.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	N/A	N/A	N/A				Duff layer	
17-20	10YR 4/6	98	5YR 4/6	2	C	M	Gravelly silt loam	Small gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Chesterton fine sandy loam, 9 to 15 percent slopes, eroded is not listed as hydric by the NRCS List of Hydric Soils. Soil at point of supports the presence of small gravel. However, guidance for using soil surveys in the arid west region is found in the 2008 Arid West Region (Version 2.0) Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, which emphasizes ground-truthing to document the soil survey. It appears that the soil investigated at this point supports relictual redoximorphic features (trail area raised up from Lagoon area) as there is a strong aerobic actinomycetes odor which indicates that soil is not inundated for extended periods. Gravel may be fill related to trail development. Soil is considered nonhydric and not problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology at the point of investigation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is at the toe of short slope no surface hydrology, no gulley or rills observed at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T2.2

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 24 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 33.02238255 | Long: -117.2470797 | Datum: NAD 83

Soil Map Unit Name: Chesterton fine sandy loam, 9 to 15 percent slopes, eroded | NWI classification: PEM/SSB

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within southern coastal saltmarsh. Please refer to Figure 12, Photo 4 to review field datapoints (e.g., T2.1 [upland] and T2.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	15	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	15 %		
Herb Stratum			
1. *Distichlis spicata*	60	No	FACW
2. *Frankenia salina*	40	Yes	OBL
3. *Sarcocornia pacifica*	20	Yes	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	120 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	95	x 2 =	190
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	135 (A)		230 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Southern coastal salt marsh.

SOIL

Sampling Point: T2.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	Gley 1 5/1	100	N/A				Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☒ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil is completely gleyed indicating long-term inundation. Chesterton fine sandy loam, 9 to 15 percent slopes, eroded is not on the NRCS National List of Hydric Soils. Positive α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). The soil at the point of investigation also presents hydric indicators, such as the sand being gleyed. Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	Surface

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Next to inundated marsh, outer edge of concave feature. Point of investigation is heavily influenced by Escondido Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Sand is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 2.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 33.01726 | Long: -117.2471213 | Datum: NAD 83

Soil Map Unit Name: Huerehuero loam, 15 to 30 percent slopes, eroded | NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint is taken at the extent of southern coastal salt marsh. Please refer to Figure 13, Photo 5 to review field datapoints (e.g., T2.3 [wetland] and T 2.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	5	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	5 %		
Herb Stratum			
1. *Frankenia salina*	90	Yes	FACW
2. *Sarcocornia pacifica*	5	No	OBL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	95	x 2 =	190
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		195 (B)

Prevalence Index = B/A = 1.95

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Southern coastal salt marsh.

SOIL

Sampling Point: T 2.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100	N/A				Muck	
1-20	10YR 3/1	98	10YR 5/6	2	C	M	Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [x] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [x] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [x] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [x] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Huerhuero loam, 15 to 30 percent slopes, eroded is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. However, soil chroma may be too dark to observe reaction. At the point of observation within the saltmarsh this soil does not have a strong musty Streptomyces odor which may indicate more common inundation factors. The soil at the point of investigation also presents hydric indicators while hydrophytic vegetation and wetland hydrology are simultaneously present. Soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [x] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Thin Muck Surface (C7)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [x] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [x] Water Marks (B1) (**Riverine**)
- [x] Sediment Deposits (B2) (**Riverine**)
- [x] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes (●) No ( ) Depth (inches):

Water Table Present? Yes (●) No ( ) Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes (●) No ( ) Depth (inches):

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is heavily influenced by Escondido Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Sand is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T2.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 30

Subregion (LRR): C - Mediterranean California | Lat: 33.01722579 | Long: -117.2470779 | Datum: NAD 83

Soil Map Unit Name: Huerhuero loam, 15 to 30 percent slopes, eroded | NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within disturbed coastal sage scrub occupying a hillslope. Please refer to Figure 13, Photo 5 to review field datapoints (e.g., T2.3 [wetland] and T 2.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Artemisia californica*	15	Yes	UPL
2. *Isocoma menziesii*	10	Yes	FACW*
3.			
4.			
5.			
Total Cover:	25 %		
Herb Stratum			
1. *Hordeum sp.*	40	Yes	UPL
2. *Hirschfeldia incana*	50	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	90 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	10	x 2 =	20
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	105	x 5 =	525
Column Totals:	115 (A)		545 (B)

Prevalence Index = B/A = 4.74

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Disturbed coastal sage scrub intermixed with nonnative grassland.

SOIL

Sampling Point: T2.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A				loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Huerhuero loam, 15 to 30 percent slopes, eroded is not listed on the NRCS National List of Hydric Soils. No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at the base of hillslope. No gullies or rills were present at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 2.5

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 8

Subregion (LRR): C - Mediterranean California | Lat: 33.01240087 | Long: -117.2472772 | Datum: NAD 83

Soil Map Unit Name: Huerhuero loam, 15 to 30 percent slopes, eroded | NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within a vegetative transition zone (at the toe of slope) of coastal sage scrub and cismontane alkali marsh. Please refer to Figure 13, Photo 6 to review field datapoints (e.g., T2.5 [upland] and T 2.6 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Artemisia californica*	10	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	10 %		
Herb Stratum			
1. *Brassica sp.*	50	Yes	UPL
2. *Distichlis spicata*	30	Yes	FACW
3. *Frankenia salina*	15	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	45	x 2 =	90
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	60	x 5 =	300
Column Totals:	105 (A)		390 (B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Vegetative transition zone of coastal sage scrub and cismontane alkali marsh.

SOIL

Sampling Point: T 2.5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5 YR 4/4	100	N/A				Silty sand	Small gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Huerhuero loam, 15 to 30 percent slopes, eroded is not listed on the NRCS National List of Hydric Soils. No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at the base of hillslope. No gullies or rills were present at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 2.6

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): C - Mediterranean California Lat: 33.01232175 Long: -117.2472689 Datum: NAD 83

Soil Map Unit Name: Huerhuero loam, 15 to 30 percent slopes, eroded NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )		
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?**	**Yes (•) No ( )**
Wetland Hydrology Present?	Yes (•)	No ( )		

Remarks: Datapoint is taken within the extent of southern coastal salt marsh. Please refer to Figure 13, Photo 6 to review field datapoints (e.g., T2.5 [upland] and T 2.6 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Frankenia salina*	40	Yes	FACW
2. *Distichlis spicata*	30	Yes	FACW
3. *Jaumea carnosa*	20	Yes	FACW
4. *Hirschfeldia incana*	5	No	UPL
5.			
Total Cover:	95 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	90	x 2 =	180
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	95 (A)		205 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Beginning of cismontane alkali marsh (which is slightly disturbed).

SOIL

Sampling Point: T 2.6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 2.5/1	100	N/A				Peaty layer	Decomposed detritus
18-20	7.5 YR 3/3	100	N/A				Silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [x] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- [ ] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [x] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Huerhuero loam, 15 to 30 percent slopes, eroded is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. However, soil chroma may be too dark to observe reaction. At the point of observation within the saltmarsh this soil does not have a strong musty Streptomyces odor which may indicate more common inundation factors than the nonnative grassland soil nearby. Soil lacks hydric indicators but hydrophytic vegetation and wetland hydrology are simultaneously present. Guidance used for soil lacking hydric indicators (while the other two parameters are present) is found in the 2008 Arid West Region (Version 2.0) Supplement: Chapter 5, page 96, Problematic hydric soils; Soils with faint or no indicators, Page 97, Paragraph 5: 'Seasonally Ponded Soils...some of these wetlands may lack hydric soil indicators due to limited saturation depth, saline conditions, or other factors' and thus meet the hydric soil definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [x] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Thin Muck Surface (C7)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [x] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [x] Water Marks (B1) (**Riverine**)
- [x] Sediment Deposits (B2) (**Riverine**)
- [x] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes (●) No ( ) Depth (inches): 0

Water Table Present? Yes (●) No ( ) Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes (●) No ( ) Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is heavily influenced by La Orilla Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 2.7

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.01044848 | Long: -117.2470898 | Datum: NAD 83

Soil Map Unit Name: Chino silt loam, saline, 0 to 2 percent slopes | NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken next to outfall and lower terrace.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	40	Yes	FACW
2.			
3.			
4.			
Total Cover:	40 %		
Sapling/Shrub Stratum			
1. *Cortaderia selloana*	10	Yes	UPL
2. *Tamarix parviflora*	≤5	No	FACW
3.			
4.			
5.			
Total Cover:	10 %		
Herb Stratum			
1. *Carex spissa*	10	Yes	FAC
2. *Cyperus eragrostis*	5	Yes	FACW
3. *Eleocharis macrostachya*	5	Yes	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	20 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 25 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	70 (A)		180 (B)

Prevalence Index = B/A = 2.57

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Datapoint taken within disturbed southern willow scrub.

SOIL

Sampling Point: T 2.7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-15	N/C	100	N/A				Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Willow roots in depositional sand

Depth (inches): 15

Hydric Soil Present? Yes ◉ No ○

Remarks: Chino silt loam, saline, 0 to 2 percent slopes, however soil at the point of investigation is sand and presents entisol characteristics (recently deposited fluvial sediments). Often there are no hydric field indicators for entisols as outlined by the NTCHS Field Indicators of Hydric Soils in the U.S. Guidance for soil lacking hydric indicators is found in the 2008 Arid West Region (Version 2.0) Supplement Chapter 3, page 27 and states that 'a soil that meets the definition of a hydric soil is hydric whether or not it exhibits indicators'. This soil is listed hydric on the NRCS' National List of Hydric Soils and both hydrophytic vegetation and wetland hydrology are simultaneously present at the point of investigation. Therefore, this soil can be considered hydric by definition. Additional guidance used for soil lacking hydric indicators is found in the 2008 Supplement: Chapter 5, page 96, Problematic hydric soils; Soils with faint or no indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken in immediate proximity to 3' outfall. Sand/soil appears to be consistently is saturated. Outfall will be considered as contributing to riverine wetland hydrology indictors. La Orilla Creek and the Lagoon heavily influence area or investigation. Therefore, both Riverine and Nonriverine Wetland Hydrology Indicators are used for this Data Form.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 2.8

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 3

Subregion (LRR): C - Mediterranean California | Lat: 33.01037421 | Long: -117.2470866 | Datum: NAD 83

Soil Map Unit Name: Chino silt loam, saline, 0-2 % slopes | NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point. Point of investigation is above floodplain terrace and outfall within transition zone of riparian scrub and coastal sage scrub.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0 %		
Sapling/Shrub Stratum			
1. *Artemisia californica*	35	Yes	UPL
2. *Baccharis pilularis*	15	Yes	Not Listed
3. *Rhus integrifolia*	5	No	UPL
4.			
5.			
Total Cover:	55 %		
Herb Stratum			
1. *Avena fatua*	10	Yes	UPL
2. *Bromus hordeaceus*	10	Yes	UPL
3. *Vulpia myuros*	5	No	FACU
4. *Collinsia heterophylla*	5	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 15 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	5	x 4 =	20
UPL species	80	x 5 =	400
Column Totals:	85 (A)		420 (B)

Prevalence Index = B/A = 4.94

Hydrophytic Vegetation Indicators:

- [●] Dominance Test is >50%
- [●] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Vegetation community transition zone between riparian scrub and coastal sage scrub.

SOIL

Sampling Point: T 2.8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/2	100	N/A				Silty fine sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil is mapped as Chino silt loam, saline, 0 to 2 percent slopes and listed as hydric by the NRCS National List of Hydric Soils. Herbaceous understory is composed of upland vegetation. Negative α,α-dipyridyl test (confirming the absence of ferrous iron [Fe++] and therefore indicating soil reducing conditions are not present). No additional requirements or wetland parameters are met to consider this soil as hydric. However, based upon NRCS listing soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 3.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 8

Subregion (LRR): C - Mediterranean California | Lat: 33.00958822 | Long: -117.2503907 | Datum: NAD 83

Soil Map Unit Name: Lagoon | NWI classification: PSSA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within the east basin of the SELER at the base of a slope and at a trail area populated by transitional area of southern coastal salt marsh and coastal sage scrub. Please refer to Figure 14, Photo 7 to review field datapoints (e.g., T3.1 [upland] and T3.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Rhus integrifolia*	30	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Leymus triticoides*	40	Yes	FAC
2. *Leymus condensatus*	40	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	80 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 30 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	40	x 3 =	120
FACU species	40	x 4 =	160
UPL species	30	x 5 =	150
Column Totals:	110 (A)		430 (B)

Prevalence Index = B/A = 3.91

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Grassey area with heavy foot traffic (in relative terms). Trails are developed within the immediate area.

SOIL

Sampling Point: T 3.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5 YR 3/4	100	N/A				Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated at this point does not support current or relictual redoximorphic features. Area has been mapped as containing the Lagoon and no soil series or land types, and therefore does not conform with the Soil Survey or San Diego County (Bowman 1973).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at base of slope there is no evidence of surface hydrology, no rills or gullies are present at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 3.2

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): C - Mediterranean California Lat: 33.00975158 Long: -117.2503526 Datum: NAD 83

Soil Map Unit Name: Lagoon NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within the east basin of the SELER within the Lagoon which supports inundated coastal brackish marsh and unvegetated water. Please refer to Figure 14, Photo 7 to review field datapoints (e.g., T3.1 [upland] and T3.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Typha domingensis*	60	Yes	OBL
2. *Scirpus maritmus*	10	Yes	OBL
3. *Sarcocornia pacifica*	5	No	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	75 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 55 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75	x 1 =	75
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	75 (A)		75 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Marsh area with open water.

SOIL

Sampling Point: T 3.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-0	Unavailable	N/A	N/A				Silt	Soil is suspended in water

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☒ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Cannot obtain soil color (hue and chroma) as soil pit is underwater and collapses once dug. Water becomes turbid. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey and supports the Lagoon. Soil at this point is suspended silts.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Standing water at the point of investigation which is heavily influenced by La Orilla Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 3.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.01437362 | Long: -117.2508948 | Datum: NAD 83

Soil Map Unit Name: Huerhuero loam, 15 to 30 percent slopes, eroded | NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within inundated southern coastal salt marsh. Please refer to Figure 14, Photo 8 to review field datapoints (e.g., T3.3 [wetland] and T3.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Sarcocornia pacifica*	60	Yes	OBL
2. *Frankenia salina*	30	Yes	FACW
3. *Distichlis spicata*	5	No	FACW
4.			
5.			
Total Cover:	95 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	35	x 2 =	70
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	95 (A)		130 (B)

Prevalence Index = B/A = 1.37

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Open water, Cismontane Alkali Marsh

SOIL

Sampling Point: T 3.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5 YR 3/1	100	N/A				Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Huerhuero loam, 15 to 30 percent slopes, eroded is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. However, soil chroma may be too dark to observe reaction. At the point of observation within the saltmarsh this soil does not have a strong musty Streptomyces odor which may indicate more common inundation factors. The soil at the point of investigation also presents hydric indicators while hydrophytic vegetation and wetland hydrology are simultaneously present. Soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is heavily influenced by the Lagoon and presents long term inundation and surface water conditions. Soil pit rapidly fills with water once dug.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 3.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 25

Subregion (LRR): C - Mediterranean California | Lat: 33.01442655 | Long: -117.2508959 | Datum: NAD 83

Soil Map Unit Name: Huerhuero loam, 15 to 30 percent slopes, eroded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes ( ) No (●)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within a vegetative transition zone (at the toe of slope) of coastal sage scrub and southern coastal salt marsh. Please refer to Figure 14, Photo 8 to review field datapoints (e.g., T3.3 [wetland] and T3.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Baccharis pilularis*	25	Yes	UPL
2. *Artemisia californica*	15	Yes	UPL
3.			
4.			
5.			
Total Cover:	40 %		
Herb Stratum			
1. *Brassica nigra*	30	Yes	UPL
2. *Foeniculum vulgare*	15	Yes	UPL
3. *Distichlis spicata*	15	Yes	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	60 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	15	x 2 =	30
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	85	x 5 =	425
Column Totals:	100 (A)		455 (B)

Prevalence Index = B/A = 4.55

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Vegetative transition zone (at the toe of slope) of coastal sage scrub and southern coastal salt marsh.

SOIL

Sampling Point: T 3.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/2	100	N/A				Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Huerhuero loam, 15 to 30 percent slopes, eroded is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at the base of hillslope. No gullies or rills were present at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 3.5

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 40

Subregion (LRR): C - Mediterranean California | Lat: 33.01578094 | Long: -117.2513368 | Datum: NAD 83

Soil Map Unit Name: Huerhuero loam, 15-30% slopes, eroded | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within a vegetative transition zone (at the toe of slope) of nonnative grassland and southern coastal brackish marsh.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Baccharis pilularis*	10	Yes	Not Listed
2.			
3.			
4.			
5.			
Total Cover:	10 %		
Herb Stratum			
1. *Foeniculum vulgare*	15	Yes	UPL
2. *Hordeum sp*	40	Yes	UPL
3. *Avena sp.*	10	No	UPL
4. *Leymus triticoides*	10	No	
5.			
6.			
7.			
8.			
Total Cover:	75 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	75	x 5 =	375
Column Totals:	75 (A)		375 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Vegetative transition zone (at the toe of slope) of coastal sage scrub and southern coastal brackish marsh.

SOIL

Sampling Point: T 3.5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10 YR 3/2	100	N/A				loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Huerhuero loam, 15-30% slopes, eroded is not listed on the NRCS National List of Hydric Soils. No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at the base of hillslope. No gullies or rills were present at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 3.6

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 3

Subregion (LRR): C - Mediterranean California | Lat: 33.015888 | Long: -117.251387 | Datum: NAD 83

Soil Map Unit Name: Tidal Flats | NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within the east basin of the SELER within the Lagoon which supports inundated coastal freshwater/ brackish marsh and unvegetated water.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Typha domingensis*	25	Yes	OBL
2. *Rumex crispus*	20	Yes	FACW
3. *Xanthium strumarium*	5	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	50 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	25	x 2 =	50
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	50 (A)		75 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Marsh area with open water.

SOIL

Sampling Point: T 3.6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10 YR 2/1	100	N/A				Muck	
1-20	10 YR 3/2	100	N/A				Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Soil pit rapidly collapses once dug. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey and supports the Tidal Flats soil land type. Soil at this point is muck and loamy silts.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches): 0

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Standing water at the point of investigation which is heavily influenced by Escondido Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 3.7

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25,T13S, R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 3

Subregion (LRR): C - Mediterranean California | Lat: 33.0199176 | Long: -117.2513793 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5-9% slope | NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within a small pocket of southern salt marsh surrounded by freshwater/brackish marsh and riparian Scrub. Upland represented by residential area abuts point of investigation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	30	Yes	FACW*
2. *Baccharis pilularis*	25	Yes	UPL
3.			
4.			
5.			
Total Cover:	55 %		
Herb Stratum			
1. *Frankenia salina*	30	Yes	FACW
2. *Sarcocornia pacifica*	30	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	60 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	60	x 2 =	120
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	25	x 5 =	125
Column Totals:	115 (A)		275 (B)

Prevalence Index = B/A = 2.39

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Southern coastal salt marsh at the point of investigation is inundated with standing water.

SOIL

Sampling Point: T 3.7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR2/1	100	N/A				Muck and silt	
1-20	10YR 5/2	100	N/A				Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [x] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [x] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- [x] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Corralitos loamy sand, 5-9% slope is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). At the point of observation within the saltmarsh this soil does have a strong musty Streptomyces odor which may indicate more common inundation factors. The soil at the point of investigation also presents hydric indicators, such as muck.while hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [x] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Thin Muck Surface (C7)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [ ] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [x] Water Marks (B1) (**Riverine**)
- [x] Sediment Deposits (B2) (**Riverine**)
- [x] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes (●) No ( ) Depth (inches): 0

Water Table Present? Yes (●) No ( ) Depth (inches): unknown

Saturation Present? (includes capillary fringe) Yes (●) No ( ) Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Standing water at the point of investigation which is heavily influenced by Escondido Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 4.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 10

Subregion (LRR): C - Mediterranean California | Lat: 33.01883243 | Long: -117.2547049 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within a vegetative transition zone (at the toe of slope) of nonnative grassland and riprian scrub. Please refer to Figure 15, Photo 10 to review field datapoints (e.g., T4.1 [upland] and T 4.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Brassica nigra*	40	No	UPL
2. *Baccharis pilularis*	10	Yes	Not Listed
3. *Ambrosia psilostachya*	10	No	FAC
4.			
5.			
Total Cover:	60 %		
Herb Stratum			
1. *Polygonum arenastrum*	15		UPL
2. *Vulpia myuros*	10		FACU
3. *Avena fatua*	5		UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	70	x 5 =	350
Column Totals:	90 (A)		420 (B)

Prevalence Index = B/A = 4.67

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Datapoint taken within transitional area of nonnative grassland and riparian scrub.

SOIL

Sampling Point: T 4.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/3	100	N/A				Fine sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at the upper terrace of restoration area. No wetland hydrology indicators observed at the time of the investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 4.2

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.0199176 | Long: -117.255915 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: PFOC/PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within the east basin of the SELER at the edge sandbar willow scrub which appears to be a restoration area with a terrace. The area supports riparian scrub. Please refer to Figure 15, Photo 10 to review field datapoints (e.g., T4.1 [upland] and T 4.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Juncus acutis ssp. leopoldii*	40	Yes	FACW
2. *Isocoma menziesii*	15	Yes	FACW
3. *Salix exigua*	15	Yes	OBL
4. *Baccharis salicifolia*	5	No	Not Listed
5.			
Total Cover:	75 %		
Herb Stratum			
1. *Muhlenbergia rigens*	10		FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 20 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	65	x 2 =	130
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	85 (A)		170 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Disturbed riparian scrub wetland.

SOIL

Sampling Point: T 4.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/3	95	5 YR 4/6	5	C	M	fine loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). At the point of observation this soil presents redoximorphic features which may indicate more common long-term inundation factors. The soil at the point of investigation also presents hydrophytic vegetation and wetland hydrology simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is heavily influenced by urban runoff.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 4.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 3

Subregion (LRR): C - Mediterranean California | Lat: 33.01013735 | Long: -117.255375 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 9 to15 percent slopes | NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [X] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within an inundated portion of southern coastal saltmarsh. Please refer to Figure 15, Photo 9 to review field datapoints (e.g., T4.3 [wetland] and T 4.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Juncus acutus spp. leopoldii*	10	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	10 %		
Herb Stratum			
1. *Jaumea carnosa*	75	Yes	OBL
2. *Batis maritima*	10	No	OBL
3. *Distichlis spicata*	5	No	FACW
4. *Sarcocornia pacifica*	5	No	OBL
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	15	x 2 =	30
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	105 (A)		120 (B)

Prevalence Index = B/A = 1.14

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Inundated southern coastal salt marsh.

SOIL

Sampling Point: T 4.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	10 YR 2/1	100	N/A				Mucky sand	
1-20	10YR 5/4	100	N/A				Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Corralitos loamy sand, 9 to15 percent slopes is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). At the point of observation within the saltmarsh this soil does have a strong musty Streptomyces odor which may indicate more common inundation factors. The soil at the point of investigation also presents hydric indicators, such as muck. Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Next to inundated saltmarsh, outer edge of concave feature. Point of investigation is heavily influenced by La Orilla Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Sand is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 4.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 10

Subregion (LRR): C - Mediterranean California | Lat: 33.00983804 | Long: -117.255383 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 9 to 15 percent slopes | NWI classification: PSSC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Datapoint is an upland confirmation point taken within the east basin of the SELER at the base of a slope between two ephemeral drainage features which occur within a vegetative zone of southern coastal salt marsh transitioning to nonnative grassland and coastal sage scruband at a trail area populated by coastal sage scrub. Please refer to Figure 15, Photo 9 to review field datapoints (e.g., T4.3 [wetland] and T 4.4 [upland]) and the general area of investigation at the time of the

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acacia melanoxylon*	10	Yes	UPL
2. *Salix lasiolepis*	10	Yes	FACW
3.			
4.			
Total Cover:	20 %		
Sapling/Shrub Stratum			
1. *Carpobrotus sp*	20	Yes	UPL
2. *Baccharis pilularis*	20	Yes	UPL
3. *Brassica nigra*	25	Yes	UPL
4.			
5.			
Total Cover:	65 %		
Herb Stratum			
1. *Foeniculum vulgare*	10	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	10	x 2 =	20
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	85	x 5 =	425
Column Totals:	95 (A)		445 (B)

Prevalence Index = B/A = 4.68

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Vegetative transition zone (at the toe of slope) of southern coastal salt marsh and nonnative grassland/coastal sage scrub.

SOIL

Sampling Point: T 4.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/3						Silty loam	
3-20	10YR 5/4						Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 9 to 15 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken near base of hillslope. No wetland hydrology indicators present at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 5.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.00879873 | Long: -117.2586884 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 9 to 15 percent slopes | NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)
Hydric Soil Present?	Yes ( )	No (●)
Wetland Hydrology Present?	Yes ( )	No (●)

Is the Sampled Area within a Wetland? Yes ( ) No (●)

Remarks: Datapoint is an upland confirmation point taken within the east basin of the SELER at the base of a slope between two ephemeral drainage features which occur within riparian scrub transitioning into southern coastal salt marsh. Please refer to Figure 16, Photos 11 and 12 to review field datapoints (e.g., T5.1 [upland] and T 5.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Baccharis pilularis*	40	Yes	UPL
2. *Opuntia sp.*	10	No	UPL
3. *Artemisia californica*	5	No	UPL
4.			
5.			
Total Cover:	55 %		
Herb Stratum			
1. *Distichlis spicata*	30	Yes	FACW
2. *Ambrosia psilostachya*	5	No	FAC
3. *Gnaphalium sp.*	5	No	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	40 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	30	x 2 =	60
FAC species	5	x 3 =	15
FACU species		x 4 =	0
UPL species	60	x 5 =	300
Column Totals:	95 (A)		375 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Datapoint taken near base of hillslope within a vegetative transition zone of riparian scrub-southern coastal salt marsh.

SOIL

Sampling Point: T 5.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/2	100	N/A				Sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 9 to 15 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil at the point of investigation presents a strong aerobic actinomycetes odor indicating that the area is not inundated for prolonged periods of time.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: At edge of riparian upland. No wetland hydrology indicators observed at the time of investigation. No potential wetland hydrology as area is above actual Lagoon basin.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 5.2

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.00885799 | Long: -117.2586895 | Datum: NAD 83

Soil Map Unit Name: Lagoon | NWI classification: N/A(40 ft south of PEMB)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within the east basin of the SELER within the Lagoon which supports cismontane alkali marsh and coastal salt marsh. Please refer to Figure 16, Photos 11 and 12 to review field datapoints (e.g., T5.1 [upland] and T 5.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Juncus acutus ssp. leopoldii*	25	Yes	FACW
2. *Baccharis pilularis*	20	Yes	UPL
3.			
4.			
5.			
Total Cover:	45 %		
Herb Stratum			
1. *Frankenia salina*	40	Yes	FACW
2. *Distichlis spicata*	40	Yes	FACW
3. *Jaumea carnosa*	10	No	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	90 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	105	x 2 =	210
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	20	x 5 =	100
Column Totals:	135 (A)		320 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Datapoint taken within cismontane alkali marsh

SOIL

Sampling Point: T 5.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100	N/A				muck	
1-15	10YR 4/3	98	10YR 5/8	2	C	M	Loamy sand	
15-20	5YR 4/2	95	10YR 5/6	5	C	M	Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Lagoon is not considered as soil and therefore, it is not listed as hydric by the NRCS National List of Hydric Soils. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey in terms that is part of the Lagoon and although not technically a soil, Lagoon can be considered a soil land type which presents redoximorphic features. Thus soil at the point of investigation will be considered as hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches): 0

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil pit rapidly fills with water once dug. Point of investigation is heavily influenced by La Orilla Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Sand is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 5.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: -117.2583605 | Long: 33.01532855 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: PEMR

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within an inundated portion of southern coastal saltmarsh. Please refer to Figure 17, Photo 13 to review field datapoints (e.g., T5.3 [wetland] and T5.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Frankenia salina*	65	Yes	FACW
2. *Jaumea carnosa*	20	Yes	OBL
3. *Ambrosia psilostachya*	10	No	FAC
4. *Distichlis spicata*	5	No	FACW
5.			
Total Cover:	100 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	70	x 2 =	140
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		190 (B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Pockets of surface water within inundated southern coastal salt marsh.

SOIL

Sampling Point: T 5.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100	N/A				Muck	
1-20	10YR 3/2	100	N/A				Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). At the point of observation within the saltmarsh this soil does have a strong musty Streptomyces odor which may indicate more common inundation factors. The soil at the point of investigation also presents hydric indicators, such as muck. Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): unknown

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Pit fills rapidly fills with water once dug. Point of investigation is within inundated saltmarsh, outer edge of concave feature. Point of investigation is heavily influenced by Escondido Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 5.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 33.01544032 | Long: -117.2584541 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within a road shoulder. Please refer to Figure 17, Photo 13 to review field datapoints (e.g., T5.3 [wetland] and T5.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	20	Yes	FACW*
2. *Brassica nigra*			UPL
3. *Hirschfeldia incana*	20	Yes	UPL
4. *Eriogonum fasciculatum*	25	Yes	UPL
5.			
Total Cover:	65 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 35 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	20	x 2 =	40
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	45	x 5 =	225
Column Totals:	65 (A)		265 (B)

Prevalence Index = B/A = 4.08

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Road shoulder/disturbed habitat.

SOIL

Sampling Point: T 5.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A				Gravelly loam	Soil mixed with fill

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at road shoulder no wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 6.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 20

Subregion (LRR): C - Mediterranean California | Lat: 33.01162283 | Long: -117.2618884 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken at the base a levee and road shoulder to Manchester Avenue. Please refer to Figure 17, Photo 14 to review field datapoints (e.g., T6.1 [upland] and T6.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	20	Yes	FACW*
2. *Carpobrotus sp.*	20	Yes	UPL
3. *Opuntia sp*	5	No	UPL
4. *Eriogonum fasciculatum*	5	No	UPL
5.			
Total Cover:	50 %		
Herb Stratum			
1. *Hirschfeldia incana*	40	Yes	UPL
2. *Frankenia salina*	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	45 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	25	x 2 =	50
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	95 (A)		400 (B)

Prevalence Index = B/A = 4.21

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Road shoulder/disturbed habitat.

SOIL

Sampling Point: T 6.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 5/4	100	N/A				Sandy loam	Soil mixed gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Compacted

Depth (inches): 10

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): unknown

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at road shoulder no wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 6.2

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.01159202 | Long: -117.2618729 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: E2EMP

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within an inundated portion and area transitioning from southern brackish marsh to soucthern coastal saltmarsh. Please refer to Figure 17, Photo 14 to review field datapoints (e.g., T6.1 [upland] and T6.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Typha domingensis*	80	Yes	OBL
2. *Frankenia salina*	50	Yes	FACW
3. *Sarcocornia pacifica*	15	No	OBL
4.			
5.			
Total Cover:	145 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	95	x 1 =	95
FACW species	50	x 2 =	100
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	145 (A)		195 (B)

Prevalence Index = B/A = 1.34

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Dense marsh area.

SOIL

Sampling Point: T 6.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100	N/A				Muck	
1-20	10YR 4/3	100	N/A				Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). At the point of observation within the saltmarsh this soil does have a strong musty Streptomyces odor which may indicate more common inundation factors. The soil at the point of investigation also presents hydric indicators, such as muck. Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☒ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Pit fills rapidly fills with water once dug. Point of investigation is within inundated marsh, outer edge of concave feature. Point of investigation is heavily influenced by Escondido Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 6.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): Concave | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.00906339 | Long: -117.2620084 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand 9-15% slopes or lagoon? | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Point of investigation is at the extent of inundated southern coastal saltmarsh.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Frankenia salina*	60	Yes	FACW
2. *Distichlis spicata*	25	Yes	FACW
3. *Sarcocornia pacifica*	10	No	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	95 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	85	x 2 =	170
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	95 (A)		180 (B)

Prevalence Index = B/A = 1.89

Hydrophytic Vegetation Indicators:

- [x] Dominance Test is >50%
- [x] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Dense cover of inundated saltmarsh.

SOIL

Sampling Point: T 6.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 3.1	100	N/A				Humic clay	
2-20	GLEY 1 6/1	100	GLEY 1 6/1	100	RM	M	Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☒ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☒ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Corralitos loamy sand, 5-9% slope is not on the NRCS National List of Hydric Soils. Positive α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). The soil at the point of investigation also presents hydric indicators, such as the sand being slightly gleyed. Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil pit is sand which rapidly fills with water and collapses once dug. Point of investigation is within inundated marsh, outer edge of concave feature. Point of investigation is heavily influenced by Escondido Creek and the Lagoon. This is why this Data Form utilizes both Riverine and Nonriverine Wetland Hydrology Indicators. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 6.4

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: 33.00901119 Long: -117.2620026 Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 9-15% slopes or lagoon ? NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken within a dirt service road shoulder which parallels I-5.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Hordeum sp.*	25	No	UPL
2. *Claytonia sp.*	20	Yes	UPL
3. *Brassica nigra*	10	No	UPL
4. *Sonchus sp.*	5	No	UPL
5. *Achillea millefolium*	5	No	UPL
6. *Melilotus sp.*	5	No	UPL
7.			
8.			
Total Cover:	70 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	70 (A)		350 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Road shoulder/disturbed habitat.

SOIL

Sampling Point: T 6.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 5/4	100	N/A				Sandy loam	Soil mixed gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 5-9% slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at dirt service road shoulder no wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T7.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): Convex | Slope (%): 40

Subregion (LRR): C - Mediterranean California | Lat: 33.0057379 | Long: -117.2665223 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken in disturbed coastal sage scrub in close proximity to trial.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Artemisia californica*	20	Yes	UPL
2. *Eriogonum fasciculatum*	20	Yes	UPL
3. *Nicotiana glauca*	10	Yes	FAC
4.			
5.			
Total Cover:	50 %		
Herb Stratum			
1. *Hirschfeldia incana*	25	Yes	UPL
2. *Croton setigerus*	5	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 25 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	80 (A)		380 (B)

Prevalence Index = B/A = 4.75

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Disturbed coastal sage scrub.

SOIL

Sampling Point: T7.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/2	100	N/A				Loam	Gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Compacted

Depth (inches): 16

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken along dirt trail. No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T7.2

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Convex Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 33.005898 Long: -117.265561 Datum: NAD 83

Soil Map Unit Name: Lagoon NWI classification: E2EMN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )	
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?** Yes (•) No ( )
Wetland Hydrology Present?	Yes (•)	No ( )	

Remarks: Datapoint taken within the middle basin of the SELER within the outer Lagoon which supports inundated coastal brackish marsh and unvegetated water.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Juncus acutus ssp. leopoldii*	30	Yes	FACW
2.			
3.			
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Scirpus americanus*	60	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	60 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 10 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	30	x 2 =	60
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	90 (A)		120 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Marsh area with open water.

SOIL

Sampling Point: T7.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10Y/R 2/1	100	N/A				Muck	
1-19	10YR3/1	100	N/A				Silty loam muck	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Lagoon is not considered as soil and therefore, it is not listed as hydric by the NRCS National List of Hydric Soils. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey in terms that is part of the Lagoon and although not technically a soil, Lagoon can be considered a soil land type which presents redoximorphic features (e.g., Loamy mucky mineral). Additionally, soil at point of investigation simultaneously supports hydrophytic vegetation and wetland hydrology. Thus, soil at the point of investigation will be considered as hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☒ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil pit rapidly fills with water once dug. Point of investigation is heavily influenced by the Lagoon.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T7.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Covex | Slope (%): 1

Subregion (LRR): C - Mediterranean California | Lat: 33.00982873 | Long: -117.265823 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 95 percent slopes | NWI classification: E2EMP

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within an inundated portion of southern coastal saltmarsh. Please refer to Figure 18, Photo 15 to review field datapoints (e.g., T7.4 [upland] and T7.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Frankenia salina*	20	Yes	FACW
2. *Jaumea carnosa*	10	No	OBL
3. *Sarcocornia pacifica*	70	Yes	OBL
4.			
5.			
6.			
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	20	x 2 =	40
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		120 (B)

Prevalence Index = B/A = 1.20

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Pockets of surface water within inundated southern coastal salt marsh.

SOIL

Sampling Point: T7.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	Muck	100	N/A				Muck	
1-9	Gley 1 3/1	100	N/A				Silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☒ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Corralitos loamy sand, 5 to 95 percent slopes is not on the NRCS National List of Hydric Soils. Positive α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). The soil at the point of investigation also presents hydric indicators, such as the sand being slightly gleyed. Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☒ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Pit fills rapidly fills with water once dug. Point of investigation is within inundated saltmarsh, outer edge of concave feature. Point of investigation is heavily influenced by the Lagoon. Soil is saturated at the time of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T7.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Convex | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.00572332 | Long: -117.2655852 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 95 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken in disturbed nonnative grassland transitioning from coastal salt marsh. Datapoint at the base of Lagoon levee in immediate proximity to Manchester Avenue. Please refer to Figure 18, Photo 15 to review field datapoints (e.g., T7.4 [upland] and T7.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Lotus scoparius*	10	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	10 %		
Herb Stratum			
1. *Hordeum sp.*	20	Yes	UPL
2. *Foeniculum vulgare*	5	No	UPL
3. *Distichlis spicata*	5	No	FACW
4. *Frankenia salina*	5	No	FACW
5. *Sonchus sp.*	≤ 5	No	UPL
6.			
7.			
8.			
Total Cover:	35 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	10	x 2 =	20
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	35	x 5 =	175
Column Totals:	45 (A)		195 (B)

Prevalence Index = B/A = 4.33

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Upland transition from southern coastal salt marsh to nonnative grassland

SOIL

Sampling Point: T7.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR3/4	100	N/A				Loam	Small gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 5 to 95 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill. Soil also presents a strong aerobic actinomycetes odor indicating no long-term inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken along Lagoon levee. No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T8.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 0

Subregion (LRR): C - Mediterranean California | Lat: 33.01037621 | Long: -117.2698486 | Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken in disturbed nonnative grassland transitioning from coastal salt marsh. Datapoint at the base of Lagoon levee in immediate proximity to dirt trail and Manchester Avenue. Please refer to Figure 18, Photo 16 to review field datapoints (e.g., T8.1 [upland] and T8.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Rhus integrifolia*	15	Yes	UPL
2.			
3.			
4.			
5.			
Total Cover:	15 %		
Herb Stratum			
1. *Oxalis sp.*	20	Yes	UPL
2. *Hordeum sp.*	25	Yes	UPL
3. *Brassica nigra*	15	Yes	UPL
4. *Juncus sp.*	5	No	FACW
5. *Trifolium sp.*	5	No	UPL
6. *Ambrosia psilostachya*	5	No	FAC
7.			
8.			
Total Cover:	75 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species		x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	90 (A)		425 (B)

Prevalence Index = B/A = 4.72

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Near an upland transition from southern coastal salt marsh to nonnative grassland.

SOIL

Sampling Point: T8.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A				Sandy loam	Small gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill. Soil also presents a strong aerobic actinomycetes odor indicating no long-term inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken along Lagoon levee. No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T8.2

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): C - Mediterranean California Lat: -117.2698924 Long: 33.01031241 Datum: NAD 83

Soil Map Unit Name: Corralitos loamy sand, 5 to 9 percent slopes NWI classification: E2EMP

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )		
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?**	**Yes** (●) **No** ( )
Wetland Hydrology Present?	Yes (●)	No ( )		

Remarks: Point of investigation is at the extent of inundated southern coastal saltmarsh. Please refer to Figure 18, Photo 16 to review field datapoints (e.g., T8.1 [upland] and T8.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Frankenia salina*	80	Yes	FACW
2. *Sarcocornia pacifica*	10	No	OBL
3. *Distichlis spicata*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	90	x 2 =	180
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		190 (B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** (●) **No** ( )

Remarks: Dense cover of inundated saltmarsh.

SOIL

Sampling Point: T8.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	Muck	100	N/A				Mucky	
1-20	10YR 4/2	100	N/A				Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Corralitos loamy sand, 5 to 9 percent slopes is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). The soil at the point of investigation also presents hydric indicators (Muck). Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition. Point of investigation is near the transition between Lagoon soil land type and Corralitos loamy sand, 5-9% slope.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☒ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil pit is sand which rapidly fills with water and collapses once dug. Point of investigation is within inundated marsh, outer edge of concave feature. Point of investigation is heavily influenced by the Lagoon.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T8.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 3

Subregion (LRR): C - Mediterranean California | Lat: 33.00429484 | Long: -117.2698348 | Datum: NAD 83

Soil Map Unit Name: Terrace escarpments | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within a transitional wetland area of southern coastal salt marsh transitioning into riparian scrub wetland. Please refer to Figure 19, Photo 17 to review field datapoints (e.g., T8.4 [upland] and T 8.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Juncus actutus spp. leopoldii*	80	Yes	FACW
2. *Frankenia salina*	10	No	FACW
3. *Distichlis spicata*	5	No	FACW
4.			
5.			
Total Cover:	95 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	95	x 2 =	190
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	95 (A)		190 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Riparian scrub wetland.

SOIL

Sampling Point: T8.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-1	Muck 10YR 2/1	100	N/A				Muck	
1-19	10 YR 3/4	100	N/A				Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Terrace escarpments is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). The soil at the point of investigation also presents hydric indicators (Muck). Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition. Point of investigation is near the transition between Lagoon soil land type and Terrace escarpments soil land type

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil is heavily saturated at the point of investigation. Point of investigation is heavily influenced by the Lagoon.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T8.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Convex | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.0042419 | Long: -117.2698342 | Datum: NAD 83

Soil Map Unit Name: Terrace escarpments | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken in cosatal sage scrub and nonnative grassland transitioning out from coastal salt marsh. Please refer to Figure 19, Photo 17 to review field datapoints (e.g., T8.4 [upland] and T 8.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Baccharis pilularis*	30	Yes	UPL
2. *Baccharis salicifolia*	20	Yes	FACW
3. *Salvia mellifera*		No	UPL
4.			
5.			
Total Cover:	50 %		
Herb Stratum			
1. *Ambrosia psilostachya*	10	Yes	FAC
2. *Trifolium sp.*	10	Yes	UPL
3. *Hordeum sp.*	5	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	25 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	20	x 2 =	40
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species	45	x 5 =	225
Column Totals:	75 (A)		295 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Disturbed habitat and cosatal sage scrub and nonnative grassland transitioning out from coastal salt marsh.

SOIL

Sampling Point: T8.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/4	100	N/A				Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Compacted

Depth (inches): 16

Hydric Soil Present? Yes ○ No ◉

Remarks: Terrace escarpments is not listed on the NRCS National List of Hydric Soils. Soil conforms to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill. Soil also presents a strong aerobic actinomycetes odor indicating no long-term inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken near dirt trail. No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 9.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Convex | Slope (%): 40

Subregion (LRR): C - Mediterranean California | Lat: 33.0057039 | Long: -117.2693083 | Datum: NAD 83

Soil Map Unit Name: Lagoon | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken at a berm and dirt service road area in cosatal sage scrub and nonnative grassland transitioning above from coastal salt marsh. Please refer to Figure 19, Photo 18 to review field datapoints (e.g., T9.1 [upland] and T 9.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	10	Yes	FACW*
2. *Baccharis salicifolia*	5	No	FACW
3. *Salvia melifera*	15	Yes	UPL
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Hirschfeldia incana*	10	Yes	UPL
2. *Brassica nigra*	15	Yes	UPL
3. *Salsola tragus*	10	Yes	UPL
4. *Sonchus sp.*	5	No	UPL
5.			
6.			
7.			
8.			
Total Cover:	40 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 20 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	15	x 2 =	30
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	55	x 5 =	275
Column Totals:	70 (A)		305 (B)

Prevalence Index = B/A = 4.36

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Disturbed habitat and cosatal sage scrub and nonnative grassland transitioning out from coastal salt marsh.

SOIL

Sampling Point: T 9.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 4/4	100	N/A				Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Lagoon is not listed on the NRCS National List of Hydric Soils as it is considered a soil land type. Negative α,α-dipyridyl test at point of investigation. Soil does not conform to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill. Soil also presents a strong aerobic actinomycetes odor indicating no long-term inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken near a berm and dirt service road area. No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 9.2

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): C - Mediterranean California Lat: 33.00493542 Long: -117.2735684 Datum: NAD 83

Soil Map Unit Name: Lagoon NWI classification: E2EMN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )	
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?** Yes (•) No ( )
Wetland Hydrology Present?	Yes (•)	No ( )	

Remarks: Datapoint taken within the middle basin of the SELER in close proximity to Lagoon mudflats which supports cordgrass community nearby. Please refer to Figure 19, Photo 18 to review field datapoints (e.g., T9.1 [upland] and T 9.2 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Sarcocornia pacifica*	100	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	100 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		100 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Inundated southern coastal saltmarsh.

SOIL

Sampling Point: T 9.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10 YR 3/1	100	N/A				Muck	
1-20	Gley 1 3/1	100	N/A				Silty sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5) (**LRR C**)
- [ ] 1 cm Muck (A9) (**LRR D**)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [x] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1)
- [x] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- [x] 1 cm Muck (A9) (**LRR C**)
- [ ] 2 cm Muck (A10) (**LRR B**)
- [ ] Reduced Vertic (F18)
- [ ] Red Parent Material (TF2)
- [x] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes (●) No ( )

Remarks: Lagoon is not considered as soil and therefore, it is not listed as hydric by the NRCS National List of Hydric Soils. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey in terms that is part of the Lagoon and although not technically a soil, Lagoon can be considered a soil land type which presents redoximorphic features (e.g., gleying and Loamy mucky mineral). Point of investigation occurs within an area which simultaneously presents hydrophytic vegetation and wetland hydrology. Thus, the soil at the point of investigation will be considered as hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1) (**Nonriverine**)
- [ ] Sediment Deposits (B2) (**Nonriverine**)
- [ ] Drift Deposits (B3) (**Nonriverine**)
- [ ] Surface Soil Cracks (B6)
- [x] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Salt Crust (B11)
- [ ] Biotic Crust (B12)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [x] Thin Muck Surface (C7)
- [ ] Recent Iron Reduction in Plowed Soils (C6)
- [x] Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- [ ] Water Marks (B1) (**Riverine**)
- [ ] Sediment Deposits (B2) (**Riverine**)
- [ ] Drift Deposits (B3) (**Riverine**)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes (●) No ( ) Depth (inches):

Water Table Present? Yes (●) No ( ) Depth (inches):

Saturation Present? (includes capillary fringe) Yes (●) No ( ) Depth (inches):

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil pit rapidly fills with water once dug. Point of investigation is heavily influenced by the Lagoon.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 9.3

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): C - Mediterranean California Lat: 33.01154129 Long: -117.2733443 Datum: NAD 83

Soil Map Unit Name: Lagoon NWI classification: E2EMP

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•)	No ( )	
Hydric Soil Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?** Yes (•) No ( )
Wetland Hydrology Present?	Yes (•)	No ( )	

Remarks: Datapoint taken within the middle basin of the SELER within the outer Lagoon which supports inundated coastal brackish marsh and unvegetated water. Please refer to Figure 20, Photo 19 to review field datapoints (e.g., T9.3 [wetland] and T 9.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Jaumea carnosa*	75	Yes	OBL
2. *Sarcocornia pacifica*	15	No	OBL
3. *Frankenia salina*	10	No	FACW
4.			
5.			
Total Cover:	100 %		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	10	x 2 =	20
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		110 (B)

Prevalence Index = B/A = 1.10

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Marsh area with open water nearby.

SOIL

Sampling Point: T 9.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10Y/R 2/1	100	N/A				Muck	
1-20	10YR 3/1	100	N/A				Silty loam muck	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Lagoon is not considered as soil and therefore, it is not listed as hydric by the NRCS National List of Hydric Soils. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey in terms that is part of the Lagoon and although not technically a soil, Lagoon can be considered a soil land type which presents redoximorphic features (e.g., Loamy mucky mineral). Additionally, soil at point of investigation simultaneously supports hydrophytic vegetation and wetland hydrology. Thus, soil at the point of investigation will be considered as hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☒ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☒ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	0
Water Table Present?	Yes ◉	No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil pit rapidly fills with water once dug. Point of investigation is heavily influenced by the Lagoon.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 9.4

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 27 T13S R4W

Landform (hillslope, terrace, etc.): Berm slope of interpretive path Local relief (concave, convex, none): Convex Slope (%): 25

Subregion (LRR): C - Mediterranean California Lat: 33.01156658 Long: -117.273366 Datum: NAD 83

Soil Map Unit Name: Lagoon NWI classification: E2EMP

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Point of investigation an upland confirmation point which is on berm slope of SELER interpretive center path (which has been constructed/filled in the Lagoon). Transformed Lagoon to upland for interpretive walkway. Area would not revert back to wetland as grade change is to high. Please refer to Figure 20, Photo 19 to review field datapoints (e.g., T9.3 [wetland] and T 9.4 [upland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	15	Yes	FACW
2. *Lotus scoparius*	10	No	UPL
3. *Croton californicum*	20	Yes	UPL
4.			
5.			
Total Cover:	45 %		
Herb Stratum			
1. *Raphanus sativus*	20	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	20 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	15	x 2 =	30
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	65 (A)		280 (B)

Prevalence Index = B/A = 4.31

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Disturbed habitat: Berm walkway.

SOIL

Sampling Point: T 9.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A				Loam	Small gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Lagoon is not listed on the NRCS National List of Hydric Soils as it is considered a soil land type. Negative α,α-dipyridyl test at point of investigation. Soil does not conform to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill. Soil also presents a strong aerobic actinomycetes odor indicating no long-term inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken on berm and interpretive walkway. No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 02-18-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 9.5

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 27,T13S, R4W

Landform (hillslope, terrace, etc.): Berm slope of interpretive path Local relief (concave, convex, none): Convex Slope (%): 25

Subregion (LRR): C - Mediterranean California Lat: 33.01160855 Long: -117.273386 Datum: NAD 83

Soil Map Unit Name: Lagoon NWI classification: E2EMP

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (•)	
Hydric Soil Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks: Point of investigation an upland confirmation point which is on berm slope of SELER interpretive center path (which has been constructed/filled in the Lagoon). Transformed Lagoon to upland for interpretive walkway. Area would not revert back to wetland as grade change is to high.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Isocoma menziesii*	15	Yes	FACW
2. *Lotus scoparius*	10	No	UPL
3. *Croton californicum*	20	Yes	UPL
4.			
5.			
Total Cover:	45 %		
Herb Stratum			
1. *Raphanus sativus*	20	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	20 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	15	x 2 =	30
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	65 (A)		280 (B)

Prevalence Index = B/A = 4.31

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks: Disturbed habitat: Berm walkway.

SOIL

Sampling Point: T 9.5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/3	100	N/A				Loam	Small gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Lagoon is not listed on the NRCS National List of Hydric Soils as it is considered a soil land type. Negative α,α-dipyridyl test at point of investigation. Soil does not conform to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill. Soil also presents a strong aerobic actinomycetes odor indicating no long-term inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken on berm and interpretive walkway. No wetland hydrology indicators observed at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-19-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 9.6

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.01164229 | Long: -117.2734199 | Datum: NAD 83

Soil Map Unit Name: Lagoon | NWI classification: PFORh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within a concave area of southern willow scrub within the SELER interpretive area. Berm has transformed southern coastal saltmarsh to southern willow scrub.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	50	Yes	FACW
2. *Salix gooddingii*	10	No	OBL
3.			
4.			
Total Cover:	60 %		
Sapling/Shrub Stratum			
1. *Baccharis salicifolia*	20	Yes	FACW
2. *Isocoma menziesii var. vernonioides*	10	Yes	FACW
3.			
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Artemisia douglasiana*	10	Yes	FACW
2. *Crassula connata*	5	No	FAC
3. *Eleocharis macrostachya*	5	No	FACW
4. *Distichlis spicata*	5	No	FACW
5. *Lolium multiflorum*	5	No	FAC
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	100	x 2 =	200
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	120 (A)		240 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Desnse southern willow scrub. Heavy duff layer.

SOIL

Sampling Point: T 9.6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	N/A	N/A	N/A				Duff	
2-20	10YR3/1	100	N/A				Silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Lagoon is not considered as soil and therefore, it is not listed as hydric by the NRCS National List of Hydric Soils. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey in terms that is part of the Lagoon and although not technically a soil, Lagoon can be considered a soil land type which presents redoximorphic features (e.g., gleying and Loamy mucky mineral). Point of investigation occurs within an area which simultaneously presents hydrophytic vegetation and wetland hydrology. Thus, the soil at the point of investigation will be considered as hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	0
Water Table Present?	Yes ◉ No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is saturated. Area receives urban runoff inputs and is influenced by the Lagoon.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-19-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 9.7

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 25 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.01292557 | Long: -117.2733892 | Datum: NAD 83

Soil Map Unit Name: Lagoon | NWI classification: PFORh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within a concave area of southern willow scrub within the SELER interpretive area. Berm has transformed southern coastal saltmarsh to southern willow scrub. Please refer to Figure 20, Photo 20 to review field datapoints (e.g., T9.8 [upland] and T 9.7 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	50	Yes	FACW
2. *Salix gooddingii*	10	No	OBL
3.			
4.			
Total Cover:	60 %		
Sapling/Shrub Stratum			
1. *Baccharis salicifolia*	20	Yes	FACW
2. *Isocoma menziesii var. vernonioides*	10	Yes	FACW
3.			
4.			
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Artemisia douglasiana*	10	Yes	FACW
2. *Crassula connata*	5	No	FAC
3. *Eleocharis macrostachya*	5	No	FACW
4. *Distichlis spicata*	5	No	FACW
5. *Lolium multiflorum*	5	No	FAC
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 0 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	100	x 2 =	200
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	120 (A)		240 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Desnse southern willow scrub. Heavy duff layer.

SOIL

Sampling Point: T 9.7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	N/A	N/A	N/A				Duff	
2-20	10YR3/1	100	N/A				Silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☒ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Lagoon is not considered as soil and therefore, it is not listed as hydric by the NRCS National List of Hydric Soils. The 2008 Supplement emphasizes ground-truthing to document the soil survey (Chapter 3 [Hydric Soil Indicators], page 34, Use of existing soil data; soil surveys. At the point of investigation, it appears that the soil investigated conforms to the soil survey in terms that is part of the Lagoon and although not technically a soil, Lagoon can be considered a soil land type which presents redoximorphic features (e.g., gleying and Loamy mucky mineral). Point of investigation occurs within an area which simultaneously presents hydrophytic vegetation and wetland hydrology. Thus, the soil at the point of investigation will be considered as hydric by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	0
Water Table Present?	Yes ◉ No ○	Depth (inches):	Unknown
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Soil is saturated. Area receives urban runoff inputs and is influenced by the Lagoon.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-27-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 9.8

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 27 T13S R4W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Convex | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.01297292 | Long: -117.2733715 | Datum: NAD 83

Soil Map Unit Name: Lagoon | NWI classification: not mapped on NWI

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [X] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Point of investigation is an upland confirmation point which is within developed/disturbed area of SELER interpretive center and in close proximity to Manchester Avenue. Please refer to Figure 20, Photo 20 to review field datapoints (e.g., T9.8 [upland] and T 9.7 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Salvia mellifera*	25	Yes	UPL
2. *Encelia californica*	15	Yes	UPL
3. *Artemisia californica*	10	No	UPL
4. *Malosma laurina*	10	No	UPL
5.			
Total Cover:	60 %		
Herb Stratum			
1. *Trifolium sp.*	10	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 30 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	70 (A)		350 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Disturbed coastal sage scrub and within SELER interpretive center.

SOIL

Sampling Point: T 9.8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10Y 3/3	100	N/A					

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Lagoon is not listed on the NRCS National List of Hydric Soils as it is considered a soil land type. Negative α,α-dipyridyl test at point of investigation. Soil does not conform to the Soil Survey of San Diego (Bowman 1973). No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology. Soil also appears to be mixed with fill. Soil also presents a strong aerobic actinomycetes odor indicating no long-term inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Point of investigation is near an outfall which provides freshwater inputs into surrounding southern willow scrub

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 10.1

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 26,T13S, R4W

Landform (hillslope, terrace, etc.): Tidal Inlet bank | Local relief (concave, convex, none): Convex | Slope (%): 15

Subregion (LRR): C - Mediterranean California | Lat: 33.013407 | Long: -117.278810 | Datum: NAD 83

Soil Map Unit Name: Chesterton fine sandy loam, 9 to 15 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint is upland confirmation point. Head of tidal inlet channel bank. Developed and rip-rapped.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1. *Carpobrotus edulis*	5	Yes	UPL
2. *Nicotiana glauca*	≤5	Yes	FAC
3.			
4.			
5.			
Total Cover:	5 %		
Herb Stratum			
1. *Hordeum murinum*	≤5	Yes	UPL
2. *Avena fatua*	≤5	Yes	UPL
3. *Distichlis spicata*	≤5	Yes	FACW
4. *Frankenia salina*	≤5	Yes	FACW
5.			
6.			
7.			
8.			
Total Cover:	0 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species		x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	5 (A)		25 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Rip-rap bank is relatively sparsely vegetated based upon the presence of rip-rap limiting plant establishment.

SOIL

Sampling Point: T 10.1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0	N/A	N/A	N/A				Rock	Rip-rap

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rip-rap

Depth (inches): 0

Hydric Soil Present? Yes ○ No ◉

Remarks: Datapoint is at head of rip-rap channel bank.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):
Water Table Present?	Yes ◉	No ○	Depth (inches): unknown
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No wetland hydrology indicators observed at the point of investigation. Field datapoint is located outside (above) high tide influence. Natural rainfall patterns would not support wetland hydrology alone.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project City/County: Encinitas/San Diego Sampling Date: 01-28-10

Applicant/Owner: San Elijo Lagoon Conservancy State: CA Sampling Point: T 10.2

Investigator(s): L. Teunis and J. Zinn Section, Township, Range: Sec 26,T13S, R4W

Landform (hillslope, terrace, etc.): Tidal Inlet bank Local relief (concave, convex, none): Convex Slope (%): 75

Subregion (LRR): C - Mediterranean California Lat: 33.013380 Long: -117.278847 Datum: NAD 83

Soil Map Unit Name: Lagoon NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [X] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ( )	No (●)	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken at toe of rip-rap armored tidal inlet channel bank. Field datapoint abuts open water which will be lateral jurisdictional extent of other waters of the U.S. This field datapoint is for documenting jurisdictional lateral extent and not the presence of wetlands.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 5 % % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	(A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ( ) No (●)

Remarks: Although the point of investigation supports no wetland vegetation (as a result of tidal inundation) this area will be considered as unvegetated tidal waters and thus a jusrisdictional water as defined by 33 CFR 328.

SOIL

Sampling Point: T 10.2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0	N/A	N/A	N/A				Rock	Rip-rap

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Rip-rap

Depth (inches): 0

Hydric Soil Present? Yes ○ No ◉

Remarks: Datapoint is at toe of rip-rap tidal inlet channel bank.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches):

Water Table Present? Yes ◉ No ○ Depth (inches): unknown

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-19-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T 10.3

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 34 T13S R4W

Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): Concave | Slope (%): 5

Subregion (LRR): C - Mediterranean California | Lat: 33.00282819 | Long: -117.2771741 | Datum: NAD 83

Soil Map Unit Name: Marina loamy coarse sand, 2 to 9 percent slopes | NWI classification: E2USN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes (●) No ( )
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks: Datapoint taken within southern coastal saltmarsh which has been recently graded to bare soil. Will continue to consider are as southern coastal saltmarsh based upon topography and vegetation communities. Please refer to Figure 21, Photo 22 to review field datapoints (e.g., T10.4 [upland] and T 10.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	%		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	%		
Herb Stratum			
1. *Jaumea carnosa*	30	Yes	OBL
2. *Frankenia salina*	15	Yes	FACW
3. *Distichlis spicata*	15	Yes	FACW
4. *Sarcocornia pacifica*	5	No	OBL
5.			
6.			
7.			
8.			
Total Cover:	65 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum ____ % | % Cover of Biotic Crust ____ %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	30	x 2 =	60
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	65 (A)		95 (B)

Prevalence Index = B/A = 1.46

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: Post grading altering active marsh with relict plant coverage. Southern coastal saltmarsh has been recently graded to bare soil at the point of investigation.

SOIL

Sampling Point: T 10.3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5YR3/1	98	7.5YR5/6	2	C	M	Loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Muck

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks: Marina loamy coarse sand, 2 to 9 percent slopes is not on the NRCS National List of Hydric Soils. Negative α,α-dipyridyl test at point of investigation. The 2008 Supplement: Chapter 3 (Hydric Soil Indicators), page 34, Use of existing soil data; soil surveys, emphasizes groundtruthing to document the soil survey. Based upon the field investigation it appears that the soil at the point of investigation does not conform with the 1979 Soil Survey of San Diego County (Bowman 1973). The soil at the point of investigation also presents hydric indicators (redox features). Additionally, hydrophytic vegetation and wetland hydrology are simultaneously present. Therefore, this soil will be considered hydric by definition. Point of investigation is near the transition between Lagoon soil land type and Marina loamy coarse sand, 2 to 9% slopes.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches): 0

Water Table Present? Yes ◉ No ○ Depth (inches): Unknown

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Soil is saturated at the point of investigation. lagoon influences wetland hydrology at the point of investigation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: San Elijo Lagoon Restoration Project | City/County: Encinitas/San Diego | Sampling Date: 02-19-10

Applicant/Owner: San Elijo Lagoon Conservancy | State: CA | Sampling Point: T10.4

Investigator(s): L. Teunis and J. Zinn | Section, Township, Range: Sec 34 T13S R4W

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): Convex | Slope (%): 40

Subregion (LRR): C - Mediterranean California | Lat: 33.0028151 | Long: -117.277175 | Datum: NAD 83

Soil Map Unit Name: Marina loamy coarse sand, 2 to 9 percent slopes | NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes (●) No ( ) (If no, explain in Remarks.)

Are Vegetation [X] Soil [ ] or Hydrology [X] significantly disturbed? Are "Normal Circumstances" present? Yes (●) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (●)	No ( )	
Hydric Soil Present?	Yes ( )	No (●)	**Is the Sampled Area within a Wetland?** Yes ( ) No (●)
Wetland Hydrology Present?	Yes ( )	No (●)	

Remarks: Datapoint is an upland confirmation point taken at the lower portion of levee/berm road shoulder of Pacific Coast Highway. Please refer to Figure 21, Photo 22 to review field datapoints (e.g., T10.4 [upland] and T 10.3 [wetland]) and the general area of investigation at the time of the delineation.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acacia melanoxylon*	5	Yes	UPL
2.			
3.			
4.			
Total Cover:	5 %		
Sapling/Shrub Stratum			
1. *Eriogonum fasciculatum*	10	Yes	UPL
2. *Carpobrotus edulus*	10	Yes	UPL
3. *Isocoma menziesii*	5	No	FAC
4. *Nicotiana glauca*	5	No	FACW
5.			
Total Cover:	30 %		
Herb Stratum			
1. *Distichlis spicata*	15	Yes	FACW
2. *Hirschfeldia incana*	10	Yes	UPL
3. *erodium cicutarium*	10	Yes	UPL
4.			
5.			
6.			
7.			
8.			
Total Cover:	35 %		
Woody Vine Stratum			
1.			
2.			
Total Cover:	%		

% Bare Ground in Herb Stratum 30 % | % Cover of Biotic Crust %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	20	x 2 =	40
FAC species	5	x 3 =	15
FACU species		x 4 =	0
UPL species	45	x 5 =	225
Column Totals:	70 (A)		280 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- (●) Dominance Test is >50%
- (●) Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes (●) No ( )

Remarks: base of road shoulder/disturbed coastal sage scrub habitat.

SOIL

Sampling Point: T10.4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR5/4	100	N/A				loamy sand fill	gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks: Marina loamy coarse sand, 2 to 9 percent slopes is not listed on the NRCS National List of Hydric Soils. Soil conforms to soil survey of San Diego County (Bowman 1973). However, soil is likely transformed based upon road building activities. No hydric soil indicators observed at the point of investigation. Soil is nonhydric and not considered problematic (per Chapter 5 of the 2008 Supplement) based on the lack of the simultaneous presence of hydrophytic vegetation and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

2010 National Agriculture Imagery Program (NAIP) Aerial Maps of the San Elijo Lagoon Ecological Reserve.

Remarks: Datapoint taken at road shoulder no wetland hydrology indicators observed at the point of investigation.

ATTACHMENT B

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

PRELIMINARY JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers
San Elijo Lagoon Restoration Project

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): July 2012

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

The San Elijo Lagoon Conservancy
P.O. Box 230634
Encinitas, CA 92023
Contact: Doug Gibson, Executive Director
(760) 436-3944 Fax: (760) 944-9606

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Los Angeles District District Regulatory Division, Los Angeles Section, South Coast Branch, San Diego Section

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
San Elijo Lagoon, Encinitas. Please refer to Summary, Introduction and Description of Project located in the Jurisdictional Delineation Report.

(Use the attached table to document multiple waterbodies at different sites)
State: CA County/parish/borough: San Diego Counties City: Encinitas and Rancho Santa Fe
Center coordinates of site (lat/long in degree decimal format): Lat: 33.008155 Long: -117.262416
UTM: 11N 475497.62 m E 3652217.96 m N
Name of nearest waterbody: Pacific Ocean
Identify (estimate) amount of waters in the review area: **618.03 acres**
Non-wetland waters: **153.47 acres**
Cowardin Class: Riverine (0.58 acre [OHWM]), Estuarine (152.89 acres)
Stream Flow: The 0.58 acre of riverine non-wetland waters presents ephemeral flow.
Wetlands: **464.56 acres**
Cowardin Class: Palustrine (71.08 acres) and Estuarine (393.48 acres)
Name of any waterbodies on the site that have been identified as Section 10 waters: **All 546.37 acres of estuarine waters occurring within survey area have been identified as Section 10 Tidal Waters (please see Footnote 15 in the Jurisdictional Delineation Report).**
Tidal:
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): January 21, 2010 through February 18, 2010

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

A. **SUPPORTING DATA. Data reviewed for JD (check all that apply** - checked items shall be included in case file and, where checked
and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: See Figures 1-10 in the San Elijo Lagoon Restoration Project Jurisdictional Delineation Report

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant. Please see Attachment A of the San Elijo Lagoon Restoration Project Jurisdictional Delineation Report (2008 Supplement Wetland Determination Data Forms — Arid West Region [Version 2.0]).

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☒ Corps navigable waters' study: N/A.

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☒ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 7.5' U.S. Geologic Service (USGS) Encinitas (1975) and Rancho Santa Fe (1983) topographic quadrangles

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey.

☒ National wetlands inventory map(s). Cite name: NWI Website.

☐ State/Local wetland inventory map(s): .

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date): 2009 Aerial Maps of the survey area (Digital Globe 2009) and 2010 National Agriculture Imagery Program (NAIP).

☒ Other (Name & Date): Pacific Institute and NOAA tidal data. Please see Site photographs in Figures 10-21 in the San Elijo Lagoon Restoration Project Jurisdictional Delineation. The Site Photographs were taken between January and February 2010.

☐ Previous determination(s). File no. and date of response letter: .

☒ Other information (please specify): Please review the San Elijo Lagoon Restoration Project Jurisdictional Delineation Report for this Preliminary JD.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Attachment B – Sites

District Office: **Los Angeles District** File/ORM # PJD Date: **January 19, 2010**
State: **CA** City/County: **Encinitas/San Diego**

Person Requesting PJD: **Doug Gibson**
Executive Director of the San Elijo Lagoon Conservancy

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
1-Central Basin	33.0123599	-117.2739385	Estuarine	0.64	Section 10 Tidal
1-Central Basin	33.0124938	-117.2718400	Estuarine	0.34	Section 10 Tidal
1-Central Basin	33.0117636	-117.2712433	Estuarine	2.13	Section 10 Tidal
1-Central Basin	33.0090287	-117.2676720	Estuarine	0.80	Section 10 Tidal
1-Central Basin	33.0097163	-117.2657021	Estuarine	1.32	Section 10 Tidal
1-Central Basin	33.0099395	-117.2646846	Estuarine	0.08	Section 10 Tidal
1-Central Basin	33.0093819	-117.2669796	Estuarine	0.15	Section 10 Tidal
1-Central Basin	33.0095106	-117.2689770	Estuarine	0.31	Section 10 Tidal
1-Central Basin	33.0107069	-117.2701991	Estuarine	0.16	Section 10 Tidal
2-East Basin	33.0184129	-117.2495770	Estuarine	38.38	Section 10 Tidal
2-East Basin	33.0098785	-117.2615577	Estuarine	12.61	Section 10 Tidal
2-East Basin	33.0119010	-117.2610145	Estuarine	0.35	Section 10 Tidal
2-East Basin	33.0111734	-117.2621562	Estuarine	1.50	Section 10 Tidal
2-East Basin	33.0121491	-117.2539106	Estuarine	62.97	Section 10 Tidal
2-East Basin	33.0102977	-117.2505243	Estuarine	0.14	Section 10 Tidal
2-East Basin	33.0100943	-117.2501393	Estuarine	0.58	Section 10 Tidal
2-East Basin	33.0100821	-117.2487734	Estuarine	2.29	Section 10 Tidal
2-East Basin	33.0108653	-117.2494906	Estuarine	0.05	Section 10 Tidal
2-East Basin	33.0110602	-117.2495658	Estuarine	0.04	Section 10 Tidal
2-East Basin	33.0112323	-117.2494497	Estuarine	0.05	Section 10 Tidal
2-East Basin	33.0115158	-117.2492135	Estuarine	0.09	Section 10 Tidal
2-East Basin	33.0207761	-117.2447431	Estuarine	0.79	Section 10 Tidal
2-East Basin	33.0224224	-117.2453798	Estuarine	0.22	Section 10 Tidal
2-East Basin	33.0221021	-117.2472485	Estuarine	0.21	Section 10 Tidal
2-East Basin	33.0222156	-117.2449226	Estuarine	0.41	Section 10 Tidal
2-East Basin	33.0148175	-117.2562831	Estuarine	1.18	Section 10 Tidal

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
2-East Basin	33.0114766	-117.2450679	Estuarine	3.06	Section 10 Tidal
2-East Basin	33.0104698	-117.2553789	Estuarine	0.15	Section 10 Tidal
2-East Basin	33.0089904	-117.2616117	Estuarine	0.04	Section 10 Tidal
2-East Basin	33.0098700	-117.2430104	Estuarine	0.33	Section 10 Tidal
1-Central Basin	33.0121443	-117.2757527	Estuarine	0.67	Section 10 Tidal
2-East Basin	33.0111517	-117.2583701	Estuarine	3.93	Section 10 Tidal
2-East Basin	33.0099995	-117.2574024	Estuarine	2.51	Section 10 Tidal
2-East Basin	33.0114033	-117.2555795	Estuarine	0.74	Section 10 Tidal
2-East Basin	33.0099518	-117.2594322	Estuarine	9.86	Section 10 Tidal
2-East Basin	33.0125451	-117.2548937	Estuarine	1.45	Section 10 Tidal
2-East Basin	33.0149651	-117.2554591	Estuarine	4.36	Section 10 Tidal
2-East Basin	33.0124580	-117.2592537	Estuarine	0.07	Section 10 Tidal
2-East Basin	33.0103519	-117.2518982	Estuarine	0.26	Section 10 Tidal
2-East Basin	33.0100981	-117.2513420	Estuarine	0.11	Section 10 Tidal
2-East Basin	33.0095269	-117.2498112	Estuarine	0.31	Section 10 Tidal
2-East Basin	33.0119273	-117.2459770	Estuarine	33.25	Section 10 Tidal
2-East Basin	33.0197648	-117.2455186	Estuarine	1.44	Section 10 Tidal
2-East Basin	33.0203596	-117.2446159	Estuarine	0.41	Section 10 Tidal
2-East Basin	33.0201377	-117.2460879	Estuarine	0.80	Section 10 Tidal
2-East Basin	33.0227665	-117.2447360	Estuarine	0.29	Section 10 Tidal
2-East Basin	33.0217806	-117.2454910	Estuarine	2.05	Section 10 Tidal
2-East Basin	33.0223362	-117.2464131	Estuarine	7.16	Section 10 Tidal
2-East Basin	33.0181402	-117.2467425	Estuarine	15.02	Section 10 Tidal
2-East Basin	33.0156790	-117.2566804	Estuarine	18.69	Section 10 Tidal
2-East Basin	33.0190084	-117.2513630	Estuarine	9.08	Section 10 Tidal
2-East Basin	33.0107488	-117.2490648	Estuarine	0.08	Section 10 Tidal
2-East Basin	33.0106885	-117.2493071	Estuarine	0.03	Section 10 Tidal
2-East Basin	33.0141295	-117.2580739	Estuarine	0.14	Section 10 Tidal
2-East Basin	33.0120531	-117.2493475	Estuarine	0.17	Section 10 Tidal
2-East Basin	33.0140835	-117.2510424	Estuarine	0.02	Section 10 Tidal
2-East Basin	33.0132486	-117.2566500	Estuarine	6.24	Section 10 Tidal
2-East Basin	33.0087081	-117.2605018	Estuarine	0.001	Section 10 Tidal
3-West Basin	33.0101355	-117.2782534	Estuarine	0.79	Section 10 Tidal
1-Central Basin	33.0079176	-117.2726926	Estuarine	4.74	Section 10 Tidal
1-Central Basin	33.0136107	-117.2780702	Estuarine	1.11	Section 10 Tidal
1-Central Basin	33.0135096	-117.2757599	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0122826	-117.2774866	Estuarine	1.18	Section 10 Tidal
1-Central Basin	33.0112874	-117.2773996	Estuarine	0.07	Section 10 Tidal
1-Central Basin	33.0107885	-117.2772173	Estuarine	0.21	Section 10 Tidal
1-Central Basin	33.0075890	-117.2763507	Estuarine	3.14	Section 10 Tidal
1-Central Basin	33.0125666	-117.2780676	Estuarine	0.10	Section 10 Tidal
1-Central Basin	33.0127265	-117.2779982	Estuarine	0.06	Section 10 Tidal
1-Central Basin	33.0080070	-117.2766813	Estuarine	0.09	Section 10 Tidal

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
1-Central Basin	33.0070307	-117.2757693	Estuarine	1.45	Section 10 Tidal
1-Central Basin	33.0124862	-117.2745273	Estuarine	0.16	Section 10 Tidal
1-Central Basin	33.0121034	-117.2740826	Estuarine	1.18	Section 10 Tidal
1-Central Basin	33.0107420	-117.2709029	Estuarine	4.88	Section 10 Tidal
1-Central Basin	33.0095225	-117.2714402	Estuarine	19.02	Section 10 Tidal
1-Central Basin	33.0112794	-117.2749868	Estuarine	4.73	Section 10 Tidal
1-Central Basin	33.0096418	-117.2744266	Estuarine	0.12	Section 10 Tidal
1-Central Basin	33.0098716	-117.2746936	Estuarine	0.09	Section 10 Tidal
1-Central Basin	33.0104960	-117.2746157	Estuarine	0.61	Section 10 Tidal
1-Central Basin	33.0114510	-117.2765664	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0112720	-117.2766438	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0110272	-117.2767406	Estuarine	0.13	Section 10 Tidal
1-Central Basin	33.0104407	-117.2761059	Estuarine	0.24	Section 10 Tidal
1-Central Basin	33.0106079	-117.2759345	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0081454	-117.2758381	Estuarine	2.31	Section 10 Tidal
1-Central Basin	33.0094114	-117.2762303	Estuarine	0.49	Section 10 Tidal
1-Central Basin	33.0094791	-117.2756763	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0092130	-117.2755343	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0090726	-117.2755602	Estuarine	0.04	Section 10 Tidal
1-Central Basin	33.0086642	-117.2761613	Estuarine	0.15	Section 10 Tidal
1-Central Basin	33.0081821	-117.2756106	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0080905	-117.2757373	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0080413	-117.2756484	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0047464	-117.2748449	Estuarine	7.37	Section 10 Tidal
1-Central Basin	33.0048486	-117.2742520	Estuarine	0.14	Section 10 Tidal
1-Central Basin	33.0043353	-117.2745077	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0042417	-117.2746070	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0059013	-117.2729576	Estuarine	6.98	Section 10 Tidal
1-Central Basin	33.0067591	-117.2741526	Estuarine	1.39	Section 10 Tidal
1-Central Basin	33.0060780	-117.2740723	Estuarine	0.34	Section 10 Tidal
1-Central Basin	33.0050601	-117.2735447	Estuarine	0.25	Section 10 Tidal
1-Central Basin	33.0072348	-117.2684099	Estuarine	23.21	Section 10 Tidal
1-Central Basin	33.0064250	-117.2689186	Estuarine	0.14	Section 10 Tidal
1-Central Basin	33.0081097	-117.2684754	Estuarine	0.09	Section 10 Tidal
1-Central Basin	33.0070906	-117.2717688	Estuarine	3.38	Section 10 Tidal
1-Central Basin	33.0090663	-117.2719693	Estuarine	0.18	Section 10 Tidal
1-Central Basin	33.0076574	-117.2723198	Estuarine	0.09	Section 10 Tidal
1-Central Basin	33.0048669	-117.2712504	Estuarine	8.61	Section 10 Tidal
1-Central Basin	33.0060439	-117.2704269	Estuarine	0.81	Section 10 Tidal
1-Central Basin	33.0061094	-117.2712771	Estuarine	0.07	Section 10 Tidal
1-Central Basin	33.0054296	-117.2706247	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0090023	-117.2651966	Estuarine	3.35	Section 10 Tidal
1-Central Basin	33.0075927	-117.2660031	Estuarine	0.20	Section 10 Tidal

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
1-Central Basin	33.0074401	-117.2660823	Estuarine	0.04	Section 10 Tidal
1-Central Basin	33.0074168	-117.2635856	Estuarine	0.30	Section 10 Tidal
1-Central Basin	33.0100282	-117.2765202	Estuarine	0.36	Section 10 Tidal
1-Central Basin	33.0130085	-117.2750613	Estuarine	0.10	Section 10 Tidal
1-Central Basin	33.0112506	-117.2769769	Estuarine	0.003	Section 10 Tidal
1-Central Basin	33.0093458	-117.2679410	Estuarine	0.31	Section 10 Tidal
1-Central Basin	33.0081894	-117.2657138	Estuarine	0.46	Section 10 Tidal
1-Central Basin	33.0079296	-117.2658625	Estuarine	0.23	Section 10 Tidal
1-Central Basin	33.0074842	-117.2643839	Estuarine	9.42	Section 10 Tidal
1-Central Basin	33.0130269	-117.2764287	Estuarine	9.38	Section 10 Tidal
1-Central Basin	33.0093143	-117.2721418	Estuarine	0.000004	Section 10 Tidal
1-Central Basin	33.0090034	-117.2717868	Estuarine	0.001	Section 10 Tidal
1-Central Basin	33.0060442	-117.2738302	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0078840	-117.2693473	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0086596	-117.2699295	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0084518	-117.2713132	Estuarine	0.00005	Section 10 Tidal
1-Central Basin	33.0084346	-117.2713210	Estuarine	0.0001	Section 10 Tidal
1-Central Basin	33.0102625	-117.2740815	Estuarine	0.0002	Section 10 Tidal
1-Central Basin	33.0104776	-117.2741248	Estuarine	0.004	Section 10 Tidal
1-Central Basin	33.0092729	-117.2757789	Estuarine	0.04	Section 10 Tidal
2-East Basin	33.0122746	-117.2606554	Estuarine	2.83	Section 10 Tidal
2-East Basin	33.0131762	-117.2589400	Estuarine	0.56	Section 10 Tidal
3-West Basin	33.0077306	-117.2777414	Estuarine	5.10	Section 10 Tidal
3-West Basin	33.0125534	-117.2788279	Estuarine	0.63	Section 10 Tidal
3-West Basin	33.0119100	-117.2786598	Estuarine	0.25	Section 10 Tidal
3-West Basin	33.0121204	-117.2783409	Estuarine	0.81	Section 10 Tidal
3-West Basin	33.0107688	-117.2785472	Estuarine	0.04	Section 10 Tidal
3-West Basin	33.0111865	-117.2783214	Estuarine	0.35	Section 10 Tidal
3-West Basin	33.0090837	-117.2774342	Estuarine	0.13	Section 10 Tidal
3-West Basin	33.0052484	-117.2766673	Estuarine	4.06	Section 10 Tidal
3-West Basin	33.0029805	-117.2767314	Estuarine	1.66	Section 10 Tidal
3-West Basin	33.0025173	-117.2760551	Estuarine	1.63	Section 10 Tidal
3-West Basin	33.0106961	-117.2779692	Estuarine	0.02	Section 10 Tidal
3-West Basin	33.0115321	-117.2781214	Estuarine	0.21	Section 10 Tidal
2-East Basin	33.0109221	-117.2418455	Palustrine, Scrub-Shrub	1.15	Non-Section 10 wetland
2-East Basin	33.0095513	-117.2550845	Riverine	0.10	Non-Section 10 non-wetland
2-East Basin	33.0074890	-117.2586684	Riverine	0.01	Non-Section 10 non-wetland
2-East Basin	33.0090609	-117.2456870	Riverine	0.16	Non-Section 10 non-wetland
2-East Basin	33.0080667	-117.2596838	Riverine	0.04	Non-Section 10 non-wetland
2-East Basin	33.0086907	-117.2533833	Riverine	0.26	Non-Section 10 non-wetland
2-East Basin	33.0101039	-117.2454234	Riverine	0.01	Non-Section 10 non-wetland
1-Central Basin	33.0131993	-117.2771993	Estuarine	0.06	Section 10 Tidal
1-Central Basin	33.0034815	-117.2752174	Estuarine	0.19	Section 10 Tidal

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
1-Central Basin	33.0046886	-117.2756434	Estuarine	0.15	Section 10 Tidal
1-Central Basin	33.0064060	-117.2733159	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0104665	-117.2704370	Estuarine	0.08	Section 10 Tidal
1-Central Basin	33.0080321	-117.2727128	Estuarine	0.26	Section 10 Tidal
1-Central Basin	33.0097295	-117.2720260	Estuarine	22.81	Section 10 Tidal
1-Central Basin	33.0084734	-117.2763101	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0089800	-117.2763156	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0087276	-117.2659498	Estuarine	0.16	Section 10 Tidal
1-Central Basin	33.0159653	-117.2815672	Estuarine	1.51	Section 10 Tidal
1-Central Basin	33.0103193	-117.2618965	Estuarine	0.15	Section 10 Tidal
2-East Basin	33.0104895	-117.2637887	Estuarine	0.37	Section 10 Tidal
2-East Basin	33.0107358	-117.2620988	Estuarine	0.04	Section 10 Tidal
2-East Basin	33.0110407	-117.2613022	Estuarine	0.02	Section 10 Tidal
2-East Basin	33.0101587	-117.2571795	Estuarine	7.74	Section 10 Tidal
2-East Basin	33.0122835	-117.2546367	Estuarine	0.36	Section 10 Tidal
2-East Basin	33.0106516	-117.2552389	Estuarine	0.23	Section 10 Tidal
2-East Basin	33.0108314	-117.2548517	Estuarine	0.02	Section 10 Tidal
2-East Basin	33.0111344	-117.2543370	Estuarine	0.09	Section 10 Tidal
2-East Basin	33.0107481	-117.2540475	Estuarine	0.04	Section 10 Tidal
2-East Basin	33.0105826	-117.2538196	Estuarine	0.03	Section 10 Tidal
2-East Basin	33.0105547	-117.2534307	Estuarine	0.07	Section 10 Tidal
2-East Basin	33.0108168	-117.2529536	Estuarine	0.03	Section 10 Tidal
2-East Basin	33.0110164	-117.2522172	Estuarine	0.05	Section 10 Tidal
2-East Basin	33.0118975	-117.2503385	Estuarine	0.08	Section 10 Tidal
2-East Basin	33.0093939	-117.2608652	Estuarine	0.04	Section 10 Tidal
2-East Basin	33.0094133	-117.2606948	Estuarine	0.01	Section 10 Tidal
2-East Basin	33.0088589	-117.2611567	Estuarine	0.05	Section 10 Tidal
2-East Basin	33.0090306	-117.2616251	Estuarine	0.18	Section 10 Tidal
2-East Basin	33.0137452	-117.2583335	Estuarine	1.00	Section 10 Tidal
3-West Basin	33.0140393	-117.2794887	Estuarine	4.26	Section 10 Tidal
1-Central Basin	33.0069091	-117.2751827	Estuarine	1.53	Section 10 Tidal
2-East Basin	33.0116642	-117.2604104	Estuarine	2.50	Section 10 Tidal
2-East Basin	33.0124124	-117.2581298	Estuarine	15.77	Section 10 Tidal
2-East Basin	33.0116715	-117.2554827	Estuarine	0.61	Section 10 Tidal
2-East Basin	33.0103453	-117.2515363	Estuarine	0.87	Section 10 Tidal
2-East Basin	33.0170768	-117.2484636	Estuarine	1.60	Section 10 Tidal
2-East Basin	33.0128005	-117.2502165	Estuarine	5.76	Section 10 Tidal
2-East Basin	33.0106164	-117.2494050	Estuarine	6.04	Section 10 Tidal
2-East Basin	33.0114144	-117.2473230	Estuarine	0.35	Section 10 Tidal
2-East Basin	33.0120847	-117.2474985	Estuarine	0.14	Section 10 Tidal
2-East Basin	33.0121723	-117.2445979	Estuarine	0.86	Section 10 Tidal
2-East Basin	33.0139976	-117.2566674	Estuarine	0.51	Section 10 Tidal
2-East Basin	33.0132567	-117.2594915	Estuarine	0.38	Section 10 Tidal

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
2-East Basin	33.0136643	-117.2584043	Estuarine	0.03	Section 10 Tidal
2-East Basin	33.0187237	-117.2532017	Palustrine, Scrub-Shrub	6.73	Non-Section 10 wetland
2-East Basin	33.0181972	-117.2544770	Palustrine, Scrub-Shrub	2.21	Non-Section 10 wetland
1-Central Basin	33.0043449	-117.2724703	Palustrine, Scrub-Shrub	0.57	Non-Section 10 wetland
1-Central Basin	33.0123238	-117.2734169	Palustrine, Scrub-Shrub	2.93	Non-Section 10 wetland
1-Central Basin	33.0127803	-117.2723871	Palustrine, Scrub-Shrub	4.75	Non-Section 10 wetland
1-Central Basin	33.0123598	-117.2711010	Palustrine, Scrub-Shrub	1.68	Non-Section 10 wetland
1-Central Basin	33.0043673	-117.2698884	Palustrine, Scrub-Shrub	1.34	Non-Section 10 wetland
1-Central Basin	33.0091912	-117.2668389	Palustrine, Scrub-Shrub	2.00	Non-Section 10 wetland
1-Central Basin	33.0070539	-117.2623635	Palustrine, Scrub-Shrub	1.11	Non-Section 10 wetland
2-East Basin	33.0112598	-117.2622529	Palustrine, Scrub-Shrub	0.42	Non-Section 10 wetland
2-East Basin	33.0133229	-117.2561113	Palustrine, Scrub-Shrub	0.33	Non-Section 10 wetland
2-East Basin	33.0138725	-117.2562058	Palustrine, Scrub-Shrub	0.15	Non-Section 10 wetland
2-East Basin	33.0164719	-117.2538288	Palustrine, Scrub-Shrub	7.60	Non-Section 10 wetland
2-East Basin	33.0177095	-117.2541604	Palustrine, Scrub-Shrub	3.48	Non-Section 10 wetland
2-East Basin	33.0206205	-117.2445799	Palustrine, Scrub-Shrub	0.41	Non-Section 10 wetland
2-East Basin	33.0210081	-117.2452181	Palustrine, Scrub-Shrub	9.63	Non-Section 10 wetland
2-East Basin	33.0214401	-117.2476493	Palustrine, Scrub-Shrub	0.15	Non-Section 10 wetland
2-East Basin	33.0219833	-117.2475428	Palustrine, Scrub-Shrub	0.39	Non-Section 10 wetland
2-East Basin	33.0189386	-117.2484725	Palustrine, Scrub-Shrub	6.44	Non-Section 10 wetland
2-East Basin	33.0161119	-117.2565912	Palustrine, Scrub-Shrub	0.49	Non-Section 10 wetland
2-East Basin	33.0163665	-117.2559633	Palustrine, Scrub-Shrub	0.08	Non-Section 10 wetland
2-East Basin	33.0083911	-117.2597644	Palustrine, Scrub-Shrub	1.83	Non-Section 10 wetland
2-East Basin	33.0090864	-117.2557926	Palustrine, Scrub-Shrub	2.88	Non-Section 10 wetland
2-East Basin	33.0086731	-117.2533585	Palustrine, Scrub-Shrub	1.63	Non-Section 10 wetland
2-East Basin	33.0106449	-117.2462759	Palustrine, Scrub-Shrub	8.41	Non-Section 10 wetland
2-East Basin	33.0097457	-117.2420334	Palustrine, Scrub-Shrub	1.98	Non-Section 10 wetland
2-East Basin	33.0101736	-117.2454467	Palustrine, Scrub-Shrub	0.11	Non-Section 10 wetland
2-East Basin	33.0075321	-117.2454197	Palustrine, Scrub-Shrub	0.19	Non-Section 10 wetland
2-East Basin	33.0105722	-117.2453802	Palustrine, Scrub-Shrub	0.004	Non-Section 10 wetland
2-East Basin	33.0077272	-117.2455086	Palustrine, Scrub-Shrub	0.002	Non-Section 10 wetland
1-Central Basin	33.0136240	-117.2771691	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0134328	-117.2769307	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0122560	-117.2764728	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0033910	-117.2746000	Estuarine	0.48	Section 10 Tidal
1-Central Basin	33.0105490	-117.2707672	Estuarine	0.21	Section 10 Tidal
1-Central Basin	33.0110849	-117.2742567	Estuarine	0.12	Section 10 Tidal
1-Central Basin	33.0100862	-117.2767276	Estuarine	0.15	Section 10 Tidal
1-Central Basin	33.0099173	-117.2763191	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0094928	-117.2758957	Estuarine	0.08	Section 10 Tidal
1-Central Basin	33.0055701	-117.2706965	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0065258	-117.2707380	Estuarine	2.12	Section 10 Tidal
1-Central Basin	33.0082807	-117.2760027	Estuarine	0.02	Section 10 Tidal

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
1-Central Basin	33.0089874	-117.2764534	Estuarine	0.04	Section 10 Tidal
1-Central Basin	33.0080345	-117.2761860	Estuarine	0.12	Section 10 Tidal
1-Central Basin	33.0095353	-117.2765219	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0084355	-117.2738037	Estuarine	35.20	Section 10 Tidal
1-Central Basin	33.0135317	-117.2758752	Estuarine	0.86	Section 10 Tidal
1-Central Basin	33.0135038	-117.2754124	Estuarine	0.29	Section 10 Tidal
1-Central Basin	33.0139340	-117.2776373	Estuarine	0.13	Section 10 Tidal
1-Central Basin	33.0133162	-117.2779880	Estuarine	0.09	Section 10 Tidal
1-Central Basin	33.0118638	-117.2765930	Estuarine	1.95	Section 10 Tidal
1-Central Basin	33.0123777	-117.2757255	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0053443	-117.2700337	Estuarine	0.27	Section 10 Tidal
1-Central Basin	33.0084081	-117.2644212	Estuarine	0.17	Section 10 Tidal
1-Central Basin	33.0083529	-117.2650039	Estuarine	0.64	Section 10 Tidal
1-Central Basin	33.0061882	-117.2656065	Estuarine	0.25	Section 10 Tidal
1-Central Basin	33.0080393	-117.2670348	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0077263	-117.2663215	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0069877	-117.2667199	Estuarine	5.40	Section 10 Tidal
1-Central Basin	33.0071291	-117.2646624	Estuarine	5.61	Section 10 Tidal
1-Central Basin	33.0079980	-117.2693620	Estuarine	0.37	Section 10 Tidal
1-Central Basin	33.0085987	-117.2692892	Estuarine	0.04	Section 10 Tidal
1-Central Basin	33.0088314	-117.2689794	Estuarine	0.06	Section 10 Tidal
1-Central Basin	33.0091299	-117.2686085	Estuarine	0.07	Section 10 Tidal
1-Central Basin	33.0078235	-117.2703254	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0089404	-117.2705162	Estuarine	0.09	Section 10 Tidal
1-Central Basin	33.0084991	-117.2704450	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0088267	-117.2709493	Estuarine	0.06	Section 10 Tidal
1-Central Basin	33.0090897	-117.2709630	Estuarine	0.02	Section 10 Tidal
1-Central Basin	33.0098548	-117.2702853	Estuarine	0.26	Section 10 Tidal
1-Central Basin	33.0115120	-117.2723026	Estuarine	0.22	Section 10 Tidal
1-Central Basin	33.0114986	-117.2741450	Estuarine	0.11	Section 10 Tidal
1-Central Basin	33.0112773	-117.2748532	Estuarine	0.07	Section 10 Tidal
1-Central Basin	33.0116644	-117.2752653	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0123560	-117.2748102	Estuarine	0.11	Section 10 Tidal
1-Central Basin	33.0098469	-117.2770665	Estuarine	2.44	Section 10 Tidal
1-Central Basin	33.0126487	-117.2779607	Estuarine	0.05	Section 10 Tidal
1-Central Basin	33.0124843	-117.2751294	Estuarine	0.04	Section 10 Tidal
1-Central Basin	33.0133630	-117.2772383	Estuarine	0.03	Section 10 Tidal
1-Central Basin	33.0051275	-117.2743422	Estuarine	0.00001	Section 10 Tidal
1-Central Basin	33.0048148	-117.2724743	Estuarine	0.00003	Section 10 Tidal
1-Central Basin	33.0093197	-117.2741931	Estuarine	0.00001	Section 10 Tidal
1-Central Basin	33.0093058	-117.2741762	Estuarine	0.0004	Section 10 Tidal
1-Central Basin	33.0100121	-117.2740994	Estuarine	0.04	Section 10 Tidal
1-Central Basin	33.0096894	-117.2762145	Estuarine	0.04	Section 10 Tidal

Site Number	Latitude	Longitude	Cowardin Class	Estimated Amount of Aquatic Resource in Review Area (in acres)	Class of Aquatic Resource
1-Central Basin	33.0082117	-117.2750137	Estuarine	0.0001	Section 10 Tidal
1-Central Basin	33.0104302	-117.2762648	Estuarine	0.001	Section 10 Tidal
1-Central Basin	33.0103547	-117.2761611	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0105362	-117.2760572	Estuarine	0.0001	Section 10 Tidal
1-Central Basin	33.0104867	-117.2760053	Estuarine	0.01	Section 10 Tidal
1-Central Basin	33.0104099	-117.2759162	Estuarine	0.01	Section 10 Tidal
3-West Basin	33.0022701	-117.2761852	Estuarine	0.72	Section 10 Tidal
3-West Basin	33.0041680	-117.2767780	Estuarine	6.40	Section 10 Tidal
3-West Basin	33.0064708	-117.2768792	Estuarine	1.96	Section 10 Tidal
3-West Basin	33.0094206	-117.2778202	Estuarine	7.81	Section 10 Tidal
3-West Basin	33.0076646	-117.2774989	Estuarine	0.20	Section 10 Tidal
3-West Basin	33.0117505	-117.2787051	Estuarine	0.01	Section 10 Tidal
3-West Basin	33.0114396	-117.2783633	Estuarine	0.01	Section 10 Tidal
3-West Basin	33.0098489	-117.2780618	Estuarine	0.0002	Section 10 Tidal
Total				**618.03 acres[a]**	

[a]When warranted acreages have been rounded to the nearest one-hundredth acre, and when warranted, rounded to the nearest ten-thousandth acre [which may account for minor rounding error]).

ATTACHMENT C

ELECTRONIC WATERS UPLOAD SHEET

Attachment C
SELRP Waters Upload Sheet

Waters_ Name	Cowadin_ Code	HGM_ Code	Area (acres)	Waters Types	Latitude (dd nad83)	Longitude dd nad83)	Local_ Waterway
1-Central Basin	E2EM1	ESTUARINEF	0.64	TNWW	33.0123599	-117.2739385	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.34	TNWW	33.0124938	-117.27184	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	2.13	TNWW	33.0117636	-117.2712433	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.8	TNWW	33.0090287	-117.267672	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	1.32	TNWW	33.0097163	-117.2657021	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.08	TNWW	33.0099395	-117.2646846	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.15	TNWW	33.0093819	-117.2669796	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.31	TNWW	33.0095106	-117.268977	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.16	TNWW	33.0107069	-117.2701991	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	38.38	TNWW	33.0184129	-117.249577	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	12.61	TNWW	33.0098785	-117.2615577	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.35	TNWW	33.011901	-117.2610145	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	1.5	TNWW	33.0111734	-117.2621562	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	62.97	TNWW	33.0121491	-117.2539106	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.14	TNWW	33.0102977	-117.2505243	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.58	TNWW	33.0100943	-117.2501393	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	2.29	TNWW	33.0100821	-117.2487734	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.05	TNWW	33.0108653	-117.2494906	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.04	TNWW	33.0110602	-117.2495658	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.05	TNWW	33.0112323	-117.2494497	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.09	TNWW	33.0115158	-117.2492135	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.79	TNWW	33.0207761	-117.2447431	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.22	TNWW	33.0224224	-117.2453798	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.21	TNWW	33.0221021	-117.2472485	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.41	TNWW	33.0222156	-117.2449226	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	1.18	TNWW	33.0148175	-117.2562831	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	3.06	TNWW	33.0114766	-117.2450679	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.15	TNWW	33.0104698	-117.2553789	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.04	TNWW	33.0089904	-117.2616117	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.33	TNWW	33.00987	-117.2430104	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.67	TNWW	33.0121443	-117.2757527	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	3.93	TNWW	33.0111517	-117.2583701	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	2.51	TNWW	33.0099995	-117.2574024	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.74	TNWW	33.0114033	-117.2555795	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	9.86	TNWW	33.0099518	-117.2594322	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	1.45	TNWW	33.0125451	-117.2548937	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	4.36	TNWW	33.0149651	-117.2554591	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.07	TNWW	33.012458	-117.2592537	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.26	TNWW	33.0103519	-117.2518982	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.11	TNWW	33.0100981	-117.251342	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.31	TNWW	33.0095269	-117.2498112	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	33.25	TNWW	33.0119273	-117.245977	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	1.44	TNWW	33.0197648	-117.2455186	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.41	TNWW	33.0203596	-117.2446159	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.8	TNWW	33.0201377	-117.2460879	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.29	TNWW	33.0227665	-117.244736	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	2.05	TNWW	33.0217806	-117.245491	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	7.16	TNWW	33.0223362	-117.2464131	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	15.02	TNWW	33.0181402	-117.2467425	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	18.69	TNWW	33.015679	-117.2566804	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	9.08	TNWW	33.0190084	-117.251363	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.08	TNWW	33.0107488	-117.2490648	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.03	TNWW	33.0106885	-117.2493071	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.14	TNWW	33.0141295	-117.2580739	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.17	TNWW	33.0120531	-117.2493475	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.02	TNWW	33.0140835	-117.2510424	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	6.24	TNWW	33.0132486	-117.25665	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.001	TNWW	33.0087081	-117.2605018	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.79	TNWW	33.0101355	-117.2782534	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	4.74	TNWW	33.0079176	-117.2726926	Pacific Ocean

Waters_ Name	Cowadin_ Code	HGM_ Code	Area (acres)	Waters Types	Latitude (dd nad83)	Longitude dd nad83)	Local_ Waterway
1-Central Basin	E2EM1	ESTUARINEF	1.11	TNWW	33.0136107	-117.2780702	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.05	TNWW	33.0135096	-117.2757599	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	1.18	TNWW	33.0122826	-117.2774866	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.07	TNWW	33.0112874	-117.2773996	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.21	TNWW	33.0107885	-117.2772173	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	3.14	TNWW	33.007589	-117.2763507	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.1	TNWW	33.0125666	-117.2780676	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.06	TNWW	33.0127265	-117.2779982	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.09	TNWW	33.008007	-117.2766813	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	1.45	TNWW	33.0070307	-117.2757693	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.16	TNWW	33.0124862	-117.2745273	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	1.18	TNWW	33.0121034	-117.2740826	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	4.88	TNWW	33.010742	-117.2709029	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	19.02	TNWW	33.0095225	-117.2714402	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	4.73	TNWW	33.0112794	-117.2749868	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.12	TNWW	33.0096418	-117.2744266	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.09	TNWW	33.0098716	-117.2746936	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.61	TNWW	33.010496	-117.2746157	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.05	TNWW	33.011451	-117.2765664	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.02	TNWW	33.011272	-117.2766438	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.13	TNWW	33.0110272	-117.2767406	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.24	TNWW	33.0104407	-117.2761059	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.05	TNWW	33.0106079	-117.2759345	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	2.31	TNWW	33.0081454	-117.2758381	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.49	TNWW	33.0094114	-117.2762303	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.01	TNWW	33.0094791	-117.2756763	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.03	TNWW	33.009213	-117.2755343	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.04	TNWW	33.0090726	-117.2755602	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.15	TNWW	33.0086642	-117.2761613	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.05	TNWW	33.0081821	-117.2756106	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.01	TNWW	33.0080905	-117.2757373	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.01	TNWW	33.0080413	-117.2756484	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	7.37	TNWW	33.0047464	-117.2748449	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.14	TNWW	33.0048486	-117.274252	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.01	TNWW	33.0043353	-117.2745077	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.01	TNWW	33.0042417	-117.274607	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	6.98	TNWW	33.0059013	-117.2729576	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	1.39	TNWW	33.0067591	-117.2741526	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.34	TNWW	33.006078	-117.2740723	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.25	TNWW	33.0050601	-117.2735447	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	23.21	TNWW	33.0072348	-117.2684099	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.14	TNWW	33.006425	-117.2689186	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.09	TNWW	33.0081097	-117.2684754	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	3.38	TNWW	33.0070906	-117.2717688	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.18	TNWW	33.0090663	-117.2719693	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.09	TNWW	33.0076574	-117.2723198	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	8.61	TNWW	33.0048669	-117.2712504	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.81	TNWW	33.0060439	-117.2704269	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.07	TNWW	33.0061094	-117.2712771	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.05	TNWW	33.0054296	-117.2706247	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	3.35	TNWW	33.0090023	-117.2651966	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.2	TNWW	33.0075927	-117.2660031	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.04	TNWW	33.0074401	-117.2660823	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.3	TNWW	33.0074168	-117.2635856	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.36	TNWW	33.0100282	-117.2765202	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.1	TNWW	33.0130085	-117.2750613	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.003	TNWW	33.0112506	-117.2769769	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.31	TNWW	33.0093458	-117.267941	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.46	TNWW	33.0081894	-117.2657138	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.23	TNWW	33.0079296	-117.2658625	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	9.42	TNWW	33.0074842	-117.2643839	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	9.38	TNWW	33.0130269	-117.2764287	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.000004	TNWW	33.0093143	-117.2721418	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.001	TNWW	33.0090034	-117.2717868	Pacific Ocean

Waters_ Name	Cowadin_ Code	HGM_ Code	Area (acres)	Waters Types	Latitude (dd nad83)	Longitude dd nad83)	Local_ Waterway
1-Central Basin	E2EM1	ESTUARINEF	0.01	TNWW	33.0060442	-117.2738302	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.02	TNWW	33.007884	-117.2693473	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.01	TNWW	33.0086596	-117.2699295	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.00005	TNWW	33.0084518	-117.2713132	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.0001	TNWW	33.0084346	-117.271321	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.0002	TNWW	33.0102625	-117.2740815	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.004	TNWW	33.0104776	-117.2741248	Pacific Ocean
1-Central Basin	E2EM1	ESTUARINEF	0.04	TNWW	33.0092729	-117.2757789	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	2.83	TNWW	33.0122746	-117.2606554	Pacific Ocean
2-East Basin	E2EM1	ESTUARINEF	0.56	TNWW	33.0131762	-117.25894	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	5.1	TNWW	33.0077306	-117.2777414	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.63	TNWW	33.0125534	-117.2788279	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.25	TNWW	33.01191	-117.2786598	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.81	TNWW	33.0121204	-117.2783409	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.04	TNWW	33.0107688	-117.2785472	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.35	TNWW	33.0111865	-117.2783214	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.13	TNWW	33.0090837	-117.2774342	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	4.06	TNWW	33.0052484	-117.2766673	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	1.66	TNWW	33.0029805	-117.2767314	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	1.63	TNWW	33.0025173	-117.2760551	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.02	TNWW	33.0106961	-117.2779692	Pacific Ocean
3-West Basin	E2EM1	ESTUARINEF	0.21	TNWW	33.0115321	-117.2781214	Pacific Ocean
2-East Basin	PSS1	RIVERINE	1.15	TNWW	33.0109221	-117.2418455	Pacific Ocean
2-East Basin	R6	RIVERINE	0.1	R6	33.0095513	-117.2550845	Pacific Ocean
2-East Basin	R6	RIVERINE	0.01	R6	33.007489	-117.2586684	Pacific Ocean
2-East Basin	R6	RIVERINE	0.16	R6	33.0090609	-117.245687	Pacific Ocean
2-East Basin	R6	RIVERINE	0.04	R6	33.0080667	-117.2596838	Pacific Ocean
2-East Basin	R6	RIVERINE	0.26	R6	33.0086907	-117.2533833	Pacific Ocean
2-East Basin	R6	RIVERINE	0.01	R6	33.0101039	-117.2454234	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.06	RPW	33.0131993	-117.2771993	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.19	RPW	33.0034815	-117.2752174	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.15	RPW	33.0046886	-117.2756434	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.05	RPW	33.006406	-117.2733159	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.08	RPW	33.0104665	-117.270437	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.26	RPW	33.0080321	-117.2727128	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	22.81	RPW	33.0097295	-117.272026	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.02	RPW	33.0084734	-117.2763101	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.01	RPW	33.00898	-117.2763156	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.16	RPW	33.0087276	-117.2659498	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	1.51	RPW	33.0159653	-117.2815672	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.15	RPW	33.0103193	-117.2618965	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.37	RPW	33.0104895	-117.2637887	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.04	RPW	33.0107358	-117.2620988	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.02	RPW	33.0110407	-117.2613022	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	7.74	RPW	33.0101587	-117.2571795	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.36	RPW	33.0122835	-117.2546367	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.23	RPW	33.0106516	-117.2552389	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.02	RPW	33.0108314	-117.2548517	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.09	RPW	33.0111344	-117.254337	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.04	RPW	33.0107481	-117.2540475	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.03	RPW	33.0105826	-117.2538196	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.07	RPW	33.0105547	-117.2534307	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.03	RPW	33.0108168	-117.2529536	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.05	RPW	33.0110164	-117.2522172	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.08	RPW	33.0118975	-117.2503385	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.04	RPW	33.0093939	-117.2608652	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.01	RPW	33.0094133	-117.2606948	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.05	RPW	33.0088589	-117.2611567	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.18	RPW	33.0090306	-117.2616251	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	1	RPW	33.0137452	-117.2583335	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	4.26	RPW	33.0140393	-117.2794887	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	1.53	RPW	33.0069091	-117.2751827	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	2.5	RPW	33.0116642	-117.2604104	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	15.77	RPW	33.0124124	-117.2581298	Pacific Ocean

Waters_ Name	Cowadin_ Code	HGM_ Code	Area (acres)	Waters Types	Latitude (dd nad83)	Longitude dd nad83)	Local_ Waterway
2-East Basin	E2AB	ESTUARINEF	0.61	RPW	33.0116715	-117.2554827	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.87	RPW	33.0103453	-117.2515363	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	1.6	RPW	33.0170768	-117.2484636	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	5.76	RPW	33.0128005	-117.2502165	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	6.04	RPW	33.0106164	-117.249405	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.35	RPW	33.0114144	-117.247323	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.14	RPW	33.0120847	-117.2474985	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.86	RPW	33.0121723	-117.2445979	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.51	RPW	33.0139976	-117.2566674	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.38	RPW	33.0132567	-117.2594915	Pacific Ocean
2-East Basin	E2AB	ESTUARINEF	0.03	RPW	33.0136643	-117.2584043	Pacific Ocean
2-East Basin	PSS1	RIVERINE	6.73	TNWW	33.0187237	-117.2532017	Pacific Ocean
2-East Basin	PSS1	RIVERINE	2.21	TNWW	33.0181972	-117.254477	Pacific Ocean
1-Central Basin	PSS1	RIVERINE	0.57	TNWW	33.0043449	-117.2724703	Pacific Ocean
1-Central Basin	PSS1	RIVERINE	2.93	TNWW	33.0123238	-117.2734169	Pacific Ocean
1-Central Basin	PSS1	RIVERINE	4.75	TNWW	33.0127803	-117.2723871	Pacific Ocean
1-Central Basin	PSS1	RIVERINE	1.68	TNWW	33.0123598	-117.271101	Pacific Ocean
1-Central Basin	PSS1	RIVERINE	1.34	TNWW	33.0043673	-117.2698884	Pacific Ocean
1-Central Basin	PSS1	RIVERINE	2	TNWW	33.0091912	-117.2668389	Pacific Ocean
1-Central Basin	PSS1	RIVERINE	1.11	TNWW	33.0070539	-117.2623635	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.42	TNWW	33.0112598	-117.2622529	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.33	TNWW	33.0133229	-117.2561113	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.15	TNWW	33.0138725	-117.2562058	Pacific Ocean
2-East Basin	PSS1	RIVERINE	7.6	TNWW	33.0164719	-117.2538288	Pacific Ocean
2-East Basin	PSS1	RIVERINE	3.48	TNWW	33.0177095	-117.2541604	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.41	TNWW	33.0206205	-117.2445799	Pacific Ocean
2-East Basin	PSS1	RIVERINE	9.63	TNWW	33.0210081	-117.2452181	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.15	TNWW	33.0214401	-117.2476493	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.39	TNWW	33.0219833	-117.2475428	Pacific Ocean
2-East Basin	PSS1	RIVERINE	6.44	TNWW	33.0189386	-117.2484725	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.49	TNWW	33.0161119	-117.2565912	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.08	TNWW	33.0163665	-117.2559633	Pacific Ocean
2-East Basin	PSS1	RIVERINE	1.83	TNWW	33.0083911	-117.2597644	Pacific Ocean
2-East Basin	PSS1	RIVERINE	2.88	TNWW	33.0090864	-117.2557926	Pacific Ocean
2-East Basin	PSS1	RIVERINE	1.63	TNWW	33.0086731	-117.2533585	Pacific Ocean
2-East Basin	PSS1	RIVERINE	8.41	TNWW	33.0106449	-117.2462759	Pacific Ocean
2-East Basin	PSS1	RIVERINE	1.98	TNWW	33.0097457	-117.2420334	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.11	TNWW	33.0101736	-117.2454467	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.19	TNWW	33.0075321	-117.2454197	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.004	TNWW	33.0105722	-117.2453802	Pacific Ocean
2-East Basin	PSS1	RIVERINE	0.002	TNWW	33.0077272	-117.2455086	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.03	RPW	33.013624	-117.2771691	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.02	RPW	33.0134328	-117.2769307	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.02	RPW	33.012256	-117.2764728	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.48	RPW	33.003391	-117.2746	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.21	RPW	33.010549	-117.2707672	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.12	RPW	33.0110849	-117.2742567	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.15	RPW	33.0100862	-117.2767276	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.05	RPW	33.0099173	-117.2763191	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.08	RPW	33.0094928	-117.2758957	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.05	RPW	33.0055701	-117.2706965	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	2.12	RPW	33.0065258	-117.270738	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.02	RPW	33.0082807	-117.2760027	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.04	RPW	33.0089874	-117.2764534	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.12	RPW	33.0080345	-117.276186	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.03	RPW	33.0095353	-117.2765219	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	35.2	RPW	33.0084355	-117.2738037	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.86	RPW	33.0135317	-117.2758752	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.29	RPW	33.0135038	-117.2754124	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.13	RPW	33.013934	-117.2776373	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.09	RPW	33.0133162	-117.277988	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	1.95	RPW	33.0118638	-117.276593	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.03	RPW	33.0123777	-117.2757255	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.27	RPW	33.0053443	-117.2700337	Pacific Ocean

Waters_ Name	Cowadin_ Code	HGM_ Code	Area (acres)	Waters Types	Latitude (dd nad83)	Longitude dd nad83)	Local_ Waterway
1-Central Basin	E2AB	ESTUARINEF	0.17	RPW	33.0084081	-117.2644212	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.64	RPW	33.0083529	-117.2650039	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.25	RPW	33.0061882	-117.2656065	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.03	RPW	33.0080393	-117.2670348	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.02	RPW	33.0077263	-117.2663215	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	5.4	RPW	33.0069877	-117.2667199	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	5.61	RPW	33.0071291	-117.2646624	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.37	RPW	33.007998	-117.269362	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.04	RPW	33.0085987	-117.2692892	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.06	RPW	33.0088314	-117.2689794	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.07	RPW	33.0091299	-117.2686085	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.03	RPW	33.0078235	-117.2703254	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.09	RPW	33.0089404	-117.2705162	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.02	RPW	33.0084991	-117.270445	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.06	RPW	33.0088267	-117.2709493	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.02	RPW	33.0090897	-117.270963	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.26	RPW	33.0098548	-117.2702853	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.22	RPW	33.011512	-117.2723026	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.11	RPW	33.0114986	-117.274145	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.07	RPW	33.0112773	-117.2748532	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.03	RPW	33.0116644	-117.2752653	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.11	RPW	33.012356	-117.2748102	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	2.44	RPW	33.0098469	-117.2770665	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.05	RPW	33.0126487	-117.2779607	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.04	RPW	33.0124843	-117.2751294	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.03	RPW	33.013363	-117.2772383	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.00001	RPW	33.0051275	-117.2743422	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.00003	RPW	33.0048148	-117.2724743	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.00001	RPW	33.0093197	-117.2741931	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.0004	RPW	33.0093058	-117.2741762	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.04	RPW	33.0100121	-117.2740994	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.04	RPW	33.0096894	-117.2762145	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.0001	RPW	33.0082117	-117.2750137	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.001	RPW	33.0104302	-117.2762648	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.01	RPW	33.0103547	-117.2761611	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.0001	RPW	33.0105362	-117.2760572	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.01	RPW	33.0104867	-117.2760053	Pacific Ocean
1-Central Basin	E2AB	ESTUARINEF	0.01	RPW	33.0104099	-117.2759162	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	0.72	RPW	33.0022701	-117.2761852	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	6.4	RPW	33.004168	-117.276778	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	1.96	RPW	33.0064708	-117.2768792	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	7.81	RPW	33.0094206	-117.2778202	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	0.2	RPW	33.0076646	-117.2774989	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	0.01	RPW	33.0117505	-117.2787051	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	0.01	RPW	33.0114396	-117.2783633	Pacific Ocean
3-West Basin	E2AB	ESTUARINEF	0.0002	RPW	33.0098489	-117.2780618	Pacific Ocean

Area in one unit type
Linear in one unit type

Acres, hectares, sq feet, sq meters
Foot, meter, yard, mile, kilmeter

Either Area or Linear for each row
Latitude / Longitude in Decimal Degrees, NAD83
If you have no data for a cell, leave it empty (blank)
Match the CODE values from Cowardin/HGM/Waters Type
Values that don't match (eg PEM1B/PEM1F) won't be imported. If its not on the Cowardin list, ORM does not support that type.
Example Longitude: -75.22342
Example Latitude: 45.12123

APPENDIX H

MARINE BIOLOGICAL RESOURCES TECHNICAL REPORT

Marine Biological Resources Technical Report for the San Elijo Lagoon Restoration Project

Prepared for:

Moffatt & Nichol
3780 Kilroy Airport Way, Suite 600
Long Beach, CA 90806
Attn: Chris Webb

Prepared by:

Merkel & Associates, Inc.
5434 Ruffin Road
San Diego, CA 92123
Phone: (858) 560-5465
Fax: (858) 560-7779

January 2014
Updated June 2014

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Project Location and Lagoon Restoration Overview 1
1.2 Stakeholder Involvement and Project Alternatives 3
1.3 Materials Disposal 4
2.0 TECHNICAL APPROACH 11
3.0 EXISTING CONDITIONS 12
3.1 Regional Overview 12
3.2 Marine Shoreline and Offshore Habitats 13
3.3 Plankton 27
3.4 Marine-Associated Birds 27
3.5 Marine Mammals 29
3.6 Threatened and Endangered Species 29
3.7 Coastal Lagoons 34
3.8 Receiver Sites 37
3.9 Offshore Stockpile Sites 43
4.0 IMPACT ANALYSIS 46
4.1 Alternative 1A 46
4.2 Alternatives 1B and 2A 51
5.0 SUMMARY 63
6.0 REFERENCES 66

LIST OF FIGURES

Figure 1-1. Project study area (from USACE 2012). 2
Figure 1-2. No Project - Existing Conditions. 6
Figure 1-3. Alternative 1A. 7
Figure 1-4. Alternative 1B. 8
Figure 1-5. Alternative 2A. 9
Figure 3-1. Nearshore resources and proposed receiver sites within the study area. 20
Figure 3-2. Nearshore resources in vicinity of Torrey Pine receiver site (from SANDAG 2011). 21
Figure 3-3. Nearshore resources and proposed nearshore disposal footprint off San Elijo Lagoon under Alternatives 1A and 2B. 22
Figure 3-4. Sensitive habitats north of San Elijo Lagoon. 31
Figure 3-5. Sensitive habitats in the vicinity of San Elijo Lagoon. 32
Figure 3-6. Sensitive habitats in the vicinity of stockpile sites (SO-6 and SO-5). 45

LIST OF TABLES

Table 1-1. Materials disposal and beneficial reuse scenarios 10
Table 3-1. Common organisms observed from soft bottom habitat in San Diego County 16
Table 3-2. Estimated hard-bottom and vegetated habitat acreage in the vicinity of the study area (from SANDAG 2011) 17
Table 3-3. Kelp canopy coverage (acres) of San Diego County kelp beds from 2000 to 2011 18
Table 3-4. Common organisms observed from hard bottom reefs in San Diego County 24
Table 3-5. Birds observed along the shoreline within the Encinitas and Solana Beach study area, September 2002 (from USACE 2012) 28
Table 3-6. Status of Least Tern Breeding in the vicinity of the study area, 2006-2009, 2011-2012 30
Table 3-7. Results of summer window surveys for snowy plovers in the vicinity of the study area, 2006-2012 33
Table 3-8. Estimated closest distances to hard bottom and vegetated habitats from the seaward boundary of proposed receiver sites (from SANDAG 2011) 37
Table 3-9. Estimated closest distances to least tern and snowy plover nest sites (from SANDAG 2011) 38
Table 3-10. Summary of habitats at the proposed receiver sites and in the nearshore vicinity (from SANDAG 2011) 38
Table 4-1. Estimated sediment plume length at potential disposal/reuse sites (after SANDAG 2011) 48
Table 4-2. Estimated direct impact acreage from sand placement 53
Table 4-3. Screening approach to assess potential impacts for various Alternative 2 scenarios. 59
Table 4-4. Summary of maximum seasonal impacts (acres) for all reaches under various scenarios under Alternative 2. 61

APPENDICES

Appendix A Potential Impacts to Nearshore Marine Resources Associated with the San Elijo Lagoon Restoration Project Technical Memo (Moffat & Nichol 2013)

1.0 INTRODUCTION

1.1 PROJECT LOCATION AND LAGOON RESTORATION OVERVIEW

San Elijo Lagoon is located in the city of Encinitas, San Diego County, California, and is the dividing feature separating the city of Encinitas to the north and Solana Beach to the south (Figure 1-1). The lagoon is an "open system," and outside influences such as tides, stream flow, sediment input, weather, and development have a profound effect on the various communities and processes within the lagoon, particularly on its aquatic processes. The historical ecological condition of the lagoon has varied dramatically in response to long-term wet and dry precipitation cycles. In addition, the ecological capacity of the lagoon to maintain itself is being challenged due to encroachment by development adjacent to the lagoon and upstream within its 77-square-mile watershed.

Urbanization within the Escondido and La Orilla Creek watersheds has accelerated freshwater storm flows and increased chemical contaminant and nutrient loads within the lagoon associated with year-round urban run-off. The ecological effects of increased runoff have been compounded by obstructions to flow caused by an inefficient channel system and the three major transportation corridors that traverse the lagoon: Highway 101, the NCTD railroad, and I-5. These constraints on the hydraulic connection between the ocean and lagoon affect drainage of tides and stormflows. As a result, water surface elevations in the lagoon are not the same as those of the ocean, and habitat distribution and quality are affected. Such factors have led to a consistent degradation of water quality in the lagoon and adjacent to the lagoon mouth, leading to beach closures and elevated bacteria levels.

Efforts have been made since the mid-1990s to actively manage the lagoon. The San Elijo Lagoon Enhancement Plan, prepared by the County in 1996, identified several opportunities for enhancement and restoration, mostly by reducing sedimentation and improving tidal exchange and circulation. A long-term financial endowment was established in the late 1990s to actively fund maintenance of tidal flushing. These management efforts improved habitat and water quality relative to the stagnant conditions that previously developed when the inlet was closed for prolonged periods. Other efforts involving removal of invasive species also resulted in some improvement to habitat quality. Although important, these efforts do not remedy the underlying hydraulic inefficiencies or loss of functional mudflat within the lagoon.

Actively maintaining a lagoon mouth that is more regularly open to the ocean has resulted in a change in circulation patterns, including a decrease in relative water elevations and inundation frequencies. Much of the functional mudflat habitat within San Elijo Lagoon is a result of historically perched water levels due to a constricted hydraulic connection to the ocean. When the mouth of the lagoon is opened through active maintenance activities, the lagoon is able to drain more efficiently and areas that were historically under water the majority of the time are now being exposed more frequently. These areas are then able to become vegetated, but cease to function as mudflats. Habitat within San Elijo Lagoon is rapidly transitioning from mudflat to low- and mid-saltmarsh due to change in inundation frequency. The rapid and ongoing expansion of two key species, cordgrass and pickleweed, has been documented through focused vegetation mapping since 2001. If no action is taken to restore the lagoon, the loss of ecologically valuable mudflat habitat would continue, to the detriment of migratory and resident shorebird populations.

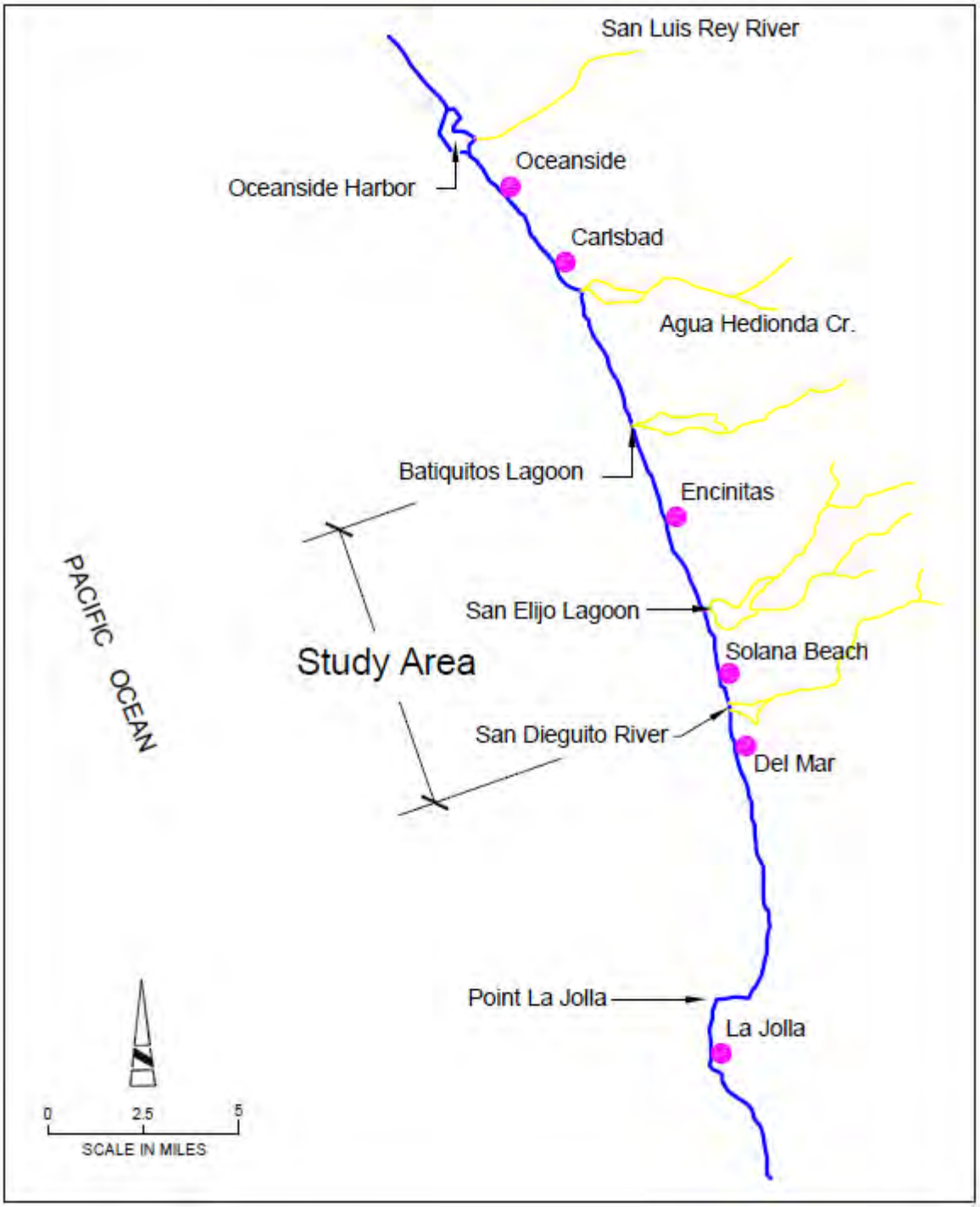


Figure 1-1. Project study area (from USACE 2012).

Restoration of tidal influence to the lagoon would restore habitat values and aquatic functions that have been degraded over the years. For the estuarine environment to be highly productive, it must be continually replenished with water and nutrients from the ocean. Regular tidal action also provides high water quality. The moderating influence of ocean waters prevents extreme fluctuations in salinity and temperature, and maintains high levels of dissolved oxygen. Generally, the amount of time that portions of wetlands are submerged or exposed due to tidal fluctuation is referred to the "inundation frequency," and results in a zonation typical of tidal wetlands. The extent of each wetland zone within a lagoon is dependent on tidal influence and the relative water elevation.

1.2 STAKEHOLDER INVOLVEMENT AND PROJECT ALTERNATIVES

The San Elijo Lagoon Restoration Program (SELRP) brings together various public and private entities that share responsibility to protect, manage, and regulate the lagoon. Since late 2007, a group of stakeholders has met regularly to guide the development of the lagoon restoration with a holistic approach. The SELRP has been largely driven by this group of stakeholders, and the project alternatives being analyzed are a result of collaborative and iterative processes to incorporate stakeholder input into project design.

Four project alternatives have been identified by the Stakeholder Committee as likely to be included in the environmental document, and include:

- No Project – Existing Conditions;
- Alternative 1A – Minimum Changes;
- Alternative 1B – Maximum Habitat Diversity, Existing Inlet Location and;
- Alternative 2A – Maximum Habitat Diversity, New Inlet Location

The conceptual design of these alternatives is required to perform engineering analyses and numerical modeling of their performance. Brief descriptions of the alternatives are provided below, and more detailed descriptions of the alternatives are provided in the Final Alternatives Assessment Report (Nordby et al. 2012).

1.2.1 No Project - Existing Conditions

No Project assumes no changes are made to the project site and existing conditions remain into perpetuity. The lagoon presently experiences mouth constriction and manual re-opening annually, and sometimes more frequently. Tidal flushing is restricted, and water quality conditions are impaired for nutrients and sediment. Habitat is distributed at elevations and locations that are related to relic closed mouth conditions, and are progressively transitioning to distributions more reflective of managed mouth conditions. For example, mudflat habitat is located too high for a full tidal lagoon because it formed when the mouth was closed and lagoon water levels were higher from impoundment. Now that the mouth is managed to be open, the mudflat is converting to vegetated marsh because hydrologic conditions are favorable for salt marsh plant growth. Figure 1-2 illustrates the existing condition.

1.2.2 Alternative 1A – Minimum Changes

Alternative 1A provides minimal physical changes to the site, with the exception of enlarging the main feeder channel throughout the site and redirecting its course just west of I-5. The main tidal

channel is also extended farther into the East Basin and existing constricted channel connections are cleared and enlarged. Existing habitat areas will essentially remain intact. The tidal prism of Alternative 1A will be slightly increased compared to existing conditions. A relatively small area of transitional habitat above tidal elevations will be placed in the northwest portion of the Central Basin. Figure 1-3 illustrates the proposed conceptual plan under Alternative 1A.

1.2.3 Alternative 1B – Maximum Habitat Diversity, Existing Inlet location

Alternative 1B would create a greater diversity of habitats relative to Alternative 1A through more extensive modifications to existing conditions within the lagoon. The existing tidal inlet would remain, and the main tidal channel would extend throughout the lagoon. A matrix of mudflats and secondary channels created off the main channel would be created in the central basin. Existing emergent low marsh would be retained to the extent possible to create a diverse habitat distribution in the basin. The main channel would be redirected just west of I-5 and extended farther into the east basin. The channel in the east basin would be substantially enlarged in cross-sectional area to promote more tidal exchange east of I-5. The tidal prism of Alternative 1B would be substantially increased compared to Alternative 1A. Nontidal habitat areas would still exist in the east basin, although, with the passage of time, passive habitat transition may occur due to proposed changes in inundation frequencies as tidal influence is extended. Several areas of transitional habitat above tidal elevations would be created in the central basin. Figure 1-4 illustrates the proposed conceptual plan under Alternative 1B.

1.2.4 Alternative 2A – Maximum Habitat Diversity, New Inlet location

Alternative 2A also provides changes to the existing site to create a greater diversity of habitats than presently exists. Seawater would enter the lagoon via a new tidal inlet located south of the existing inlet and a new subtidal basin would be created just landward of the new inlet in the West and Central Basins. The main tidal channel would extend throughout the lagoon and be redirected just west of I-5, and extend into the East Basin. The channel in the East Basin is identical to that for Alternative 1B. The tidal prism of Alternative 2A will increase compared to Alternative 1B. Non-tidal habitat areas remain in the East Basin. Transitional habitat areas above tidal elevations will also be included in the Central Basin as with Alternative 1B. Figure 1-5 illustrates the proposed conceptual plan under Alternative 2A.

1.3 MATERIALS DISPOSAL

The proposed project and its alternatives would generate a substantial amount of material for disposal, possibly through export to upland or offshore disposal or stockpiling sites, reuse for construction of infrastructure, or reuse for beach/nearshore nourishment. The materials disposal/reuse scenarios described in Table 1-1 are partially independent of the lagoon restoration alternative carried forward for analysis. The lagoon generally contains an approximately 3-foot layer of fine sediment overlying a much coarser sand base. The fine sand is not appropriate for beneficial reuse, but the course sand is. The fine material is also difficult to dispose of offsite in a cost effective manner. Therefore, a typical approach in lagoon restoration projects is to over excavate proposed sedimentation basins with coarser sand that is potentially suitable for reuse, then backfill those areas with the finer sediments that are not of suitable quality to be beneficially reused. The pit would then be capped with a layer of coarse sandy material. The remainder of the sandy material could be used for reuse within the lagoon, as beach nourishment along Cardiff beach or other regional beaches, as

littoral cell nourishment in the nearshore zone off the lagoon or stored for future use in existing offshore borrow sites.

Depending upon the alternative, anywhere from 160,000 cy to 1.4 mcy of excavated or dredged soil materials would need to be disposed of and/or reused as part of restoration implementation. This is in addition to the vegetative material discussed as part of clear and grub activities. Specific locations have been carried forward for potential materials disposal/reuse. A matrix describing each of the materials disposal/reuse scenarios and maximum volumes capacity per site is provided in Table 1-1. Alternatives 2A and 1B have a variety of options; however, however, under Alternative 1A, the material quality is such that it can only be disposed in the offshore disposal site currently designed and permitted for such usage (LA 5).

The materials disposal/reuse scenarios described in Table 1-1 reflect a maximum volume that could be placed at a variety of locations and the total available capacity exceeds the amount of material needed to be disposed/reused for the construction of Alternatives 2A or 1B. Thus only a portion of these disposal/reuse sites, or a portion of the volume (and footprints) identified in Table 1-1, may actually be used for materials placement under those alternatives. Inlet maintenance would also result in materials to be disposed of, but material removed from the inlet is anticipated to be sandy and disposed of on the adjacent beach/nearshore, and is not taken into account in this table, which focuses on the one-time disposal needs associated with initial project implementation. To provide full public disclosure and maximum flexibility during construction, all disposal/reuse scenarios are evaluated in this EIR/EIS.

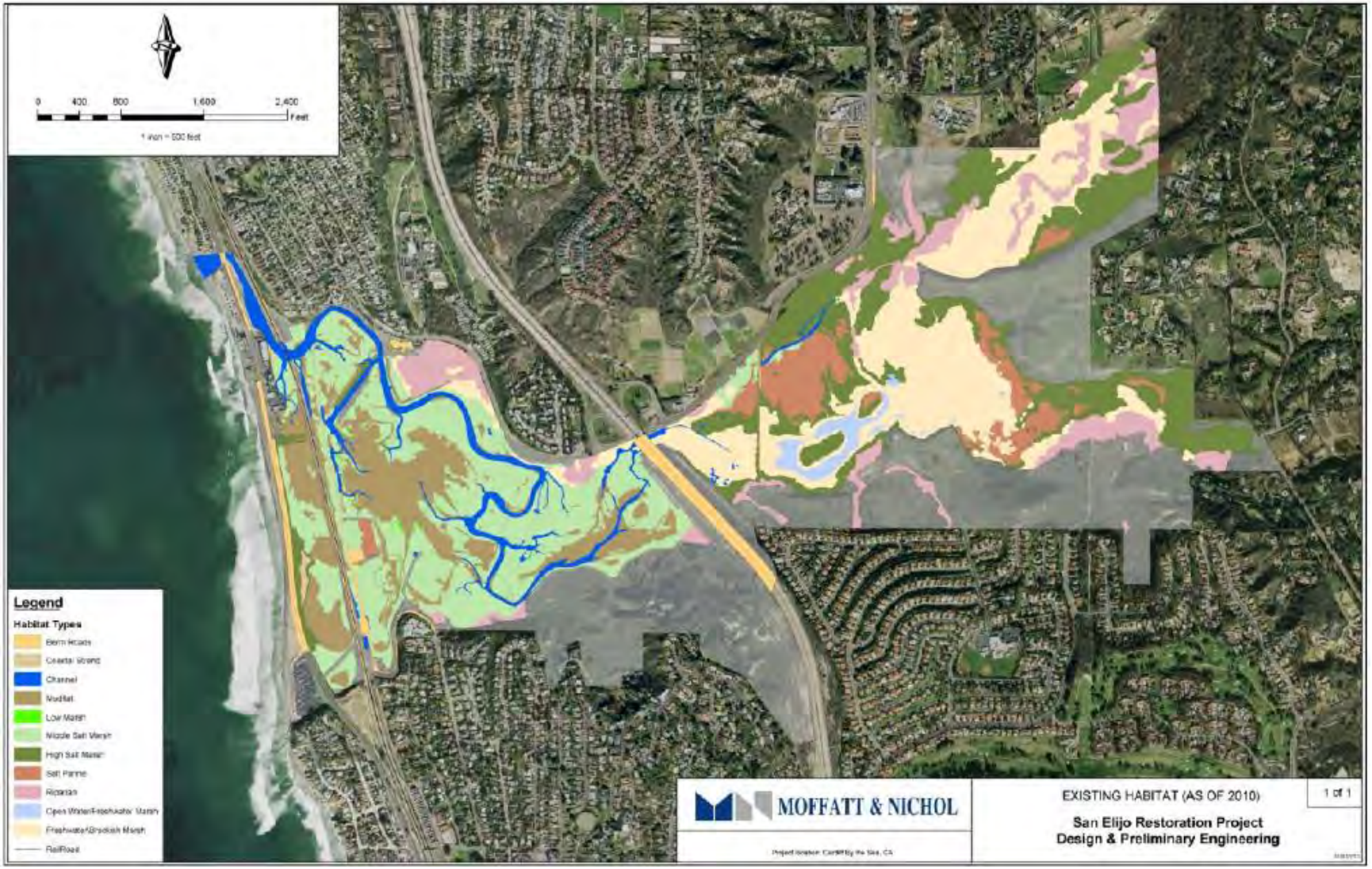


Figure 1-2. No Project - Existing Conditions.

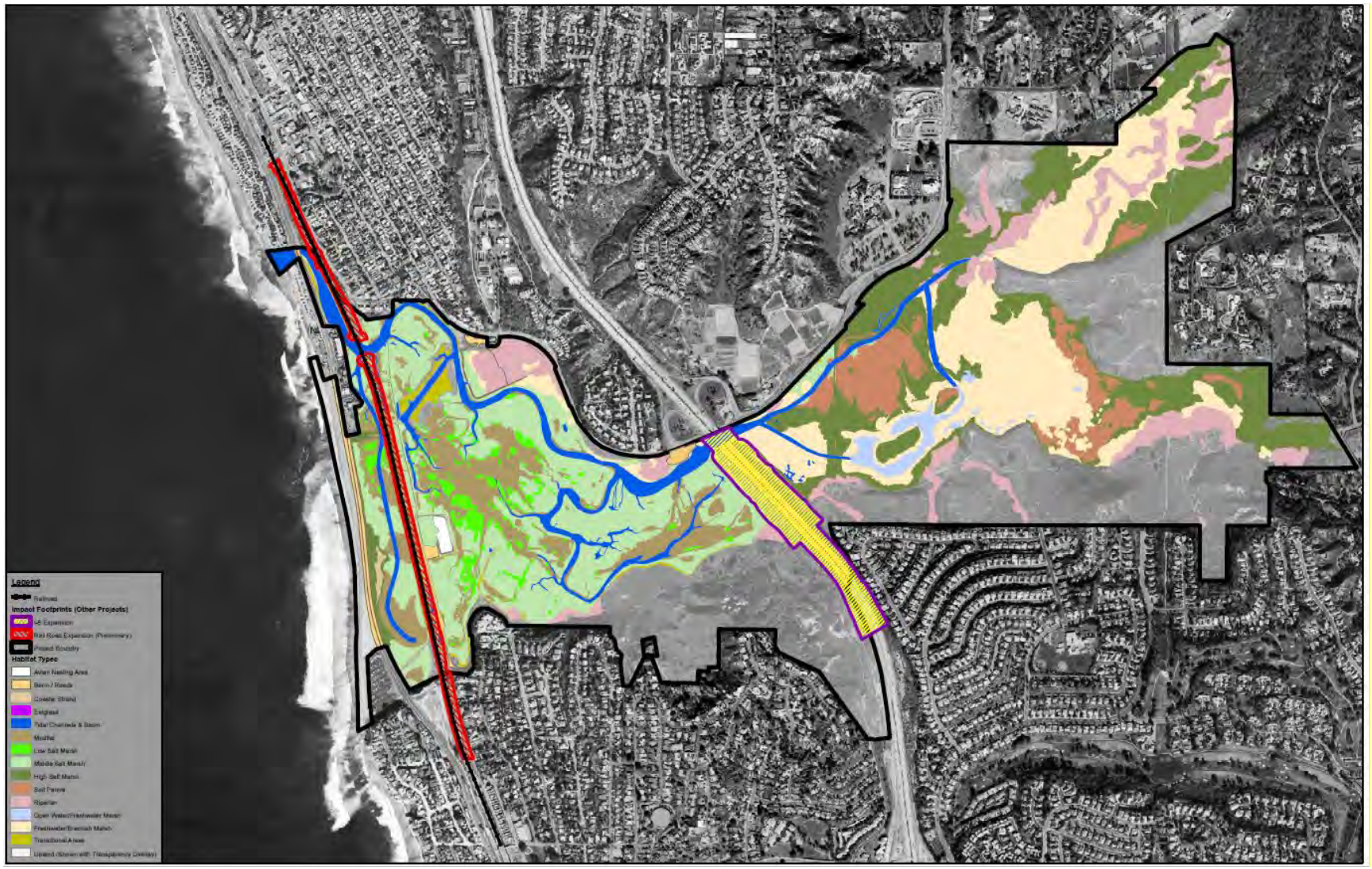


Figure 1-3. Alternative 1A.

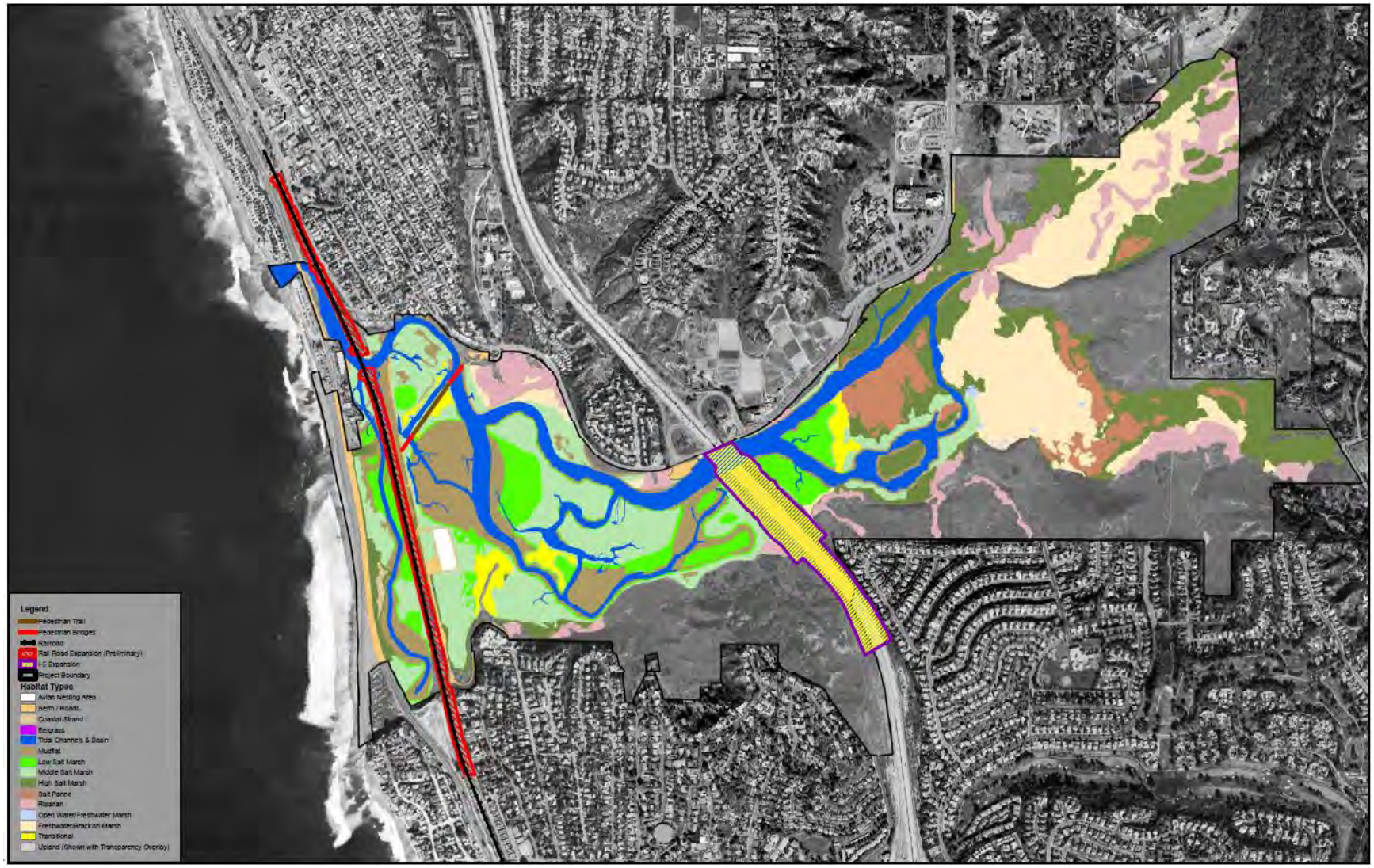


Figure 1-4. Alternative 1B.

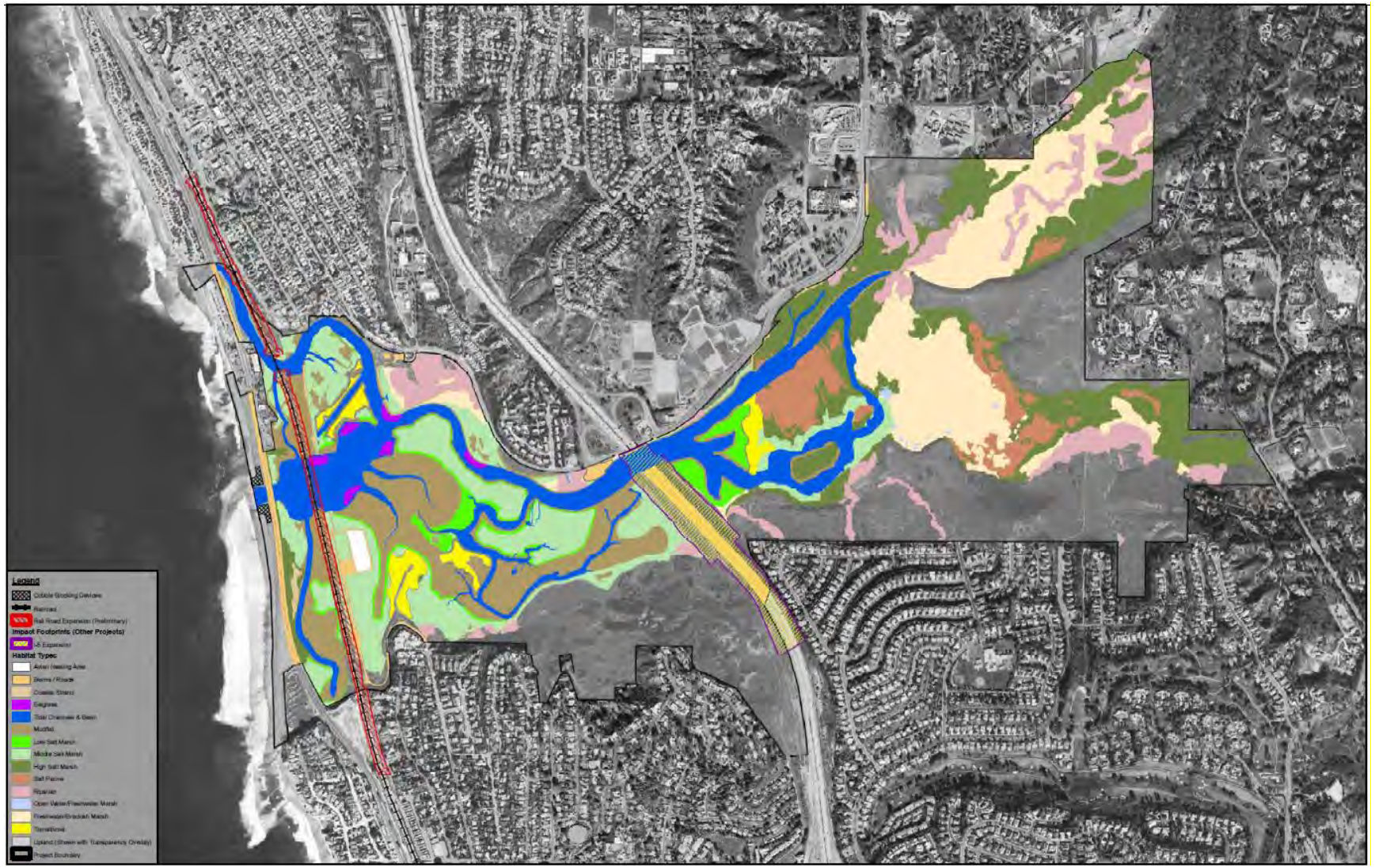


Figure 1-5. Alternative 2A.

Table 1-1. Materials disposal and beneficial reuse scenarios.

<table>
<tr><td colspan="5">Approximate Net Quantity of Material:
Alt 1A = 150,000 cy of relatively poor quality material that is only suitable for offshore disposal at LA-5
Alt 1B = 1.2 mcy (overdredging would occur to generate appropriate material for beneficial reuse)
Alt 2A = 1.4 mcy (overdredging would occur to generate appropriate material for beneficial reuse)</td></tr>
<tr><th>Type of Materials Placement</th><th>Potential Disposal Locations</th><th colspan="2">Alternative 2A & 1B</th><th>Alternative 1A</th></tr>
<tr><td>Offshore Disposal</td><td>LA 5</td><td colspan="2">0</td><td>160,000</td></tr>
<tr><td>Offshore Stockpiling (outside littoral cell)</td><td>SO-5/SO-6</td><td colspan="2">1,000,000</td><td>0</td></tr>
<tr><td rowspan="2">Nearshore (inside littoral cell)</td><td rowspan="2">Cardiff</td><td>Alt 2A</td><td>Alt 1B</td><td rowspan="2">0</td></tr>
<tr><td>500,000</td><td>300,000</td></tr>
<tr><td rowspan="5">Onshore (beach nourishment)</td><td>Cardiff</td><td colspan="2">300,000</td><td>0</td></tr>
<tr><td>Leucadia</td><td colspan="2">117,000</td><td>0</td></tr>
<tr><td>Moonlight Beach</td><td colspan="2">105,000</td><td>0</td></tr>
<tr><td>Solana Beach</td><td colspan="2">146,000</td><td>0</td></tr>
<tr><td>Torrey Pines</td><td colspan="2">245,000</td><td>0</td></tr>
<tr><td rowspan="2">Onshore Fill</td><td rowspan="2">NCTD Railroad, I-5, HWY 101</td><td>Alt 2A</td><td>Alt 1B</td><td rowspan="2">0</td></tr>
<tr><td>90,000</td><td>70,000</td></tr>
<tr><td colspan="5">Notes:
1. Nearshore materials placement quantity at Cardiff is greater in Alternative 2A because a new inlet would require construction of a pre-filled ebb bar.
2. Materials placement quantities exceed amount to be disposed of, or reused, to allow flexibility at individual placement sites.
3. Onshore beach sand placement sites are consistent with RBSP II (SCH# 2010051063) with the exception of Cardiff, which will extend slightly further north and south along the coastline.
4. SCOUP sites are not included as an option for materials placement in this EIR/EIS because the existing SCOUP programs assume construction methods and other conditions that are not consistent with the SELRP (e.g., daytime construction only).</td></tr>
</table>

2.0 TECHNICAL APPROACH

This report specifically addresses shoreline and nearshore marine biological resources to a depth of approximately 100 ft between Batiquitos Lagoon and Torrey Pines. Biological resources within the lagoon are discussed and analyzed in a separate document.

Given the similarity with recently completed projects such as RBSP II, existing conditions for RBSP II, updated where appropriate to reflect post-RBSP II conditions were utilized. Note that existing conditions information pre-RBSP II would still be considered valid given the general species assemblages that occur within the littoral system, and that despite the dynamic nature of the environment, the existing conditions information provided in this report is anticipated to be representative of the beach and nearshore habitat by the time sand is placed as part of the SELRP.

The impact assessment includes evaluation of the potential for direct and indirect impacts to water and biological resources. The direct impact assessment considers impacts associated with dredging, disposal, anchoring, pipeline placement, placement of sand at receiver and stockpile sites, and movement of vessels, vehicles, and equipment to these locations. The indirect impact assessment considers potential effects of turbidity during dredging and sand placement, potential for bacterial or contaminant release to waters during dredging, potential for accidental discharges, noise and other construction-related activity disturbance, and potential effects of sedimentation of nearshore hard-bottom areas associated with natural transport of sands from receiver sites due to wave action and currents. Sediment transport modeling similar to that conducted for RBSP II was conducted using similar assumptions such as the receiver sites would be receiving the same or similar amounts of sand as they did for RBSP II (see Appendix A). Although the receiver sites benefited from sand placed during RBSP II, they are expected to gradually narrow as the material is distributed throughout the system and may resemble pre-RBSP II conditions by the time the SELP is implemented.

The significance of impacts was evaluated according to estimated duration of impact (short-term or long-term), sensitivity of the affected habitat or resources, and potential relative change from existing conditions after project implementation.

3.0 EXISTING CONDITIONS

3.1 REGIONAL OVERVIEW

The project area is in the eastern Pacific Ocean coastal region referred to as the Southern California Bight (SCB), whose boundaries span from Point Conception, California, to Punta Eugenia, Baja California, and is directly affected by two ocean currents. The colder, more northerly California Current and the southern, warm-water California Countercurrent (also known as the Davidson Current) influence the ocean within the SCB. These two currents "mix" in the Santa Barbara Channel. The water within the southern portion of the SCB is generally warmer and more saline than that within the northern area (Hickey 1993). These differing conditions, as well as upwelling of cooler, nutrient-rich waters, influence the unusually diverse marine biota within the SCB (Murray and Littler 1981). The distribution of species within the SCB is also affected by the complex hydrography and geology of the region. The mainland shelf, which extends from shore to approximately -650 feet MLLW, comprises 6% of the 40,000-square-mile SCB.

Marine ecosystems and habitats off San Diego County include sandy beach, rocky reefs, sandy or soft ocean bottoms, kelp forests, seagrass beds, and submarine canyons. The coastal study area for this project includes the shoreline and nearshore habitats to a depth of approximately 100 feet. Deeper water habitats would not be influenced by the project and are not discussed further.

Sandy beach habitat supports shorebirds, including the threatened western snowy plover (*Charadrius alexandrines nivosus*), and provides spawning habitat for the state-managed California grunion (*Leuresthes tenuis*). Pismo clam (*Tivela stultorum*) beds occur in sandy substrate in localized areas extending from intertidal to nearshore depths. Soft-bottom habitats also support diverse invertebrate populations that are preyed upon by demersal fish living on or near the bottom. Nearshore reefs and kelp beds harbor a variety of macroalgae, invertebrate, and fish populations. Marine mammals forage on invertebrates and fish throughout the water column over hard or soft bottoms and within kelp beds. Marine biological resources also support important commercial fisheries, are the target of recreational fishing and diving, and are the subject of educational research.

Marine habitats provide important linkages to adjacent coastal wetland and terrestrial ecosystems. Several ecologically valuable coastal wetlands occur within the region. Migratory marine fish such as California halibut (*Paralichthys californicus*) use coastal wetlands as nursery habitats. Endangered California least tern (*Sterna antillarum browni*), which seasonally breed and nest at several coastal lagoons in the region, forage on small fish in the ocean as well as within coastal wetlands. Threatened snowy plover, which may be found at certain beaches, nest at several of the coastal wetlands within the region.

In many areas there is an abrupt transition to coastal bluffs or urbanized landscapes where beaches are backed by revetment or seawalls, or are adjacent to roads and other development. Several species of terrestrial insects, birds, and mammals live or forage within marine habitats. Vegetated dune or coastal strand habitats are limited and have only localized occurrence in the region. Several of the coastal wetlands within the study area are ecological preserves or reserves, and three are State Marine Conservation Areas (SMCA) protected under the Marine Life Protection Act (MLPA). Similarly, two receiver sites, one nearshore disposal site, and one stockpile site are located within an MLPA boundary.

3.2 MARINE SHORELINE AND OFFSHORE HABITATS

The characterization of marine resources in the study area was based on review of relevant reports (SANDAG 2011, USACE 2012) and Geographic Information System (GIS) data. Examples include:

- 2009 and 2010 reef dives and intertidal surfgrass mapping within the study area were used to provide representative information on reef heights and habitat quality indicators (SANDAG 2011).
- 2006 reef dives and intertidal surfgrass mapping within the study area were used to provide representative information on reef heights and habitat quality indicators (SAIC 2007).
- 2005 Post-construction monitoring report for RBSP I (AMEC 2005)
- 2004 LiDAR data were used to provide bathymetric information for portions of the study 50 area.
- 2003-2005 Coastal habitat study (SAIC 2006).
- 2002 California State Conservancy and SANDAG San Diego Nearshore Program GIS layers of bathymetry, hard substrate, and aquatic vegetation mapping served as the basis for reef and sensitive resource acreage calculations (SANDAG 2002).
    - Substrate GIS data enabled calculation of reef dimensions and acreage.
    - Vegetation GIS data enabled calculation of acreage by dominant and/or sensitive resource categories (i.e., surfgrass, giant kelp, understory algae).
    - 2000 reef dives and intertidal surfgrass mapping produced for the 2001 RBSP were used to provide additional representative information on reef heights and habitat quality indicators.

Information from above-described sources was considered for the description of baseline conditions for marine resources. The acreage of habitat types within the SELRP model area is provided in Appendix A. The marine resource section is organized into the following subsections: habitats and associated organisms; an overview of essential fish habitat (EFH), plankton, birds, and mammals within the study area; and a summary of marine resources in the project area.

3.2.1 Habitats

Soft Bottom Communities

Soft-bottom habitats include sandy beaches and nearshore sandy or silty-sand bottoms. These are the predominant habitats in the region with sandy beaches covering approximately 80 percent of the shoreline in the SCB (CCC 1987). Sandy beaches are unstable habitats due to daily sand movement associated with waves and currents and larger-scale seasonal cycles of sand movement. Biological resource development on sandy beaches varies seasonally, generally being greater in spring to summer and less in fall to winter associated with seasonal sand erosion and accretion as well as reproduction and recruitment. Most sandy beach invertebrates are mobile and move up and down the beach with changes in tide level and some, such as the sand crab (*Emerita analoga*) migrate to the shallow nearshore during high tides and seasonal periods of beach erosion.

Sandy Beach

Common invertebrates observed on San Diego County sandy beaches include sand crabs, beach hoppers (*Megalorchestia* spp, *Orchestodea* spp.), amphipods (e.g., *Eohaustorius* spp.), isopods (e.g., *Excirolana* spp.), and other crustaceans; bean clam (e.g., *Donax gouldii*), and olive snail (*Olivella*

biplicata); bloodworm (*Euzonus mucronata*) and other polychaetes worms (e.g., *Hemipodus borealis*, *Lumbrineris* spp., *Nephtys californiensis*, *Scololepis* spp.); and nemertean ribbon worms (Straughan 1981; SAIC 2006, 2007). In her 12-year study of sandy beaches from Estero Bay to Coronado, Straughan (1981) found that higher abundance and species diversity were found on long, gently sloping, relatively fine grain beaches with no periodically-exposed beach rock. Beaches that were short and steep, coarse-grained, and/or experienced more erosion had fewer organisms, and, in some cases, only sand crabs. Beaches within the study area prior to the 2001 RBSP were characterized as narrow and with various cobble coverage and, in some cases, had seasonally exposed bedrock. These beaches varied between having limited marine resources (sand crabs, worms), or slightly more developed marine resources (sand crabs, worms, and bean clams or amphipod crustaceans) (MEC 2000b). Terrestrial insects are an important ecological component of the sandy beach and help break down washed ashore kelp and seagrass wrack. The wrack may harbor a variety of insects and invertebrates that are important prey items for gulls and shorebirds.

Pismo clams live in sandy areas from the intertidal zone to depths of 80 feet and may concentrate in beds in certain areas. Pismo clam beds may be persistent features due to the short benthic phase of their planktonic larvae (60 to 62 hours). Pismo clams are capable of rapid movement in the sediment due to their well-developed foot; they normally bury to a depth of 2 to 6 inches. The minimum legal size of 4.5 inches is reached at about the age of 5 years.

The California grunion (*Leuresthes tenuis*), which is a nearshore species that feeds on plankton, comes to shore to spawn on sandy beaches. Their spawning generally extends from March through August although start and end dates may vary earlier or later between years. The peak of spawning occurs April through June (Martin 2006). Grunion spawn at night on any or all of the 3 to 4 nights after the highest tide associated with each full or new moon and then only for a 1- to 3-hour period. Eggs incubate in the sand for approximately 10 days until the next tide series is high enough to reach them, when exposure to wave action triggers their hatching and the baby grunion are washed back into the sea. Grunion are managed as a game species by the California Department of Fish and Wildlife (CDFW), formerly the California Department of Fish and Game (CDFG), who post annually updated predicted spawning runs on the internet (www.dfg.ca.gov/marine/grunionschedule.asp). Beaches in the study area either had unsuitable substrate or were potentially only seasonally suitable for grunion spawning prior to the 2001 RBSP. After beach nourishment, potential grunion spawning habitat was created, and in some areas habitat suitability extended through 2005 (SAIC 2006).

Sandy Subtidal

Soft-bottom nearshore communities have similar characteristics for a given water depth, sediment type, and wave energy. Thus, sandy nearshore communities off Oceanside would generally be similar to those found at similar depths and bottom type off Imperial Beach. The subtidal zone is classified into general regions, including the shallow subtidal to a depth of about -30 feet MLLW (generally corresponds to littoral zone), an inner shelf zone from about -30 to -80 feet MLLW, middle shelf from about -80 to -300 feet MLLW, and outer shelf zone from about -300 to -600 feet MLLW. Thus, the study region encompasses the shallow, inner shelf, and a small portion of the middle shelf zones.

Bottom-dwelling invertebrate species in the shallow subtidal zone are well adapted to shifting sediments and turbidity, with suspension feeders being the dominant group. Many of the sandy beach invertebrates move between the intertidal and shallow subtidal depths and additional species live on and within sediments within increasing distance offshore as wave energy diminishes toward the seaward limit of the littoral zone. Common species in the shallow subtidal of the study region

include burrowing anemones, sea pansy, sea pen, purple globe crab (*Randallia ornata*), clams, snails, sand dollar, sea star, and tube worms (Table 3-1; U.S. Navy 1995, SAIC 2009).

Fish commonly found over sandy subtidal habitat off San Diego County beaches include barred surfperch (*Amphistichus argenteus*), California corbina (*Menticirrhus undulatus*), California halibut (*Paralichthys californicus*), queenfish (*Seriphus politus*), round stingray (*Urobatis halleri*), shovelnose guitarfish (*Rhinobatos productus*), spotfin croaker (*Roncador stearnsii*), and white croaker (USACE 1994, U.S. Navy 1997a). Speckled sanddabs (*Citharicthys stigmaeus*) and bat rays (*Myliobatis californica*) also have been observed in these waters at depths of -3 to -10 m (-10 to -30 ft) MLLW. Schooling water column fish, abundant just beyond the surfzone, include northern anchovy, jack mackerel (*Trachurus symmetricus*), Pacific bonito (*Sarda chiliensis*), and topsmelt (*Atherinops affinis*) (Cross and Allen 1993, Garfield 1994).

The proposed nearshore disposal and stockpile sites fall within the inner shelf zone, which is influenced by oceanic swell. The number of species and abundances of bottom-dwelling macroinvertebrates is lower in the inner shelf compared to the middle and outer shelf depth zones. Polychaete worms and/or small, mobile crustaceans dominate the inner to middle shelf infaunal community. The most abundant species collected in sediment core samples at depths of -49 to -134 feet MLLW on the San Diego shelf include brittle stars, polychaete worms (e.g., *Aricidea* spp., *Diopatra* spp., *Mediomastus* spp., *Monticellina* spp., *Spiophanes* spp., *Sternaspis fossor*, and *Streblosoma crassibranchia*), and small crustaceans (*Heterophoxus oculatus*, *Photis* spp., and *Rhepoxynius* spp.) (SCCWRP 1994, 1998, 2003). Macroinvertebrate species living on or above the bottom comprising 80% or more of the abundance in trawls collected during the 2003 Regional Bight program included blackspotted shrimp (*Crangon nigromaculata*), California sand star (*Astropecten verrilli*), sea pens, and white sea urchin (*Lytechinus pictus*) (SCCWRP 2003). Fish species comprising 80% or more of the abundance in trawls on the inner shelf during the 2003 Regional Bight program included English sole (*Parophrys vetulus*), Pacific sanddab (*Citharichthys sordidus*), pink seaperch (*Zalembius rosaceus*), speckled sanddab, yellochin sculpin (*Icelinus quadriseriatus*), and white croaker (*Genyonemus lineatus*) (SCCWRP 2003). The most abundant species of the middle shelf include Dover sole (*Microstomus pacificus*), longspine combfish (*Zaniolepis latipinnis*), Pacific sanddab, speckled sanddab, and rockfish (*Sebastes* spp.). Twenty species of fish were observed by divers and collected by otter trawl at borrow sites SO-5 and SO-7 (MEC 2000). The most abundant fish included barred sand bass (*Paralabrax nebulifer*), California halibut, California lizardfish (*Synodus lucioceps*), English sole, horneyhead turbot (*Pleuronichthys verticalis*), queenfish, speckled sanddab, and white croaker

Hard-Bottom and Vegetated Habitats

Hard-bottom habitats are productive ecosystems that support a variety of plants and animals. They include rocky intertidal shores and nearshore reefs, and support vegetated habitats such as seagrass beds and kelp forests. Less than 15% of the coastline in San Diego County is estimated to be rocky. The species that associate with hard-bottoms differ greatly with depth, type of substratum (e.g., cobble, boulders, rocky outcrop, sandstone reef), and substrate relief height and complexity.

Rock or sandstone reefs provide hard substratum to which kelp and other algae can attach in the nearshore zone (<100 feet depth). In addition, many invertebrates such as sea anemones, sea fans, scallops, and sponges require hard substratum for attachment. The structural complexity of hard-bottom habitats shelter and provide foraging habitat for mobile invertebrates (e.g., lobster) and fish.

Table 3-1. Common organisms observed from soft bottom habitat in San Diego County.

Organism	Common Name	Scientific Name	Water Depth MLLW (ft)		
			-10	-20	-30
Algae			none found		
Invertebrate	Tube-dwelling Polychaete	*Diopatra ornata*		X	X
	Tube-dwelling Polychaete	*Diopatra splendissima*		X	X
	Tube-dwelling Polychaete	*Pista pacifica*		X	X
	Tube-dwelling Polychaete	*Loimia medusa*			X
	Tube-dwelling Polychaete	*Chaetopterus* spp.		X	
	Crab	*Pagurus* spp.		X	X
	Crab	*Pagurites* spp.		X	X
	Porcelain Crab	*Randallia ornata*		X	X
	Swimming Crab	*Portunus xantusii*		X	
	Elbow Crab	*Heterocrypta occidentalis*	X		
	Snail	*Olivella biplicata*	X	X	X
	Snail	*Polinices* spp.	X	X	X
	Snail	*Nassarius fossatus*		X	
	Razor Clam	*Ensis* spp.		X	
	Sea Star	*Astropecten armatus*		X	X
	Brittle Star	Ophiurodea		X	X
	Sand Dollar	*Dendraster excentricus*		X	
	Burrowing Anenome	*Harenactis attenuata*		X	X
	Burrowing Anenome	*Zaolutus actius*		X	X
	Sea Pansy	*Renilla kollikeri*		X	X
	Sea Pen	*Stylatula elongata*		X	X
Fish	Halibut	*Paralichthys californicus*	X	X	X
	Speckled Sanddab	*Citharichthys stigmaeus*	X	X	X
	Bat Ray	*Myliobatus californica*	X	X	X
	Shovelnose Guitarfish	*Rhinobatos productus*	X		X

Source: U.S. Navy 1995

The proportion of hard substrate habitat at any given time relates to rock relief height and time of year, with lower relief substrate subject to exposure or burial by sand associated with seasonal on and offshore sand movement or large waves associated with substantial storm events (e.g., El Niño).

Several physical factors influence the types and diversity of marine life associated with rocky habitats. Important substrate qualities include relief height (low, high), texture (smooth, pitted, cracked), size, and composition (sandstone, mudstone, basalt, granite). Substrates that are of higher relief, greater texture, and larger size generally have the richest assemblages of marine species. In contrast, low-lying rocks or reefs subject to sand scour from seasonal burial and uncovering typically are unvegetated or colonized by opportunistic species with annual life cycles or sand tolerant species. Cobbles on beaches, which get tumbled about by waves during the rise and fall of the tides, do not support plants or attached animals. However, cobbles in subtidal waters may support understory algae and kelp beds, although they are generally subject to greater annual variability due to their greater instability under storm surge and large wave conditions.

Estimated acreages of hard-bottom and vegetated habitats in the study region are given in Table 3-2 (also see Appendix A). The acreage is based on the 2002 Nearshore Program Habitat Inventory GIS,

which provides the most comprehensive dataset of the spatial extent of hard-bottom and vegetated habitats off San Diego County. In addition, recent kelp cover acreages are provided. The acreage estimates are summarized by city and were computed by extending the jurisdictional boundaries offshore.

Table 3-2. Estimated hard-bottom and vegetated habitat acreage in the vicinity of the study area (from SANDAG 2011).

Jurisdiction	Bedrock 2002	Cobble 2002	Surfgrass 2002	Understory Kelp 2002	Kelp		
					2002	2005	2008
Carlsbad	239.2	157.0	23.4	330.8	42.0	4.8	152.7
Encinitas	751.0	0.9	81.9	469.2	225.5	10.4	355.2
Solana Beach	267.0	0	3.5	115.2	30.7	15.9	153.7
Del Mar	141.0	0	9.1	150.7	8.3	0	16.3
City of San Diego (Torrey Pines)*	102.7	4.0	10.7	84.7	0.3	0	0.3

* Estimate for City of San Diego was computed as within 1 mile of a receiver.

The data are valuable for identifying the general distribution and relative percentages of hard-bottom (rock, cobble) and different types of vegetated hard-bottom habitats (kelp, surfgrass, understory algae) within the local region (see Figures 3-1 through 3-3). However, acreage calculations should be viewed as estimates relative to current conditions. This limitation applies to both the hard-bottom and vegetated habitat. Because hard-bottom varies from cobble to high-relief reefs (greater than 3 feet in height), there is potential for variability in the amount of hard-bottom at any given time due to natural sand movement patterns in the littoral zone. This applies to low-relief rock and cobble subject to burial and uncovering by sand. The term "ephemeral reefs" has been used to describe hard-bottom areas that experience this type of disturbance.

Vegetated habitats also experience variability in cover between years due to a number of factors. Surfgrass is a sand-tolerant, perennial species that may be subject to less interannual variability. Studies suggest it may be more vulnerable to variability along its inshore distribution limit in the lower intertidal, where wave action and sand movement are greater. Kelp beds naturally die back and regrow each year, the extent of which is influenced by oceanographic and climate conditions. Key factors include water temperature, nutrient levels (tied to upwelling and current patterns), and storm-generated waves and sedimentation. Annual canopy cover of kelp beds off San Diego exhibited a general pattern of increase during colder water and decrease during warmer water oceanographic conditions. Kelp canopy was low after the 1998 El Nino, increased with the cooler La Nina conditions of 1999 to 2000, decreased again during a period of warmer than average temperatures and low nutrients, and rebounded in 2007. In addition, the San Diego Region experienced changes in kelp harvesting patterns. Observed canopies in 2008 were one of the best seen in the last 50 years (MBC 2009). Table 3-3 summarizes kelp canopy coverage in San Diego County from 2000 to 2011 relative to cold and warm water events. Kelp (particularly juvenile plants) also may be affected by predation by sea urchins. The understory algae category mapped in 2002 includes perennial species, as well as, opportunistic species that may exhibit annual variability associated with rock exposure or burial.

Biological resources associated with distinct hard-bottom habitats are summarized below, and include intertidal and nearshore reefs, surfgrass beds, and kelp beds of the study area.

Table 3-3. Kelp canopy coverage (acres) of San Diego County kelp beds from 2000 to 2011.

	Canopy Area (acres)											
Kelp Bed	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Oceanside	-	-	-	-	-	-	-	-	-	-	-	-
North Carlsbad	-	4.20	13.10	4.20	0.74	3.21	-	6.42	26.69	33.36	19.27	4.20
Agua Hedionda	-	-	<0.25	0.49	0.25	1.98	-	3.95	19.77	22.73	7.66	5.44
Encina Power Plant	0.49	7.17	23.97	43.98	16.56	0.25 -	-	20.02	75.61	53.13	43.49	20.76
Carlsbad State Beach	0.74	5.68	11.61	0.49	0.02	-	-	15.81	29.90	31.38	17.05	6.18
Leucadia	22.24	51.64	82.53	45.71	11.86	0.25	3.95	57.57	104.03	106.01	53.13	29.40
Encinitas	9.88	32.37	37.81	12.36	3.95	-	0.49	50.66	85.50	50.66	31.63	30.64
Cardiff	37.07	76.35	100.08	49.91	11.12 -	-	0.99	70.67	119.60	128.49	52.63	97.60
Solana Beach	49.42	100.57	120.58	60.54	5.44	22.98	0.07	112.92	203.36	124.79	81.05	124.54
Del Mar	1.48	3.71	8.65	7.41	-	-	-	9.14	14.08	10.87	9.39	18.29
Torrey Pines	-	-	-	-	-	-	-	-	0.25	0.10	0.74	7.66
La Jolla	308.88	631.34	831.74	851.01	254.27	215.72	28.91	679.53	1024.23	561.91	685.95	633.81
Point Loma	812.96	1624.44	938.73	1114.17	475.42	531.76	436.63	893.51	1636.54	1213.01	982.72	1040.79
Imperial Beach	4.94	19.27	51.89	20.51	47.20	98.84	98.84	368.92	468.25	212.75	0.99	37.56

Notes: "-" indicate no canopy was present during kelp overflights at given location
Values represent approximately the maximum coverage for each year. Areal estimates derived from charts based on infrared aerial photographs.
Source: MBC Applied Environmental Sciences 2012

Rocky Intertidal Zone

The intertidal zone, also known as the littoral zone, in marine aquatic environments is the area of the foreshore and seabed that is exposed to the air at low tide and submerged at high tide (i.e., the area between tide marks). Biological resource development on hard substrates in the intertidal zone varies with tide exposure, relief height and complexity, and oceanographic conditions, and on persistent, high-relief reefs exhibit a distinct zonation with tidal level (Reish 1972). The upper intertidal or splash zone is characterized by simple green algae (*Chaetomorpha* spp., *Enteromorpha* spp., *Ulva* spp.), acorn barnacles (*Cthamalus* spp.), limpets (*Collisella* spp., *Lottia* spp.), and periwinkles (*Littorina* spp.). California mussel (*Mytilus californianus*), gooseneck barnacle, aggregating sea anemones, chitons, hermit crabs, and a variety of marine snails (e.g., *Acanthina* spp., *Lithopoma undulosa*, *Kelletia kelletia*, *Ocenebra* spp., *Tegula* spp.) are commonly observed in the middle intertidal zone of rocky shores (Stewart 1982, MEC 2000). The low to minus intertidal zone of persistent reefs are characterized by a greater diversity of animals, including aggregating and green sea anemones (*Anthopleura elegantissima*), purple sea urchin (*Strongylocentrotus purpuratus*), California sea hare (*Aplysia californica*), crabs, marine snails, brittlestars (e.g., *Ophithrix* spp.), and starfish (*Asterina miniata*, *Pisaster* spp.). Wooly sculpin (*Clinocottus analis*) is one of the more commonly encountered fish in tidepools. Feather boa kelp (*Egregia menziesii*) may opportunistically recruit to exposed rock but rarely lives more than a year in the intertidal, although it is perennial in subtidal waters (Black 1974).

Hard-bottom benches occur under the sand at several of the beaches in north San Diego County. Several of the RBSP I receiver sites had sand scoured rocks or extensive cobbles that became exposed during winter prior to the RBSP I. The rocks had few resources (e.g., turf algae) or were bare. Seasonal rockiness substantially decreased after the RBSP I (e.g., SAIC 2006). High wave conditions removed several feet of sand from local beaches in January-February 2010, leaving many with a similar appearance of rockiness as before the RBSP I. Because these rock benches are low relief, they are naturally subject to sand influence and support few if any biological resources (SANDAG 2011).

Marsh birds, including great blue heron (*Ardea herodias*) and snowy egret (*Egretta thula*), gulls, and shorebirds forage on invertebrates and fish on exposed reefs and in tidepools.

Nearshore Reefs

Subtidal reefs in the shallow nearshore also exhibit considerable variation in resource development associated with the seasonal onshore and offshore migration of sand. Similar to intertidal reefs, substrate factors such as relief height, texture, composition, and size largely determine resource development (Ambrose et al. 1989). Historical average differences in sand depth between winter and summer generally range from 1 to 3 ft in the low intertidal and shallow nearshore depths (to -20 ft MLLW) of the study area (MEC 2000). Thus, reefs less than 3 ft in height are subject to varying degrees of sedimentation, which may range from complete to partial burial on a seasonal basis depending upon reef height and the amount of sand moving onshore and offshore. Resource development on the low-relief reefs can vary substantially on a seasonal basis associated with cycles of exposure and partial or complete sedimentation (MEC 2000). Because low-relief reef may be buried below the sand surface, sometimes it may only be distinguished by the presence of surfgrass and/or feather boa kelp, which because of their long blades or fronds may extend above the sand surface. Figures 3-1 through 3-3 depict nearshore resources in the vicinity of the project area.

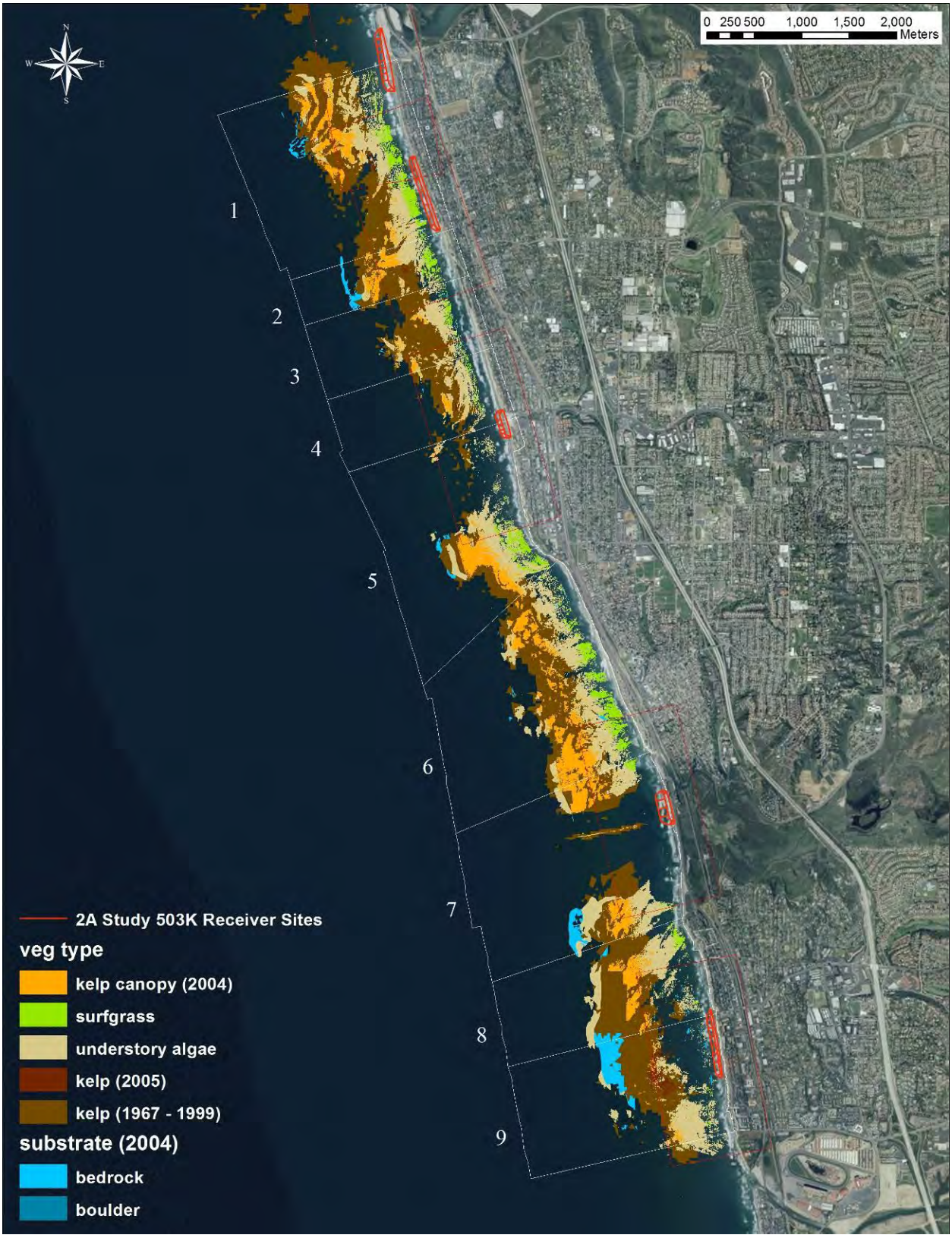


Figure 3-1. Nearshore resources and proposed receiver sites within the study area.

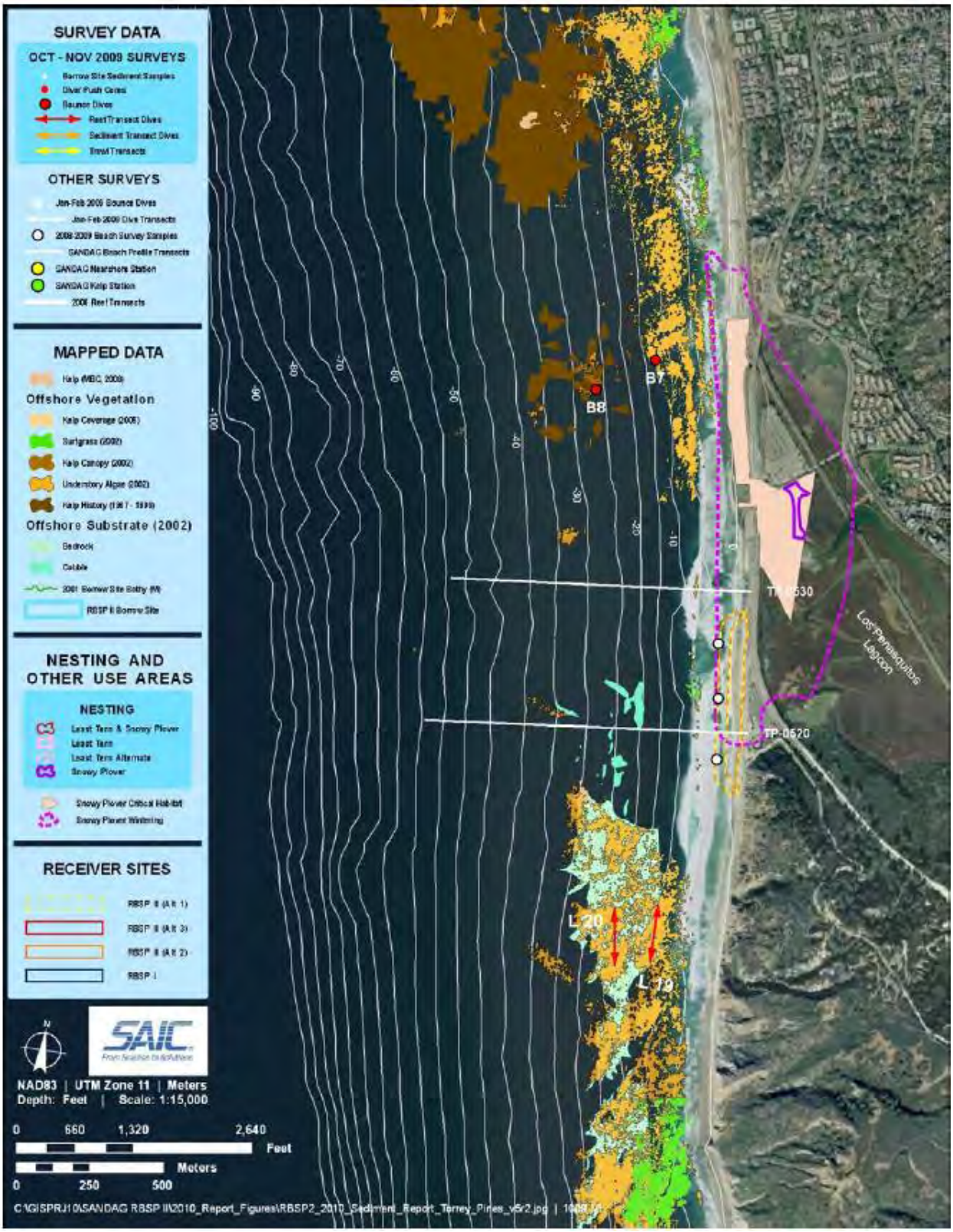


Figure 3-2. Nearshore resources in vicinity of Torrey Pine receiver site (from SANDAG 2011).

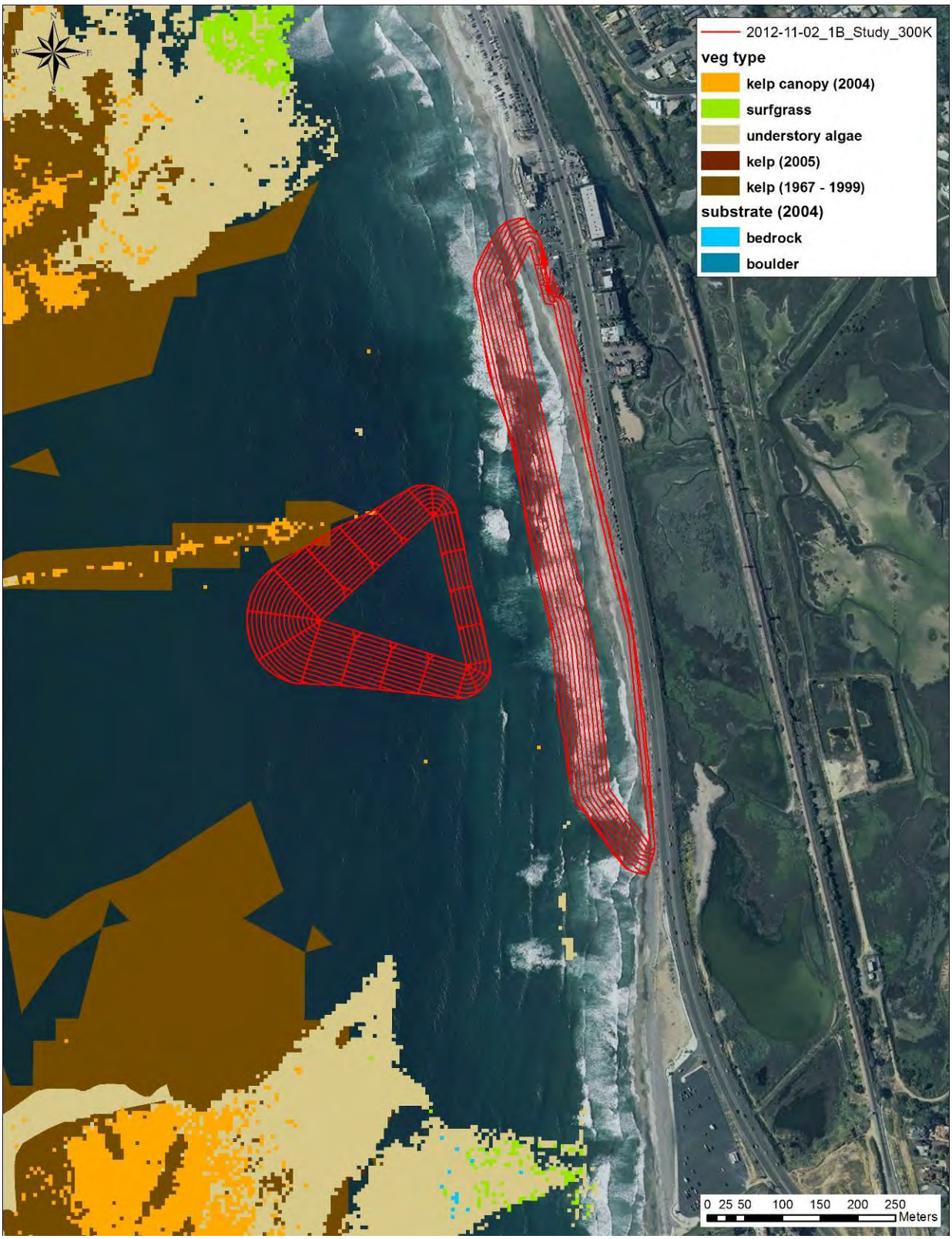


Figure 3-3. Nearshore resources and proposed nearshore disposal footprint off San Elijo Lagoon under Alternatives 1A and 2B.

Hard substrate less than 2 ft in height tends to be poorly vegetated with annual or tolerant species (e.g., coralline algae, feather boa kelp, *Ulva*) that can develop rapidly when the surface becomes exposed from sand (Stewart 1991; MEC 2000). Invertebrates may or may not be associated with these lower relief reefs. While reefs above 3 ft in height, which generally extend above the height of seasonal sand movement, typically support more persistent marine resources.

Understory algae are common on nearshore reefs. Feather boa kelp is conspicuous growing up to 12 ft in length (Black 1974). The sea palm may co-occur with feather boa kelp at subtidal depths. Sea palms (*Eisenia arborea*) may live more than 10 years and grow to about 1 to 1.5 ft in height in areas of high surge, but they may reach up to 3 ft in height in deeper water. Their shorter height and occurrence on higher relief reefs suggests they may be less tolerant of sand sedimentation than surfgrass and feather boa kelp (AMEC 2005). A variety of smaller red algae (*Corallina* spp., *Erythroglossum californicum*, *Gigartina* spp., *Gracilaria* spp., *Jania* spp., *Lithothrix* spp. *Rhodoymenia* spp.) and brown algae (*Cystoseira osmundacea*, *Sargassum* spp., *Zonaria farlowi*) may co-occur with feather boa kelp and/or sea palms on nearshore reefs. Persistent reefs support hundreds of species of invertebrates (e.g., crabs, nudibranchs, sea urchins, scallops, sea stars, snails, sponges, tunicates, worms) and attract a variety of fish such as garibaldi (*Hypsypops rubicundus*), blacksmith (*Chromis punctipinnis*), and black perch (*Embiotoca jacksoni*).

Fish abundance on reefs is related to vegetative cover, substrate complexity, and relief; however, increases in relief height on reefs greater than 3 ft have minimal effects (Cross and Allen 1993). Fish associated with nearshore reef habitats within the study area include kelp bass (*Paralabrax clathratus*) and barred sand bass; black, shiner, walleye, and dwarf surfperches (Embiotocidae); señorita; California sheephead (*Semicossyphus pulcher*); garibaldi; opaleye (*Girella nigricans*); white seabass (*Atractoscion nobilis*); sargo (*Anisotremus davidsoni*); salema (*Xenistius californiensis*); giant kelpfish (*Heterostichus rostratus*); painted greenlings (*Oxylebius pictus*); and halfmoon (*Medialuna californiensis*). Table 3-4 summarizes common organisms observed from nearshore reefs in San Diego County.

Surfgrass Beds

Surfgrass (*Phyllospadix* spp.) generally grows on hard-substrate from approximately 0 to -20 ft MLLW, and may form conspicuous beds in the low intertidal to shallow subtidal zones of rocky beaches in San Diego County (Stewart 1991, MEC 2000). Surfgrass provides important habitat for a variety of algae, invertebrates, and fish, and up to 34 species of algae and 27 species of invertebrates may be associated with surfgrass on San Diego beaches (Stewart and Myers 1980). It also serves as a nursery habitat for California spiny lobster, *Panuliris interruptus* (Williams 1995). Figures 3-1 through 3-3 depict surfgrass resources in the vicinity of the project area.

The distribution of surfgrass is within the active portion of the beach profile characterized by seasonal onshore and offshore movement of sand. Surfgrass is considered a stress tolerant strategist that is morphologically adapted to withstand shifting sand movement (O'Brien and Littler 1977, Taylor and Littler 1982, Littler et al. 1983). Surfgrass has long shoots (3 to 5 ft) that can extend above a variety of sand depths, the shoots are protected from sand abrasion by fibrous sheaths, dense rhizomatous roots bind and enmesh with sand to form an effective anchor, and growth and colonization is by vegetative propagation of rhizomes and/or seasonal seed production (Stewart and

Table 3-4. Common organisms observed from hard bottom reefs in San Diego County.

Organism	Common Name	Scientific Name	Water Depth MLLW (ft)		
			-10	-20	-30
Algae	Brown	*Macrocystis pyrifera*			X
	Brown	*Cystoseira osmundacea*	X	X	X
	Brown	*Egregia menziesii*	X	X	X
	Brown	*Zonaria farlowi*	X		
	Red	*Gigartina* spp.	X	X	X
	Red	*Gracillaria sjoestedtii*	X	X	X
	Red	*Rhodymenia* spp.	X	X	X
	Red	*Lithothrix aspergillium*	X	X	X
	Red	*Jania* spp.	X	X	X
	Red	*Corallina* spp.	X	X	X
Surfgrass	Surfgrass	*Phyllospadix torreyi*	X		
Invertebrate	Nudibranch	*Phidiana crassicornis*	X	X	X
	California Spiny Lobster	*Paniluris interruptus*	X	X	X
	Kellet's Whelk	*Kelletia kelletii*	X	X	X
	Snail	*Armina californica*		X	X
	Cone Snail	*Conus californica*		X	X
	Olive Snail	*Olivella baetica*		X	X
	Snail	*Neverita draconis*		X	
	Leather Star	*Dermisterias imbrcata*		X	X
	Sea Star	*Pisaster giganteus*		X	X
	Sea Fan	*Muricea* spp.	X	X	X
Fish	Black Perch	*Embiotoca jacksoni*	X	X	X
	Shiner Surfperch	*Cymatogaster aggregata*	X	X	X
	Dwarf Surfperch	*Micrometrus minimus*	X	X	X
	White Sea Bass	*Atractoscion nobilis*	X	X	X
	Sargo	*Anisotremus davidsonii*	X	X	X
	Salema	*Xenistius californiensis*	X	X	X
	Giant Kelpfish	*Heterostichus rostratus*	X	X	X
	Painted Greenling	*Oxylebius pictus*	X	X	X
	Halfmoon	*Medialuna californiensis*	X	X	X
	Señorita	*Oxyjulis californica*	X	X	X
	Opaleye	*Girella nigricans*	X	X	X
	California Sheephead	*Semicossyphus pulcher*	X	X	X
	Garibaldi	*Hypsopops rubicundus*	X	X	X
	Northern Anchovy	*Engraulis mordax*	X	X	X
	Pacific or Chub Mackerel	*Scomber japonicus*	X	X	X

Source: U.S. Navy 1995

Meyers 1980, Taylor and Littler 1982, Cooper and McRoy 1988, Stewart 1989, Williams 1995). Surfgrass may recover relatively quickly from disturbance via re-growth if the rhizome mat remains intact (J. Engle, U.C. Santa Barbara, personal communication). However, recovery can take several years if the rhizome mat is removed (Stewart 1989, Turner 1985).

Although surfgrass is adapted to sand accretion, the amount of sand affects its health and growth. The timing of sand cover also appears important. Pelchner (1996) found that the amount of carbohydrates stored in summer months from photosynthesis was important to the survival of plants over winter and early spring. Experimental manipulations showed that surfgrass was less healthy without any sand cover (more shoots, but less leaf biomass), whereas sand depths up to 2 inches

optimized growth (more leaf biomass and productivity). However, sand depths of 5 inches resulted in less carbohydrate storage, which if it occurred during summer reduced plant biomass and potential survival over winter. Based on surveys conducted in 2010, surfgrass normally experience sand depths ranging from 1 to 10 inches at in the vicinity of the study site (SANDAG 2011). Critical thresholds of sand cover are not well understood and may vary depending on site-specific conditions related to factors such as exposure (e.g., tides, wave energy).

Fish commonly found in surfgrass habitats off San Diego include barred sand bass, black perch, blacksmith, garibaldi, opaleye, señorita (*Oxyjulis californica*), and topsmelt (DeMartini 1981, MEC 1995).

Kelp Forests/Beds

Southern California kelp forests are dominated by giant kelp (*Macrocystis pyrifera*), which grows at depths between -20 and -120 ft MLLW (Aleem 1973, Leet et al. 1992). Kelp attaches to hard substrate by means of a holdfast, and fronds may grow to heights that exceed the water depth, forming leafy canopies at the water surface. Giant kelp, and its associated hard bottom habitat, supports a diverse community of algae, invertebrates, and fish. Invertebrates found in kelp beds include lobster, sea stars, sea urchins, and molluscs. Surfperch, rockfish (*Sebastes* spp.), cabezon (*Scorpaenichthys marmoratus*), lingcod (*Ophiodon elongatus*), and wrasses (senorita, rock wrasse, and sheephead) are common.

In addition, kelp beds provide food for marine birds and mammals. Gulls commonly scavenge on the surface canopy, and cormorants, pelicans, and terns feed on schooling fish near the edge of the canopy (Foster and Schiel 1985). Seals, sea lions, and whales forage within kelp beds, and kelp is commercially harvested for food products, fertilizers, adhesives, paints, pharmaceuticals, rubbers, and textiles (Foster and Schiel 1985, Bakus 1989).

Aerial photography has been used to map and quantify the surface area of kelp canopies offshore southern California for a number of years. The density and distribution of the kelp canopy exhibits seasonal and interannual variability related to a variety of physical and chemical factors (e.g., nutrient concentrations, sedimentation, temperature, turbidity). Kelp beds in Southern California commonly deteriorate to some degree during summer and fall when temperatures are higher and nutrient concentrations are lower (Foster and Schiel 1985, Tegner and Dayton 1987). Kelp beds also may show dramatic die-back during El Niño and recovery during La Niña conditions.

Giant kelp is adversely affected by sedimentation and turbidity. Large amounts of shifting sediment can bury small plants and prevent settling of microscopic spores, both of which can reduce kelp beds (Dayton et al. 1984). El Niño conditions, which result in high waves, higher-than-average temperatures, and low nutrients, have been linked to periodic and widespread reductions in kelp canopy. Kelp canopy has substantially regrown in the region since the 1997-1998 El Niño (Table 3-3).

Figures 3-1 through 3-3 depict kelp bed resources in the vicinity of the project area, and Table 3-3 summarizes the surface area of kelp canopies off San Diego County from 2000 to 2011. Kelp beds identified on Table 3-3 as Leucadia, Encinitas, Cardiff, Solana Beach, Del Mar, and Torrey Pines occur within the study area. The acreage of habitat types within the SELRP model area is provided in Appendix A.

3.2.2 Essential Fish Habitat

EFH is managed under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This Act protects waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity (Magnuson-Stevens Act, 16 U.S.C. 1801 et seq.). The entire coastal area ranging from the mean high tide level to offshore depths represents EFH within the study area. The Pacific Groundfish and Coastal Pelagic fishery management plans (FMPs) apply to EFH in the study region. The habitat designations associated with those plans are defined below.

EFH for species in the Pacific Groundfish FMP, which applies to 89 fish species (e.g., flatfish, rockfish, sharks) is identified as all waters and substrate within the following areas:

- Depths less than or equal to 11,480 ft to mean higher high water level (MHHW) or the upriver extent of saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 ppt during the period of average annual low flow;
- Seamounts in depths greater than 11,482 ft as mapped in the EFH assessment GIS; and
- Areas designated as Habitat Areas of Particular Concern (HAPCs) (e.g., seagrass, kelp canopy, estuaries, rocky reef).

EFH for species in the Pacific Groundfish FMP also is relevant to species designated in the Nearshore Fishery Management Plan (NFMP), which are generally managed by the state (CDFG 2002). For instance, 16 of the 19 species designated in the NFMP are officially designated in the Pacific Groundfish FMP, including 13 species of rockfishes (black, black-and-yellow, blue, brown, calico, China, copper, gopher, grass, kelp, olive, quillback, and treefish - *Sebastes* spp.), California scorpionfish (*Scorpaena gutatta*), Cabezon (*Scorpaenichthys marmoratus*), and kelp greenling (*Hexagrammos decagrammus*). Three species designated in the NFMP are not specifically designated in the Pacific Groundfish FMP (rock greenling – *Hexagrammous lagocephalus*, California sheephead - *Semicossyphus pulcher*, and monkeyface prickleback - *Cebidichthys violaceus*) and are actively managed by the state; however, designated groundfish EFH (including HAPC) generally is relevant because these three species are associated with rocky reef, kelp bed, or surfgrass habitats (CDFG 2002).

EFH for species in the Coastal Pelagic FMP, which applies to four fish and one invertebrate species (e.g., anchovy, sardine, Pacific mackerel, jack mackerel, and market squid) is identified as all waters and substrate within the following areas:

- All marine and estuarine waters from the shoreline to the limits of the Exclusive Economic Zone (EEZ), which extends approximately 200 nautical miles offshore; and
- Water surface boundary, which is the water column between the thermoclines where temperatures range from 10 to 26 degrees Centigrade.

EFH encompasses nearshore areas adjacent to the receiver sites, as well as, nearshore disposal and offshore disposal sites. Nearshore areas characterized by reef, seagrass, estuaries, or kelp canopy are more specifically defined as HAPCs. Note that this report only addresses EFH within the nearshore environment, since EFH associated with the lagoon is addressed separately in another report.

3.3 PLANKTON

Plankton includes a diverse group of microscopic plants (phytoplankton), larval fish and eggs (ichthyoplankton), and other animals (zooplankton). The most abundant component of the plankton community is the phytoplankton, which aggregate near the surface where primary production occurs. They are grazed upon by zooplankton and ichthyoplankton and small fishes such as anchovies, which are in turn fed upon by larger fishes, birds, mammals, and man. Thus, phytoplanktons are the primary producers in the marine food web.

There are over 280 species of phytoplankton recorded from California coastal waters (Riznyk 1977); however, species composition of the community at any particular location at any given time exhibits considerable variability as the plankton drift with the currents (Goodman et al. 1984). The most common types of phytoplankton that may be expected within the study area include centric diatoms, pennate diatoms, dinoflagellates, and coccolithophores. Under certain oceanographic conditions, blooms of dinoflagellates (e.g., *Gonyaulax polyedra*) may cause red tide conditions. Decreased water clarity typically is associated with red tides.

Zooplankton that would be expected within the study area include microscopic animals (e.g., radiolarians, ciliates, foraminifera), larval forms of macroinvertebrates (e.g., crabs, lobster, shrimps, molluscs), and animals that live within the plankton community (e.g., arrow worms, copepods, cladocerans, ctenophores, salps). Larger zooplankton (greater than 35 mm) serve as a major food source for fish.

Ichthyoplankton includes larvae and eggs of resident fish that spawn nearshore, migratory species, and subarctic and temperate/tropical species whose spawning ranges extend into the area (Loeb et al. 1983). Vertical and cross-shelf variations in species composition vary with season. A study off San Diego County documented that larvae with persistently higher concentrations within 1 mile of shore include cheekspot goby (*Ilypnus gilberti*), giant kelpfish (*Heterostichus rostratus*), bay goby (*Lepidogobius lepidus*), and unidentified larvae of blennies, clinids, and silversides (Barnett et al. 1984). The larvae of northern anchovy (*Engraulis mordax*), queenfish (*Seriphus politus*), and white croaker (*Genyonemus lineatus*) tended to concentrate nearshore between 1 and 2.5 miles offshore, although queenfish and white croaker had a more inshore distribution during spring and summer.

3.4 MARINE-ASSOCIATED BIRDS

Seabirds and shorebirds are commonly observed along southern California beaches. Seabirds such as cormorants, pelicans, and terns forage for fish offshore. Gulls may feed on fish and invertebrates, and are notable scavengers. Shorebirds probe for marine invertebrates in the damp sands of the intertidal zone and may feed on small fish and crustaceans in tide pools. However, in areas of beach erosion, foraging opportunities for shorebirds decrease. Shallow sand depths and exposed cobble and/or bedrock support few invertebrate prey. Approximately 50 species of marine-associated birds have been reported to occur along the shoreline and adjacent nearshore ocean between Carlsbad and Del Mar (MEC 2000). A total of 12 species of birds was observed along the shoreline during a September 2002 reconnaissance survey (Table 3-5).

Table 3-5. Birds observed along the shoreline within the Encinitas and Solana Beach study area, September 2002 (from USACE 2012).

Scientific Name	Common Name	Encinitas	Solana Beach
Pelecanus occidentalis	brown pelican - FE, SE		
Phalacrocorax auritus	double-crested cormorant - CSC		
Charadrius vociferus	killdeer		
Actitis macularia	spotted sandpiper	O, V	O
Arenaria melanocephala	black turnstone	O	O
Calidris alba	sanderling		O
Catoptrophorus semipalmatus	willet	O	O
Limosa fedoa	marbled godwit	O	O
Numenius phaeopus	whimbrel		O
Larus delawarensis	ring-billed gull		O
Larus heermanni	Heermann's gull	O	O
Larus occidentalis	western gull	O	O

O=observation; V=vocalization
FE = Federal Endangered; SE = State Endangered; CSC = California Species of Special Concern

The most commonly observed seabirds within the study area during the September 2002 survey included Heerman's gull (*Larus heermanni*), ringed-billed gull (*Larus delawarensis*), and western gull (*Larus occidentalis*). Other commonly observed seabird species in the ocean waters offshore northern San Diego County include the Federal and state endangered California brown pelican *(Pelecanus occidentalis californicus*); surf scoter (*Melinita perspicillata*); western grebe (*Aecmophorus occidentalis*); and double-crested (*Phalacrocorax auritus*), Brandt's (*P. pencillatus*), and pelagic (*P. pelagicus*) cormorants. Terns, including the state and Federal endangered California least tern (*Sterna antillarum browni*), elegant tern (*S. elegans*), Caspian tern (*S. caspia*), and Forster's tern (*S. forsteri*), also sometimes forage in nearshore waters of the project area.

The most commonly observed shorebirds during the September 2002 survey were black turnstone (*Arenaria melanocephala*), marbled godwit (*Limosa fedoa*), sanderling (*Calidris alba*), whimbrel (*Numenius phaeopus*), and willet (*Caloptrophorus semipalmatus*). Marsh birds, including great blue heron, great egret, and black-crowned night heron (*Nycticorax nycticorax*), were observed foraging on exposed reefs south of Swami's during the May 2002 surfgrass mapping survey. Other commonly observed and/or expected shorebirds in the project area include killdeer (*Charadrius vociferus*), black-bellied plover (*Pluvialis squatarola),* wandering tattler (*Heteroscelus incanus*), and spotted sandpiper (*Actitis macularia*).

The most commonly observed birds at RBSP II receiver sites in November 2008, July 2009, and January 2010 included Heerman's gull (*Larus heermanni*), western gull (*Larus occidentalis*), black-bellied plover (*Pluvialis squatorola*), marbled godwit (*Limosa fedoa*), western sandpiper (*Calidris mauri*), whimbrel (*Numenius phaeopus*), and willet (*Tringa semipalmata*). The western snowy plover was observed on the wider beach adjacent to the Batiquitos receiver site and at the Cardiff receiver site. The endangered California least tern (*Sterna antillarum browni*) and the elegant tern (*Thalasseus elegans*) were observed in flight near the jetties of Batiquitos Lagoon during beach surveys of the nearby Batiquitos receiver site.

3.5 MARINE MAMMALS

Common dolphins (*Delphinus delphis*) and bottlenose dolphins (*Tursiops truncatus*) occur in the surf zone and in offshore waters. Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) and Risso's dolphins (*Grampus griseus*) also are known to occur seasonally in southern waters of the SCB.

California gray whales (*Eschrichtius robustus*) migrate through the study area. The southbound migration through the SCB begins in December and lasts through February; the northbound migration is February through May. Gray whales migrate up to 125 miles offshore along three pathways through the SCB. The project area lies within the nearshore migration path, which extends from the shoreline to approximately 12 miles offshore.

Harbor seals (*Phoca vitulina*) and California sea lions (*Zalophus californicus*) haul out on sandy beaches, but haul-outs are localized or infrequent on beaches in the region. An established harbor seal haul-out area occurs at La Jolla, which is several miles from any of the proposed beaches in the study area. No established sea lion haul-out locations occur in the local region.

3.6 THREATENED AND ENDANGERED SPECIES

Federally listed and state-listed species under the federal and state endangered species acts (FESA and CESA, respectively) with the potential to occur in the project area primarily include two marine-associated birds (California least tern and western snowy plover). Other listed species with the potential to occur in the project area potentially affected by indirect impacts (e.g., noise, sand transport) include the Belding's savannah sparrow, light-footed clapper rail, and abalone. The California brown pelican was recently delisted (federal and state), but remains a state Fully Protected species. Pelicans forage on fish in nearshore waters and are expected to occur in the project area. These species are described in greater detail below.

Although certain San Diego lagoons were included in proposed critical habitat for the endangered tidewater goby, none are included in the final rule (USFWS 2008). The tidewater goby does not occur in open ocean habitat, preferring slack water in estuaries and lagoons. Therefore, this species is not discussed further.

Federal-listed marine turtles occasionally are sighted in warm-water areas of estuaries and bays in the region, but do not come to shore on beaches in the study area. Other recently delisted species with low potential to be affected by the project include the American peregrine falcon (*Falco peregrinus*) (federal and state delisted) and gray whale (federal delisted). For these reasons, the above-mentioned species are not discussed further.

Access routes to the receiver sites transition from urban roads directly to the beach or are at locations that are unvegetated. No dune, strand, marsh vegetation, or native plant communities occur within 200 ft of beach access locations.

3.6.1 Abalone

Two species of abalone are listed as federal endangered species, the black abalone (*Haliotis cracherodii*) and the white abalone (*Haliotis sorenseni*). Both species are associated with reef habitats. The black abalone occurs in shallow subtidal and intertidal rocky habitats throughout

southern California. The population of this species has been severely reduced by a wasting disease caused by a bacteria-like organism (Federal Register Vol. 74, No. 9). Abalone are broadcast spawners, but adults must be at a close distance (e.g., within a few feet) for reproduction to be successful. This life history characteristic in combination with depleted stocks limit the ability of these species to naturally recover. Reefs in the project area are potential habitat for this species. However, there are few recent reports of their occurrence. The white abalone generally occurs in water depths between 66 and 200 ft (NMFS 2008), which is outside the littoral zone subject to sand transport effects. Natural hard bottom generally is located 500 ft or more away from the borrow sites; therefore, white abalone would not be expected to be affected by the project. The project area is not designated critical habitat for either abalone species.

3.6.2 California Least Tern

The California least tern is a federal and state listed endangered species. This species is a seasonal migrant to San Diego and nests in colonies at constructed nest sites in coastal wetlands and on sandy beaches with sparse vegetation. It forages in shallow water (generally less than 3 feet deep) within one to two miles from shore, but foraging up to five miles from nest sites has been documented. The least tern nesting season is April 1 to September 15. San Diego County nesting sites are located near the Santa Margarita River on USMCB Camp Pendleton, Batiquitos Lagoon, Mission Bay, mouth of San Diego River, Silver Strand, San Diego Bay, and Tijuana Estuary NERR. Newly constructed nesting sites are at San Dieguito Lagoon. Recent breeding status of the species at nesting locations in the vicinity of the project area are shown in Table 3-6. Nesting locations in the vicinity of project area are shown in Figures 3-4 and 3-5.

Table 3-6. Status of Least Tern Breeding in the vicinity of the study area, 2006-2009, 2011-2012.

Site	2006		2007		2008		2009		2011		2012	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Batiquitos Lagoon	601	601	575	578	596	596	576	620	519	522	550	562
W1	35	35	40	37	35	35			22	22		
W2	399	399	371	371	396	396			463	466		
E1	145	145	163	163	164	164			28	28		
E2	0	0	0	0	0	0			0	0		
E3	22	22	4	4	1	1			6	6		
San Elijo Lagoon	0	0	0	0	0	0	0	0	0	0	0	0

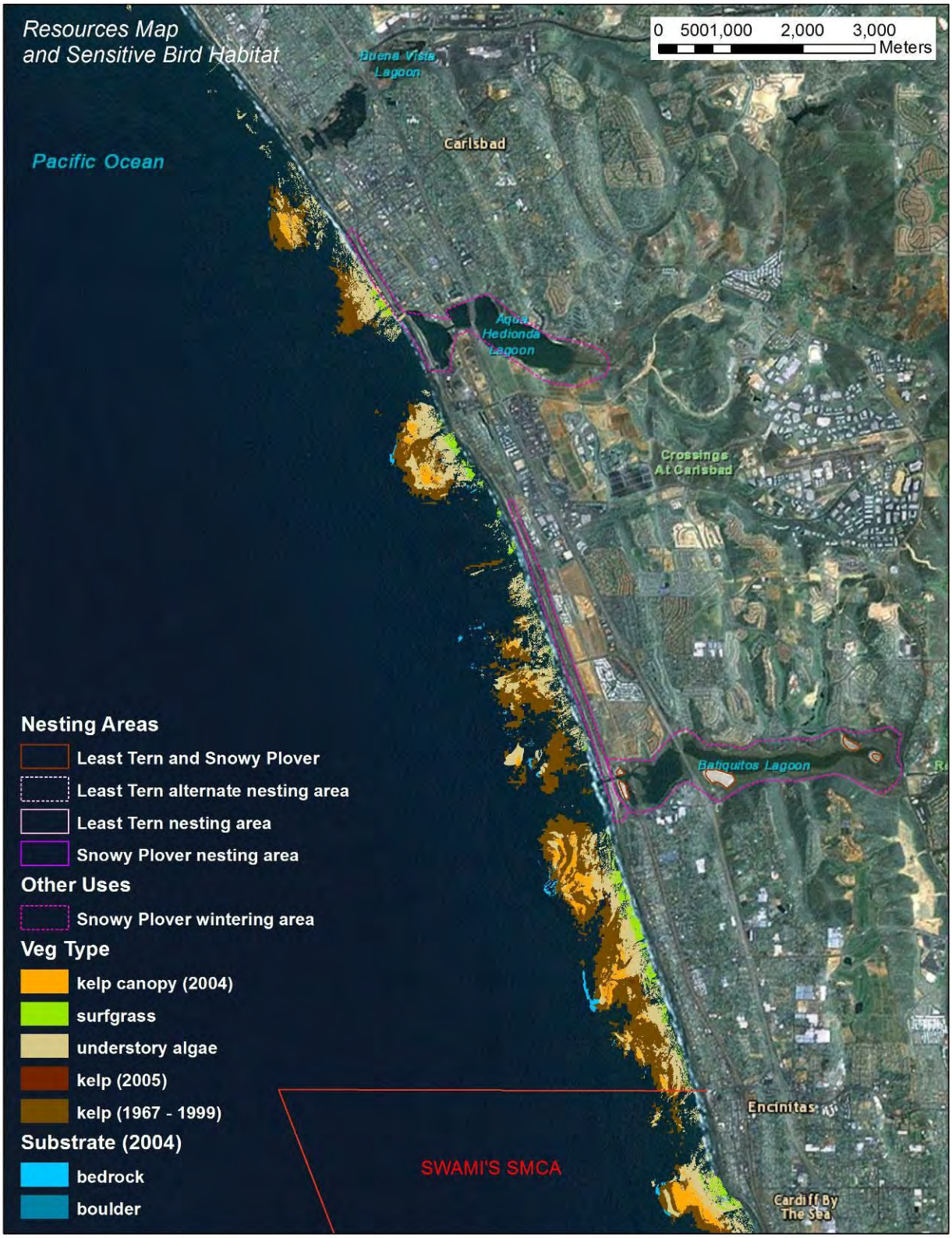


Figure 3-4. Sensitive habitats north of San Elijo Lagoon.

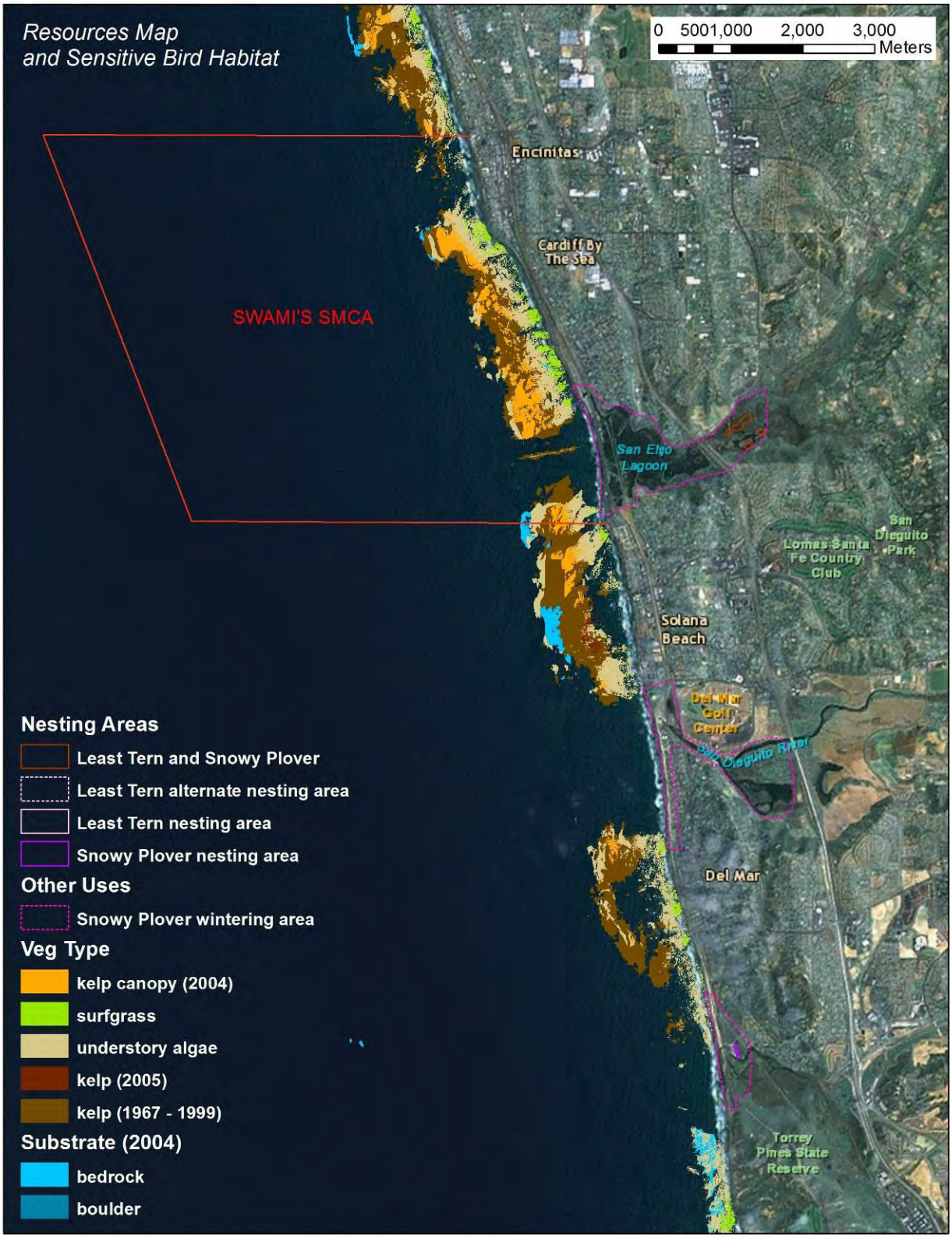


Figure 3-5. Sensitive habitats in the vicinity of San Elijo Lagoon.

3.6.3 Western Snowy Plover

The western snowy plover is a federal and state listed threatened species. This small shorebird is a resident in San Diego and nests at constructed nest sites in coastal wetlands, alkali flats at river mouths, salt evaporators, and on sandy beaches with sparse vegetation. Snowy plover forages on marine-estuarine invertebrates and terrestrial and marine-associated insects, including those associated with kelp wrack washed ashore on sandy beaches. The nesting season extends from March 1 to September 15.

USFWS designated Critical Habitat for snowy plover in the project area includes portions of Batiquitos Lagoon, Los Penasquitos Lagoon, and within the west basin of San Elijo Lagoon, with recent nesting observed only in Batiquitos Lagoon. Results of recent summer surveys are shown in Table 3-7, and recent nesting and potential overwintering locations are shown on Figures 3-4 and 3-5. Newly constructed sites are at San Dieguito Lagoon. Within San Elijo Lagoon, snowy plovers are regularly spotted foraging within mudflats. Up to 76 snowy plover individuals were recorded within the lagoon and adjacent beach area on September 29, 2011 (Patton 2012). Historically, plovers were recorded nesting within San Elijo Lagoon on the East Basin islands and East Basin dike. Postbreeding and wintering roosting flocks have been documented at Cardiff State Beach, which is adjacent to San Elijo Lagoon. Roost sites have varied but have included both sides of the mouth of the lagoon. No breeding has been recorded within the lagoon since 2002 (Patton 2010).

Table 3-7. Results of summer window surveys for snowy plovers in the vicinity of the study area, 2006-2012.

Site	2006	2007	2008	2009	2010	2011	2012
S. Carlsbad S.B.	0	0	1	1	1	0	3
Batiquitos Lagoon	14	8	5	3	3	6	2
San Elijo Lagoon	0	0	0	0	0	0	0
Cardiff SB	0	0	0	0	0	0	0
San Dieguito Lagoon	0	0	0	0	0	0	0
Los Penasquitos Lagoon	0	0	0	0	0	0	0

Source: USFWS 2012

3.6.4 Belding's Savannah Sparrow

Belding's savannah sparrow is a state-listed endangered species. Belding's savannah sparrows are found in coastal salt marshes from Santa Barbara south to San Diego County. This species nests exclusively in pickleweed (*Salicornia* sp.) and is often found in and around the margins of tidal flats, but would be unlikely to occur along the bluffs or shoreline because of a lack of suitable habitat. They occur at Aqua Hedionda Lagoon, Batiquitos Lagoon, Buena Vista Lagoon, San Elijo Lagoon, San Dieguito Lagoon, Los Penasquitos Lagoon, and Tijuana Estuary NERR/Tijuana Slough NWR (James and Stadtlander 1991, Zembal and Hoffman 2010, National Audubon Society 2010). The breeding season of Belding's savannah sparrow is mid-March through mid-August.

Belding Savannah sparrow primarily nests in middle and inner portions of the wetlands 1,000 ft or more from the beach. Exceptions in the project area include San Elijo Lagoon and Los Penasquitos Lagoon. At San Elijo Lagoon, Belding's savannah sparrow historically have nested between Coast Highway and the railroad tracks near the middle to southern end of the lagoon and east of the railroad tracks (D. Gibson, San Elijo Lagoon Foundation Sensitive Bird Species Locations, unpublished

map). At Los Penasquitos Lagoon, the areas of greatest nest site density historically have been between the two main water channels and to the southeast of the channel "fingers" (James and Stradtlander 1991, Torrey Pines State Preserve 1998).

3.6.5 Light-Footed Clapper Rail

Light-footed clapper rail is a federal and state listed endangered species. It is a hen-sized marsh bird that nests in the lower intertidal zone of coastal salt marshes where dense stands of cordgrass are present. They also build nests in pickleweed. Light-footed clapper rails also may nest in freshwater marshes, although less common. Their breeding season is mid-March to mid-August. They require shallow water and mudflats for foraging, with adjacent higher vegetation for cover during high water. In San Diego County, pairs have been detected during one or more years in the following coastal wetlands over the past 10 years: Santa Margarita Lagoon, Buena Vista Lagoon, Aqua Hedionda Lagoon, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito Lagoon, Los Penasquitos Lagoon, Kendall-Frost Reserve, San Diego River, San Diego Bay, and Tijuana Slough NWR.

This species primarily nests in middle and inner portions of the wetlands subject to tidal or freshwater influence. Reported locations of pairs in 2006 and 2007 were primarily in the inner basin at Aqua Hedionda Lagoon; central and inner basins at Buena Vista Lagoon; inland of El Camino Real in the San Dieguito River Valley; southeastern part of Los Penasquitos Lagon; and central and inner basins of San Elijo Lagoon (Zembal et al. 2008). Most nesting at Batiquitos Lagoon occurs in the central and eastern Basins; however, six pairs were vocalizing from the western tern island and one pair was detected in the northeast corner of the west basin in 2007 (Zembal et al. 2008).

3.6.6 California Brown Pelican

The California brown pelican is a protected species in California. They are found in the open ocean and other coastal salt waters along the southern California coast throughout the year. This species is tolerant of human activity near its daytime roosts and readily utilizes various manmade structures (e.g., piers, breakwaters, buoys) as roosting sites. Known breeding locations include offshore islands such as Anacapa and Santa Barbara Islands in southern California and islands off the coast of northwestern Baja California, Mexico.

3.7 COASTAL LAGOONS

Coastal wetlands discussed in this section include estuaries, lagoons, and streams that occur in the vicinity of the project area. Coastal wetlands in the vicinity of the project area include Batiquitos Lagoon, San Elijo Lagoon, and San Dieguito Lagoon.

Several of the wetlands are ecological reserves, as listed below. State Marine Parks or Marine Reserve designations refer to waters below the mean high tide line within the larger ecological reserves.

- Batiquitos Lagoon – State Marine Park (Ecological Reserve)
- San Elijo Lagoon – State Marine Park (Ecological Reserve)
- San Dieguito Lagoon – State Marine Park (Ecological Reserve)

Coastal wetlands include some combination of open water, channels, mudflats, salt marsh, and upland habitats. Creeks and rivers with outlets to the ocean provide long corridors of open water including transition from salt freshwater, stream banks, and often include adjacent riparian (freshwater influenced shrubs and trees) habitats. Due to their diversity of habitats, coastal wetlands are sensitive areas that support primary living, foraging, and reproductive habitat for hundreds of species of invertebrates, fish, birds, and plants (CCC 1987). San Diego coastal wetlands with open inlets to the ocean are important nursery habitats for marine fish and all are important foraging and stopover locations for migratory birds along the Pacific Flyway. In addition, the coastal wetlands support several endangered and threatened animal and plant species.

Habitat quality and ecosystem functions of estuaries and lagoons are highly influenced by their surrounding watershed and connection to the ocean. Erosion and runoff may lead to habitat degradation associated with sediment buildup and reduced tidal exchange. Estuaries and lagoons also are sediment sinks for sands moving along the coastline and may require periodic dredging or excavation to maintain an open inlet to tidal exchange.

3.7.1 Batiquitos Lagoon

The ocean inlet to Batiquitos was completed in 1997, which restored the lagoon to tidal flushing. The inlet is located just north of the Encinitas study area boundary. The lagoon is managed as a State Ecological Reserve by the CDFW. The primary habitat is estuarine open water followed by coastal salt marsh. Nesting islands support endangered California least terns and threatened western snowy plover (Figure 3-4). The lagoon supports over 150 bird species, 65 fish species, and a diverse variety of marsh plants (www.batiquitosfoundation.org). The lagoon also functions as habitat for marine and estuarine species of invertebrates and fish. Routine dredging is required to maintain hydrological circulation within the lagoon.

Under the MLPA, Batiquitos Lagoon eastward of the Interstate Highway 5 Bridge was designated as a SMCA. Take of all living marine resources is prohibited except for take pursuant to operation and maintenance, habitat restoration, research and education, maintenance dredging and maintenance of artificial structures inside the conservation area per any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department. Boating, swimming, wading, and diving are prohibited within the conservation area.

3.7.2 San Elijo Lagoon

San Elijo Lagoon is comprised of approximately 900 acres and includes the 590-acre San Elijo Ecological Reserve, which is managed by the CDFW and the San Diego County Department of Parks and Recreation (Figure 3-5). Historically, it was intermittently open to tidal flushing due to its relatively small tidal prism and frequent blockage by a substantial volume of cobbles. The San Elijo Lagoon Conservancy experimented with different types of inlet openings between 1994 and 1999, and in 2001 a long-term financial endowment was established to maintain the inlet open to tidal flushing (www.sanelijo.org). The mosaic of aquatic, marsh, riparian, and upland habitats supports more than 23 species of fish, 20 species of reptiles and amphibians, 24 species of mammals, and 296 species of birds. Endangered Belding's savannah sparrow, least Bell's vireo, light-footed clapper rail and threatened California gnatcatcher nest at the lagoon. Historically, endangered California least tern and threatened snowy plover have nested at the lagoon, although no recent records of successful nesting have occurred in the last five years. California brown pelicans use the open water to rest and

feed. Over the past several decades, the ecological system has degraded due to urban development that has altered the hydrology and increased sedimentation within the lagoon. The goal of the SELRP is to enhance and restore the biological functions and values of the San Elijo Lagoon Reserve with a balance of habitat types.

Under the MLPA, San Elijo Lagoon was designated as a SMCA. Take of all living marine resources is prohibited except operation and maintenance, maintenance dredging, habitat restoration including sediment deposition, research and education, and maintenance of artificial structures inside the conservation area per any required federal, state and local permits, or activities pursuant to Section 630, or as otherwise authorized by the department. Boating, swimming, wading, and diving are prohibited within the conservation area.

3.7.3 San Dieguito Lagoon

The inlet to San Dieguito Lagoon is located south of the Solana Beach study area boundary (Figure 3-5). The lagoon is part of the San Dieguito River Park System. The lagoon spans 520 acres with about half that consisting of disturbed and agricultural habitat. Wetland habitat comprises 267 acres. Historically, the lagoon has been intermittently open to tidal flushing and required mechanical openings to keep the inlet open. The lagoon is the location of a 150-acre restoration project currently being implemented by Southern California Edison in partnership with the San Dieguito River Park Authority (JPA). Construction grading was completed in 2009 with the exception of the inlet excavation. The goal of the project is to increase biodiversity of marine life within the area. Four new nesting sites (two east and two west of the I-5) and one deteriorated nesting site (on the west side of I-5), will be created to provide habitat for endangered Belding's Savannah Sparrow, California least tern, light-footed clapper rail, and threatened western snowy plover. Inlet excavation will include beneficial reuse of sands on adjacent beaches. The lagoon entrance will require annual maintenance of up to 25,000 cubic yards with the sand placed on the adjacent beach (www.sdlagoon.com/facts.htm).

Under the MLPA, San Dieguito Lagoon Ecological Reserve was designated as a SMCA. Take of all living marine resources is prohibited except the recreational take of finfish by hook-and-line from shore and the Grand Avenue bridge. Boating, swimming, wading, and diving are prohibited within the conservation area. No person, except state and local law enforcement officers, fire suppression agencies and employees of the department in the performance of their official duties or persons possessing written permission from the department, shall be permitted on the California least tern nesting island. No person, except state and local law enforcement officers, fire suppression agencies and employees of the department in the performance of their official duties or persons possessing written permission from the department, shall enter this conservation area between 8:00 p.m. and 5:00 a.m. The County of San Diego, after consultation with the department, may carry out management activities for fish and wildlife, flood control and vector control. Authorized operation and maintenance activities shall include, but shall not be limited to, use of chemicals, vegetation control, water control and use of associated equipment. Collections of fish, wildlife, water and soil may be made by the department for the purposes of fish and wildlife management or by San Diego County for the purposes of water quality testing and vector control.

3.7.4 Swami's State Marine Conservation Area

Swami's SCMA was designated under the MLPA (Figures 3-4 and 3-5). Take of all living marine resources is prohibited with the exception of: 1) recreational take by hook-and-line from shore; 2) the recreational take of pelagic finfish, including Pacific bonito, and white seabass by spearfishing; and 3) take pursuant to beach nourishment and other sediment management activities and operation and maintenance of artificial structures inside the conservation area per any required federal, state and local permits, or as otherwise authorized by the department.

3.8 RECEIVER SITES

The proposed receiver sites are same as those that were used for RBSP I and II, and were described in terms of habitat and species identified within its boundaries (i.e., footprint) as well as nearby sensitive resources (SANDAG 2011). Sensitive resources are defined at the habitat level to include vegetated nearshore reefs and kelp beds, and at the species level to include threatened or endangered species. Potential suitability of receiver sites as spawning habitat for California grunion are noted in the text. Generally, sandy beaches with gentle slopes and sufficient beach width above the mean high tide line to support egg incubation would be suitable, while beaches with substantial cobble, steep slopes, or with complete wave run-up over average high tides would not be suitable. The site assessment considers the potential for suitability to change during the course of the grunion spawning season, which primarily ranges from March to August, due to natural seasonal sand level changes on beaches.

The closest distances to sensitive habitats from receiver site boundaries are summarized in Table 3-8. The closest distances to least tern and snowy plover nesting sites are summarized in Table 3-9. The types of habitats observed at the receiver sites and documented in the nearshore in their vicinities are summarized in Table 3-10. Hard-bottom and vegetated habitats in the vicinity of the receiver and stockpile sites are shown in Appendix A.

Table 3-8. Estimated closest distances to hard bottom and vegetated habitats from the seaward boundary of proposed receiver sites (from SANDAG 2011).

	Distance (ft) From Receiver Site to Hard Bottom or Vegetated Habitats				
Proposed Receiver Sites	**Hard Bottom (2002)**	**Intertidal Surfgrass (2002)**	**Subtidal Surfgrass (2002)**	**Understory Algae (2002)**	**Kelp Bed (2008)**
Leucadia	150	150	150	290	1000
Moonlight Beach	330	3000	500	400	850
Cardiff (beach)	700	1800	1000	1500	1500
Solana Beach	120	1500	240	200	2500
Torrey Pines	150	200	200	1000	>5000

Note: Historical kelp bed represents maximum extent of kelp across multiple years, 1967-2002; Distances are estimates based on receiver site footprints, 2002 Habitat Inventory maps, and 2008 kelp cover.

Table 3-9. Estimated closest distances to least tern and snowy plover nest sites (from SANDAG 2011).

Receiver Sites	Nearest Nest Site*	Distance	
		Miles	Meters
Leucadia	Batiquitos	0.8	1287
Encinitas-Moonlight	Batiquitos	2.6	4184
Cardiff	San Elijo (historical)	1.1	1770
Cardiff	San Dieguito (new)	3.2	5150
Solana Beach	San Dieguito (new)	1.4	2253
Torrey Pines	Los Peñasquitos (historical)	0.2	322
Torrey Pines	San Dieguito (new)	2.3	3701

Active nesting within last 5 years except at historical and new sites.

Table 3-10. Summary of habitats at the proposed receiver sites and in the nearshore vicinity (from SANDAG 2011).

Receiver Site	Intertidal	Subtidal to -10 ft MLLW	Subtidal -11 to -20 ft MLLW	Subtidal -20 to -30 ft MLLW
Leucadia	Sand	Sand and reef, surfgrass, understory algae	Sand and reef, surfgrass, understory algae	Sand and reef, understory algae, kelp
Moonlight Beach	Sand, cobble sparse	Sand and reef, patchy surfgrass, turf dominated	Sand and relief reef surfgrass, understory algae	Sand and reef, kelp, sea fans, understory algae
Cardiff	Sand, cobble variable	Sand and reef, surfgrass, understory algae	Sand and reef, surfgrass, understory algae	Sand and reef, kelp, understory algae
Solana Beach	Sand, cobble sparse	Sand and reef, surfgrass, understory algae	Sand and reef, surfgrass, understory algae	Sand and reef, sea fans, kelp
Torrey Pines	Sand, cobble sparse	Sand and reef, surfgrass, understory algae	Sand and reef, surfgrass, understory algae	Sand and reef, understory algae

3.8.1 Leucadia Receiver Site

Within Receiver Site Boundaries

The footprint (2,700 lineal ft) of the Leucadia receiver site is the same with Alternatives 1B and 2A, which is the same as the RBSP I and II footprint. However, no sand was placed at the Leucadia receiver site for RBSP II although it appeared above-water volume gains were evident after nourishment, presumably due to littoral transport from Batiquitos receiver site (Coastal Frontiers 2012).

Prior to RBSP II, beach habitat was sandy within the boundaries of the receiver site alternatives. Sand depths averaged between 19 and 25 inches across tide zones during the July 2009 survey.

Polychaete worms, ribbon worms, and amphipod and isopod crustaceans were collected. Three juvenile Pismo clams (< 2 inches) were collected, but no sign of established Pismo clam beds was observed. Kelp and surfgrass wrack was sparse on the beach. Habitat was potentially suitable for grunion spawning during the July 2009 survey.

Sand erosion was visible after the January 2010 storm with greater beach slope, presence of cobbles, and exposure of substantial unvegetated sandstone reef in the swash zone. The sandstone was largely unvegetated indicating recent scour. One rock patch had sparse turf algae. Birds observed during the 2008 survey, or 2009 and 2010 site visits included Heerman's and western gulls, marbled godwit, willet, and whimbrel. California brown pelicans were observed in flight.

Nearby Sensitive Resources

Intertidal surfgrass is approximately 150 ft from the receiver site. Surfgrass was observed on low-relief rock in the minus tide zone seaward of the site boundaries during the June 2009 and January 2010 site visits. Localized patches of surfgrass partially buried in sand were seen during the January 2010 site visit. Exposed blade lengths were less than 12 inches. Nearshore reef with surfgrass and understory algae begins approximately 150 ft seaward and extends farther offshore of the proposed boundaries of the alternatives. Kelp bed habitat was mapped approximately 1,000 ft offshore the southern portion of the site in 2008.

The closest endangered least tern and threatened western snowy plover nesting sites are located at Batiquitos Lagoon, which is approximately 0.8 mile upcoast of the receiver site. Potential snowy plover wintering areas are located approximately 3,000 ft upcoast.

3.8.2 Moonlight Beach Receiver Site

Within Receiver Site Boundaries

The footprint (770 lineal ft) of the receiver site is the same with Alternatives 1B and 2A, which is the same as the RBSP I and II footprint. At the Moonlight Beach receiver site, 92,000 cy of primarily coarse sand were provided from RBSP II. The October Post-Nourishment profile and the December 2012 profile both exceeded the envelope of post-RBSP I changes landward of the berm. Erosion of the newly placed fill was evident from the berm to a depth of approximately 3 ft during the period between the Post-Nourishment and the December 2012 surveys (Coastal Frontiers 2012). The shoreline advance (21 ft) was the lowest among the RBSP II receiver sites, and subaerial volume gain (26 ft) was below average.

Prior to RBSP II, beach habitat was predominantly sandy with sparse cobble throughout the tide zones. Sand depths during the July 2009 survey averaged 22 to 29 inches across tide zones. Polychaete worms, sand crabs, and amphipod crustaceans were collected. No Pismo clams were collected and no sign of established Pismo clam beds were observed. No vegetation wrack was on the beach. Habitat was potentially suitable for grunion spawning during the July 2009 survey.

Sand erosion was visible after the January 2010 storm with greater beach slope, concentrations of cobbles, and exposure of substantial sandstone in the swash zone seaward of the upcoast half of the site. The sandstone was unvegetated indicating recent scour.

Birds observed during the 2009 survey or 2010 site visit included Heerman's and western gulls; willet shorebirds; and rock pigeons. One California brown pelican was resting on the beach during the July 2009 survey.

Nearby Sensitive Resources

Habitat directly offshore is primarily sand with sparse cobble and rocks mainly vegetated with turf algae. Sparse surfgrass may occur offshore (MEC 2000). Substantial reef with surfgrass, understory algae, and kelp occurs approximately 400 to 500 ft offshore and upcoast of the northern boundary of the site. Scattered rock reef with understory algae occurs offshore the southern site boundary and extends farther downcoast. Kelp was mapped in 2008 approximately 850 ft offshore.

The closest endangered least tern and threatened western snowy plover nesting sites are located at Batiquitos Lagoon, which is more than 2 miles upcoast of the receiver site. Potential snowy plover wintering areas also are located more than 2 miles upcoast.

3.8.3 Cardiff Receiver Site

Within Receiver Site Boundaries

The footprint (3,400 lineal ft) of the receiver site is the same with Alternatives 1B and 2A, which is the larger than the RBSP I and II footprint. At the Cardiff receiver site, 89,000 cy of relatively coarse sand with a median grain size of 0.57 mm were provided from RBSP II. The December 2012 profile exceeded the envelope of post-RBSP I changes above the waterline. The shoreline advance (39 ft) at Cardiff was below the average value for the RBSP II beach fills, while the subaerial volume gain (30 cy/ft) approached the average value. The only shorezone volume loss among the receiver sites occurred at Cardiff. This apparent contradiction can be explained by below-water volume losses from just below MSL to a depth of about 15 ft, which offset the above-water gains from the nourishment. The December 2012 profiles at the two transects located downcoast of the Cardiff receiver site (Transects SD-0625 and SD-0620) exceeded the envelope of post-RBSP I changes near the waterlines and in a depth of about 5 ft, suggesting that a portion of the nourishment material may have dispersed to the south.

Prior to RBSP II, beach habitat was predominantly sandy with variable cobble, ranging from sparse to localized areas of dense cobble. Sand depths during the November 2008 survey averaged 16 to 18 inches in the upper and middle tide zones and 35 inches in the lower intertidal. Beach widths above the high tide zone ranged from 0 to 1.7 ft. Riprap shore protection occurred along most of the site; the wetted sand line indicated wave run-up to the revetment.

No sensitive habitats were observed within the proposed boundaries of the alternatives. No Pismo clams were collected and there was no evidence of Pismo clam beds. Beach hoppers, bloodworms, and sand flies were observed in the upper intertidal. Various polychaete and ribbon worms were collected in the middle and lower intertidal zones. Bean clams were sparse in the swash zone and no concentrated patches of sand crabs were observed. Kelp and surfgrass wrack was sparse and localized on the beach.

Observed birds during the November 2008 survey included herring and western gulls and a large flock of western sandpipers. The site is within potential wintering area for threatened western snowy plover. No snowy plovers were observed at the time of the survey.

Potential habitat suitability for grunion spawning was limited by relatively narrow beach widths and wave run-up to and/or within a few ft of riprap and/or dense cobble; therefore, habitat suitability would depend on environmental conditions during the grunion season. Sand erosion was visible after the January 2010 storm with greater beach slope and concentrations of cobbles.

Nearby Sensitive Resources

No Pismo clam beds were observed along two soft-bottom transects surveyed at water depths of 16 to 30 ft directly offshore the central portion of the receiver site in 2009 (SAIC 2009). An outfall pipeline covered with riprap occurs offshore the alternatives and supports localized occurrence of hard-bottom indicator species such as giant kelp, feather boa kelp, sea palm, and sea fans.

Intertidal surfgrass, sensitive hard-bottom, and vegetated habitats occur approximately 1,000 ft upcoast and 1,000 ft downcoast of the proposed receiver site.

Historically, least terns and snowy plovers have nested at San Elijo Lagoon east of I-5, at locations more than 1 mile from the receiver site. However, there have been no recent records of successful nesting activity in the last 5 years. The closest active nest sites in the past 5 years have been at Batiquitos Lagoon located more than 5 miles upcoast. The proposed Cardiff receiver site is located nearly 3 miles from the new nest sites constructed at San Dieguito Lagoon. Endangered Belding's savannah sparrow reports have been more than 1,000 ft and light-footed clapper rail reports have been 500 ft or more from the site.

3.8.4 Solana Beach Receiver Site

Within Receiver Site Boundaries

The footprint (1,900 lineal ft) of the receiver site is the same with Alternatives 1B and 2A, which is the same as the RBSP I and II footprint. At the Solana Beach receiver site, 142,000 cy of relatively coarse sand with a median grain size of 0.55 mm were provided from RBSP II. Profiles showed significant above-water volume gains at the time of the November 2012 Post-Nourishment survey (Coastal Frontiers 2012). Erosion had commenced by the time of the December 2012 survey, with the MSL shoreline retreating approximately 50 ft.

Prior to RBSP II, beach habitat was predominantly sandy with sparse cobble. Sand depths during the November 2008 survey averaged 20 to 28 inches across tide zones. The July 2009 survey indicated greater variability in sand depths, ranging from 17 inches in the upper intertidal to 27 inches in the lower intertidal. Beach widths above the high tide zone were narrow and ranged from 0 to 1.7 ft.

No sensitive habitats were observed within the proposed receiver site boundaries. No Pismo clams were collected and no signs were observed of Pismo clam beds. Beach hoppers, bloodworms, bean clams, and polychaete and ribbon worms were collected. Kelp and surfgrass wrack was sparse and localized on the beach. Potential habitat suitability for grunion spawning was limited by relatively narrow beach widths and wave run-up to and/or within a few ft of coastal bluffs; therefore, habitat

suitability would depend on environmental conditions during the grunion season. Observed birds included Heerman's and western gulls, marbled godwit, willet, and black-bellied plover (*Pluvialis squatarola*).

Nearby Sensitive Resources

Intertidal surfgrass habitat occurs 2,400 ft upcoast. Sensitive subtidal hard-bottom and vegetated habitats occur approximately 480 ft upcoast. Sensitive hard-bottom areas are located approximately 240 ft offshore. The closest active least tern and snowy plover nest sites in the past 5 years have been at Batiquitos Lagoon located more than 5 miles upcoast. The closest new nest sites constructed at San Dieguito Lagoon are approximately 1.3 miles from the Alternative 1 site boundary and 1 mile from the Alternative 2 site boundary.

3.8.5 Torrey Pines

Within Receiver Site Boundaries

The footprint (1,620 lineal ft) of the receiver site is the same with Alternatives 1B and 2A, which is the same as the RBSP I and II footprint. Similar to the Leucadia receiver site, no sand was placed at the Torrey Pines receiver site for RBSP II.

Prior to RBSP II, beach habitat was predominantly sandy with sparse cobble throughout the tide zones. Sand depths during the November 2008 survey averaged from 20 to 30 inches across tide zones. Beach widths above the spring high tide line ranged from 0 to 5 ft.

No sensitive biological resources were observed within the proposed receiver site boundaries. Sand crabs, bean clams, and polychaete worms were collected in shovel samples. One juvenile Pismo clam (< 2 inches) was collected. No sign of Pismo clam beds was observed. Bean clams were sparse in occurrence in the swash zone. Kelp and surfgrass wrack was sparse and localized on the beach. Potential habitat suitability for grunion spawning was limited by relatively narrow beach widths above the high tide line; therefore, habitat suitability would depend on environmental conditions during the grunion season.

Birds observed during the 2008 survey and 2009 site visit included California, Heerman's, and western gulls; whimbrel; black phoebe, and snowy egret (*Egretta thula*). Potential wintering area for threatened snowy plover occurs within the site and extends farther upcoast. No snowy plovers were observed during the 2008, 2009, or 2010 site visits. After the January 2010 storm, sand erosion was visible along the bluff and increased cobble cover. Scoured sandstone without marine life was exposed in the lower intertidal.

Nearby Sensitive Resources

Intertidal surfgrass habitat occurs 200 ft offshore of the site. Other reefs with understory algae are located approximately 1,000 ft downcoast and 1,400 ft upcoast of the site. Kelp bed habitat is nearly 1 mile from the site.

Critical habitat for threatened western snowy plover occurs approximately 1,400 ft upcoast of the site. Endangered Belding's savannah sparrow reports have been more than 800 ft and endangered light-footed clapper rail reports have been more than 2,000 ft from the site.

3.9 OFFSHORE STOCKPILE SITES

Depending upon the alternative, anywhere from 160,000 cy to 1.4 mcy of excavated or dredged soil materials would need to be disposed of and/or reused as part of restoration implementation. The materials disposal/reuse scenarios described in Table 1-1 reflect a maximum volume that could be placed at a variety of locations and the total available capacity exceeds the amount of material needed to be disposed/reused for the construction of Alternatives 2A or 1B. Thus only a portion of these disposal/reuse sites, or a portion of the volume (and footprints) identified, may actually be used for materials placement under those alternatives.

SO-5 and SO-6 are designated borrow sites located in the ocean outside the littoral depth of closure (Figure 3-6). These sites were identified in the RBSP EIR/EAs as sand sources for beach nourishment (SANDAG 2011); approval to utilize the sites for offshore stockpiling for future projects would be obtained as part of the permitting process associated with the proposed SELRP.

Both the SO-5 and SO-6 borrow sites dredged for RBSP I or RBSP II remain as depressions approximately 10 to 15 ft below the adjacent seabed. The entire area of the new SO-6 is close enough to shore (within 4,000 ft) for sand to be discharged directly through a pipeline extended along the ocean floor from the beach off of the proposed location of the new inlet for Alternative 2A. The discharge line would pass from the lagoon through the existing tidal inlet and along the back of the beach to south of the restaurants, then straight offshore into the borrow site. Natural ocean forces would distribute material within the borrow site depression. The untended seaward end of the pipe could potentially remain in place. Sand would deposit around and over the pipe in a centralized area. The pipe would be pulled out of the site from its landward end by earthmoving equipment at project completion. Alternatively, sand would be pumped from the lagoon through a discharge line to a barge over the discharge site with a downspout, then directed downward into the borrow site. Material would exit the barge-mounted downspout near the seabed and settle on the seafloor within the borrow site. The barge would be repositioned periodically to spread the discharge evenly through the borrow site, and natural forces would complete the distribution.

3.9.1 SO-6 Borrow Site

Near-surface sediments at the SO-6 borrow site consist of medium sand with a median grain size of 0.43 mm and low content of fine sediment (6% silt + clay) and TOC (0.2 %) (SANDAG 2011).

While most of the species observed during monitoring near this borrow site are species common throughout the SCB, some are more representative of coarse sand sediments. These tend to be less common than those species associated with sand and silt/sand sediments. Infaunal animals collected in 2009 included a variety of worms; clams, snails, and scaphopod mollusks; brittle star, burrowing holothuroid, and sea urchin echinoderms; amphipod, crab, and ostracod crustaceans; and minor phyla such as acorn worm and ribbon worms (SANDAG 2011). Mobile macroinvertebrates and fish collected from a nearby regional monitoring station off Cardiff included spiny sand star (*Astropecten armatus*), elbow crab (*Heterocrypta occidentalis*), white sea urchin, barred sand bass (*Paralabrax*

nebulifer), California lizardfish (*Synodus lucioceps*), longfin sanddab (*Citharichthys xanthostigma*), sargo (*Anisotremus davidsoni*), and speckled sanddab (SANDAG 2011).

The borrow site is more than 500 ft from substrate supporting kelp canopy mapped in 2008. The San Elijo wastewater discharge pipeline is located more than 500 ft upcoast. The closest nearshore reefs at depths less than -30 ft are located approximately 1,400 ft away. Proposed pipeline and mono buoy locations have the potential to be near vegetated reef, kelp habitats, and the pipeline at Cardiff. The closest edge of the borrow site is more than 1.5 mi from historically used least tern nesting sites at San Elijo Lagoon and more than 3 miles from newly constructed sites at San Dieguito Lagoon.

3.9.2 SO-5 Borrow Site

Near-surface sediments consist of fine sand with a median grain size of 0.12 mm and relatively low content of fine sediment (18% silt + clay) and TOC (0.3 %) (SANDAG 2011).

Infaunal animals collected in 2009 included a variety of worms; clams, snails, and scaphopod mollusks; brittle star, burrowing holothuroid, and heart urchin echinoderms; amphipod, cumacean, crab, ostracod, shrimp, and tanaid crustaceans; and minor phyla such as acorn worm and ribbon worms, burrowing anemones, brachyopods, and phoronids (SANDAG 2011). Trawl caught macroinvertebrates and fish during the 2009 survey included blacktail shrimp (*Crangon nigricauda*), decorator crab (*Loxorhyrichus crispatus*), spiny sand star, and Xanthus's swimming crab (*Portunus xantusii*), bay pipefish (*Syngnathus leptorhynchus*), California bat ray, California lizardfish, giant kelpfish (*Heterostichus rostratus*), kelp bass (*Paralabrax clathratus*), and speckled sanddab. Similar species were collected in 1999 prior to dredging for RBSP I, including blackspotted bay shrimp, elbow crab, California halibut, English sole, and fantail sole (*Xystreurys liolepis*) (MEC 2000).

The SO-5 borrow site is located approximately 1,000 ft or more from nearshore reefs at depths less than -30 ft and approximately 600 ft from kelp canopy mapped in 2008. Proposed pipeline and mono buoy locations have the potential to be near vegetated reef or artificial hard bottom (pipeline). The closest edge of the borrow site is approximately 1.8 to 1.9 mi from the newly constructed least tern nesting sites at San Dieguito Lagoon.

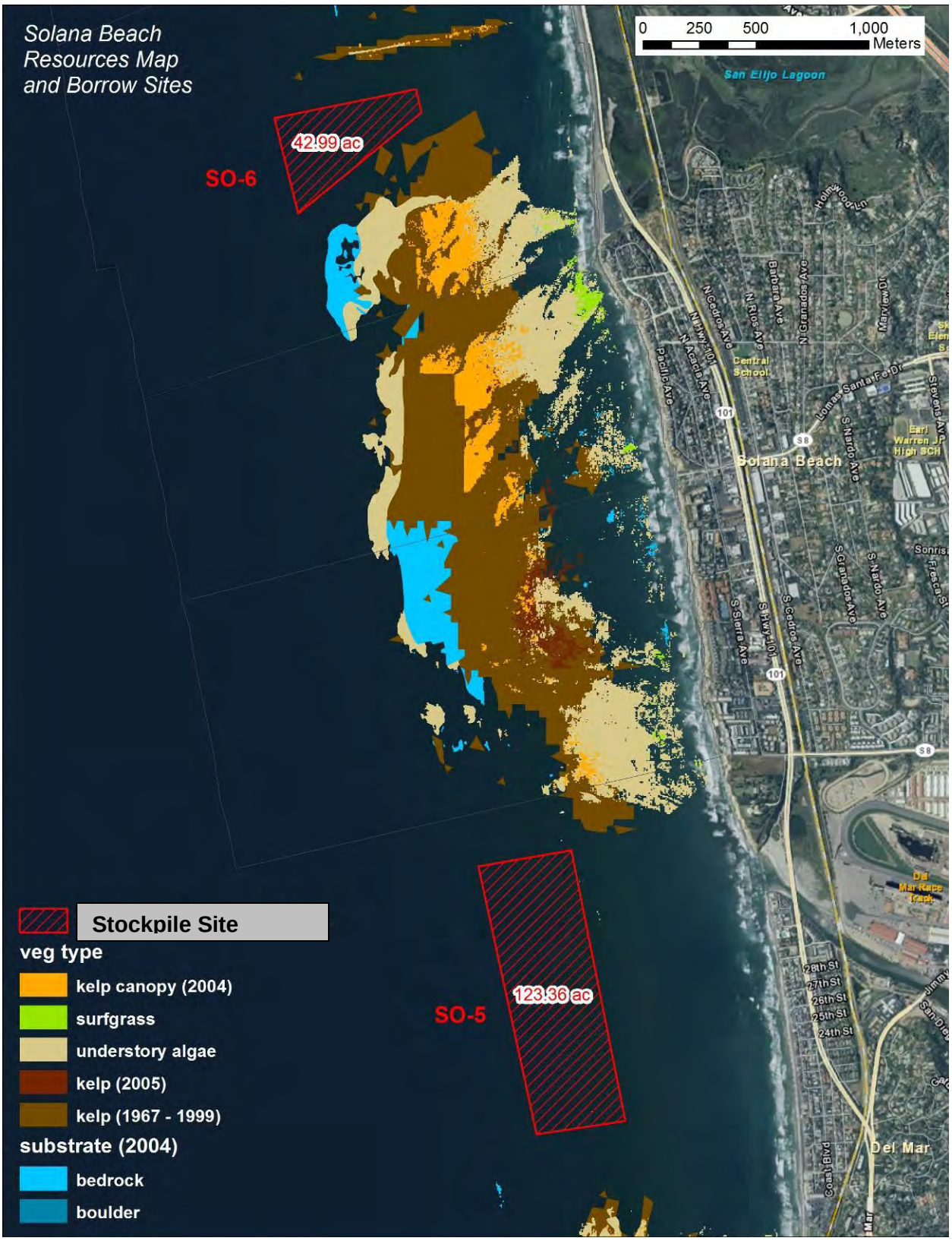


Figure 3-6. Sensitive habitats in the vicinity of stockpile sites (SO-6 and SO-5).

4.0 IMPACT ANALYSIS

This impact analysis only addresses shoreline and nearshore marine biological resources, and not biological resources within San Elijo Lagoon. Potential impacts to biological resources would primarily be related to resuspension of sediment during the dredging, transport, and placement of dredged materials. Direct impacts to marine biological resources may occur through burial or smothering of organisms during sand placement at receiver and stockpile sites, equipment-related damage to habitats or animals during construction activities. Indirect impacts may result from reductions in marine water quality associated with dredging and sand placement activities, sediment transport related to movement of sands from the receiver sites, noise from construction equipment, or interference of normal movement or behaviors of animals due to temporary construction activities or long term changes in the environment. Indirect impacts may result in reduction in habitat quality, interference with foraging or impaired growth, diminished reproduction, or interruption of wildlife movement. Direct and indirect impacts from the project on biological resources are assessed in this section.

An impact to biological resources would be considered significant if a project alternative results in:

- A direct adverse effect on the population of a threatened or endangered species or the loss or disturbance of important habitat for a listed species;
- A long-term net loss in the habitat value of a sensitive biological habitat. For the purposes of this analysis, kelp beds, and well-developed rocky intertidal and surfgrass beds are considered sensitive biological habitats;
- Substantial impedance to the breeding, movement or migration of fish or wildlife;
- Substantial loss to the population of any native fish, wildlife or vegetation. For the purpose of this analysis, substantial is defined as a change in a population that is detectable over natural variability for a period of five years or more; and/or
- Substantial adverse impact on Essential Fish Habitat.

The significance of the impacts was evaluated according to the estimated duration of the impact (short-term or long-term), sensitivity of the affected habitat, and relative change from existing conditions.

4.1 ALTERNATIVE 1A

Implementation of Alternative 1A would result in dredging and disposing of 160,000 cy of sediment at the LA-5 offshore disposal site (Table 1-1). Potential impacts to biological resources would primarily be related to resuspension of sediment during the dredging and transporting of dredged materials, presumably to barges located offshore of San Elijo Lagoon. Since no sediment would be deposited at a receiver or stockpile site, no impacts at receiver or stockpile sites would occur with implementation of Alternative 1A.

4.1.1 Direct Impacts from Alternative 1A

Direct impacts to marine biological resources may occur through equipment-related damage to habitats or animals during construction activities. The placement of temporary pipelines, anchoring, and vessel transport have the potential to impact sensitive resources. Figure 3-3 depicts the resources offshore of the lagoon along inshore routes if sinker pipelines are used to transport sediment to

offshore barges. Similar to RBSP I and II, it is assumed that project permit conditions would include requirements to avoid sensitive resources such as kelp, reefs, and structures such as outfalls. Discharge lines would also be placed to prevent vessels from traversing kelp beds and designated vessel transit corridors also would avoid kelp beds. In addition, an anchor plan would be prepared during the project implementation and design phase to avoid sensitive resources in the area. Implementation of these design features would ensure the impact would not be substantially adverse and would remain less than significant.

Placement of pipelines would occur across the beach face or along the back of the beach. No sensitive habitats occur in these areas. A preconstruction survey would be conducted of all pipeline routes to confirm no sensitive resources would be directly impacted by the placement and, if necessary, pipelines would be rerouted to avoid direct impacts. This is consistent with the approach successfully used for RBSP I and II, and therefore the impact would not be substantially adverse and would remain less than significant

Vehicle access and pipeline placement also have the potential to result in direct impacts to invertebrates and grunion eggs if present. Effects on invertebrate biota generally are minor in the low and middle intertidal where invertebrates are buried by sand. During the grunion season, construction equipment has the potential to damage eggs in the upper intertidal, if eggs are present. Preconstruction habitat suitability assessment and monitoring would be used to minimize adverse effects to grunion during their spawning season, and therefore the impact would not be substantially adverse and would remain less than significant.

4.1.2 Indirect Impacts from Alternative 1A

The primary indirect impact from Alternative 1A includes potential degradation of water quality through the generation of turbidity by dewatering dredged material at offshore barges. Turbidity can have a number of effects on marine biota. Reduction of water clarity or ambient light levels can impact primary production of plankton, inhibit plant growth or recruitment of plants in vegetated habitats, reduce foraging efficiency of a variety of animals, or cause physiological stress in organisms unable to move away from the turbid water. Sedimentation associated with the settlement of suspended sediment from turbidity plumes has the potential to impact organisms or plant recruitment in hard-bottom habitats. Sedimentation generally is less of a concern for soft-bottom habitats unless within spawning grounds.

While it is assumed that Best Management Practices (BMPs) such as screening the material would occur, turbidity plumes would still be generated. Turbidity at the offshore areas can be influenced by many factors, including characteristics of dredged material, water depth, and hydrodynamic forces (mixing, currents, etc.). The degree of turbidity depends largely on the size of the sediment particles. Extremely fine material such as clay and silt have a tendency to quickly go into suspension during the dredging process and stay suspended for a longer time due to their small settling velocities. Fines may be expected to settle on the order of several hours at the 45 to 75 foot depths, while coarser-grained materials, such as sands, would tend to settle on the order of several minutes at similar depths (SANDAG 2011).

The elevated suspended solids concentrations in turbidity plumes reduce water clarity/light transmittance, and increase discoloration. Table 4-1 shows the estimated sediment plume length expected to occur from depositing spoils at disposal/reuse sites in onshore, nearshore, and offshore

locations. These estimates assume a median particle size of 0.20 millimeter (mm), as determined through sediment characterization (M&N 2012b) and a settling velocity of 0.08 feet per second (ft/s), were calculated by the following formula: water depth/particle settling velocity x current speed (feet/sec), which is the material anticipated for Alternatives 1B and 2A. For Alternative 1A, where fines will be deposited at LA-5, a smaller median grain size was used.

Table 4-1. Estimated sediment plume length at potential disposal/reuse sites (after SANDAG 2011).

Disposal/Reuse Location	Current Velocity (knots)	Depth (ft)	Plume Length (ft)
Onshore	1.5–3.0	10	313 – 625
Nearshore	1.5–3.0	15	469 – 938
Offshore	0.5–1.5	25	781 – 1,563
Offshore*	0.5–1.5	25	2,083 – 4,166

*assumes median particle size of 0.10 mm and a settling rate of 0.03 ft/s (WEF 1991)

The estimated plume distance on any given day will vary according to the grain size characteristics of the material dredged during that day, turbulence, current speed, and to what depth in the water column the particles are resuspended. Use of the overall mean grain size diameter represents an indication of average plume extent. Silt/clays resuspended during dredging may travel longer distances than indicated in the table.

For Alternative 1A, under maximum expected current speeds (0.5 to 1.5 knots), the range of predicted downcurrent plumes ranged from approximately 2,000 to 4,000 ft (Table 4-1); however, the anticipated turbidity would be generated from dewatering sediment in a barge and is not expected to occur for extended periods of time. This would be based on how long it would take to fill a barge which would depend on the size of the barge and dredge production. Therefore, impacts would not be substantially adverse and would remain less than significant

Resuspension of sediments can also affect other water quality parameters such as dissolved oxygen and pH within the zone of influence. As noted above, this will depend on numerous environmental factors, although it is anticipated any effects would be short-term and localized. Therefore, no long-term reductions in water quality would be anticipated due to the diluting capacity of the ocean, localized nature of the turbidity plumes, and rapid dissipation once dredging operations ceased. Therefore, impacts would not be substantially adverse and would remain less than significant

Since it is assumed that the material is suitable for ocean disposal and permitted to be disposed of at LA-5, no impacts are anticipated from potential effects associated with contaminants.

Other indirect impacts may result from implementation of Alternative 1A including:

- Forage Reduction or Alteration
- Disturbance, Displacement, or Interference
- Other Construction Issues
- Turbidity

Forage Reduction, Alteration, or Modification

No adverse effects on bird foraging were observed with implementation of the RBSP I (AMEC 2002). Foraging by seabirds and waterbirds on fish prey was patchy and appeared to be prey dependent. There were no obvious patterns as to the effects of dredging or discharge turbidity on foraging locations or prey availability. Similar findings were reported during monitoring of least tern foraging behavior during beach nourishment at Surfside-Sunset, California (MEC 1997). Therefore, impacts would not be substantially adverse and would remain less than significant

Disturbance, Displacement, or Interference

Equipment operation noise and activities have the potential to disturb shorebirds, gulls, and other coastal birds that may forage in the vicinity of construction. This impact has the potential to be adverse, but would not be significant because disturbance effects would be temporary and limited to the period of construction, with unaffected areas available to provide foraging opportunities. Therefore, impacts would not be substantially adverse and would remain less than significant

Other Construction Issues

Operation of equipment on the beach or dredges and support vessels has the potential to introduce contaminants to the marine environment from minor spills and leaks. The potential for accidental discharge also could result from collision with or by another vessel. The probability of both types of accidental discharges is considered low. The dredging contractor would be required to develop a Spill Prevention Control and Containment plan (SPCC) prior to initiating construction. If a spill occurred, the contractor would utilize BMPs to prevent long-term degradation of water quality. For these reasons, impacts to biological resources from accidental discharges would not be substantially adverse and would remain less than significant

Turbidity

Turbidity has the potential to indirectly impact plankton, fish, marine mammals, kelp, and vegetated reefs. Turbidity within the ocean environment is naturally variable depending on wave climate and season. Monitoring data from seven California beach nourishment projects indicate that turbidity measurements with a nephelometer were below or within ranges measured during storm or high wave conditions (SAIC 2007b). As discussed above, turbidity would be expected to be localized to the discharge location. Elevated turbidity would occur in pulses and would be expected to return to background conditions between barge cycle times. Therefore, impacts would not be substantially adverse and would remain less than significant

Plankton, Pelagic Fish, and Marine Mammals

As discussed above, the effects of suspended particulates on plankton are generally considered negligible because of the limited area affected and short exposure time as they drift through the affected areas. Similarly, potential effects on fish would be limited and temporary in nature, and a number of studies have documented variable responses by fish that range from attraction to avoidance. Pelagic fish and any marine mammals that ventured close to shore, would not be expected to be adversely affected because the turbidity would remain localized and short term, and

similar to conditions that may be experienced during storm events. Therefore, impacts would not be substantially adverse and would remain less than significant.

Kelp

Kelp beds occur from approximately 2,000 feet upcoast and downcoast from the middle of the lagoon, which is close to the distance that turbidity plumes may be expected to travel unless carried by currents. In the unlikely event that turbidity did extend to the kelp beds, the particulate concentration would be expected to be low as to have a negligible effect on the kelp bed. Therefore, impacts would not be substantially adverse and would remain less than significant.

Vegetated Reefs

Nearshore vegetated reefs have the potential to be impacted by reduced light transmittance and siltation associated with turbidity plumes. Turbidity also has the potential to cause physiological stress, reduced feeding, or displacement of mobile marine invertebrates or fish in reef areas. Actual effects would depend on the concentration and duration of turbidity. While marine invertebrates and bottom-associated fish are generally tolerant of high turbidity such as naturally occurs during high wave or storm conditions, adverse effects may result from exposure to very high concentrations or moderate to high concentrations for prolonged periods. As noted, turbidity plumes associated with the project would be relatively localized and of short duration. Furthermore, suspended sediment concentrations in turbidity plumes would be minimized by use of BMPs. Therefore, impacts would not be substantially adverse and would remain less than significant.

4.1.3 Threatened and Endangered Species

California Least Tern

The lagoon is located far from nesting site locations that may be seasonally used by endangered least terns during their April–September breeding season. Dredging at the lagoon and placement of material onto barges under Alternative 1A would generate turbidity that would be expected to be localized and short-term in nature. No adverse effects on bird foraging were observed with implementation of the RBSP I (AMEC 2002) and similar findings were reported during monitoring of least tern foraging behavior during beach nourishment at Surfside-Sunset, California (MEC 1997b). Turbidity plumes expected during construction are anticipated to be localized and short-term in nature. Therefore, impacts would not be substantially adverse and would remain less than significant.

Western Snowy Plover

The lagoon is located approximately 6 miles from snowy plover critical habitat located adjacent to Batiquitos Lagoon. This species nests at Batiquitos Lagoon, and has been observed to forage at the beach in the vicinity of the Batiquitos receiver site. Since no construction would occur within designated or proposed critical habitat, impacts from Alternative 1A would not be substantially adverse and would remain less than significant.

4.1.4 Essential Fish Habitat

As discussed in Section 3.2.2, the proposed project would encompass designated EFH, including nearshore areas adjacent to receiver sites, as well as the areas located farther offshore. In addition to EFH designations, certain areas may also be designated as HAPCs. HAPCs are discrete subsets of EFH that provide important ecological functions. HAPCs are vulnerable to degradation (50 C.F.R. 600.815[a][8]). Regional Fishery Management Councils may designate a specific habitat area as an HAPC in the FMP based on one or more of the following reasons: (1) importance of the ecological function provided by the habitat; (2) the extent to which the habitat is sensitive to human-induced environmental degradation; (3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and (4) rarity of the habitat type (50 C.F.R. 600.815[a][8]). The HAPC designation does not confer additional protection or restrictions upon an area but can help prioritize conservation efforts.

Impacts to EFH are typically determined based on whether a project reduces quality and/or quantity of EFH, regardless of the degree to which that impact occurs. Based on the Magnuson-Stevens Act, adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species, and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 C.F.R. 600.810(a)). By definition, the threshold to have an adverse impact to EFH is low; however, the nature of the impact can be further qualified based on the type of impact (e.g., temporary or permanent). This is distinctly different from an adverse or significant impact determination made under NEPA and CEQA, which takes into account the context and intensity of a potential impact. Therefore, this section refers to impacts to EFH in terms of compliance with the Magnuson-Stevens Act and does not reflect impact severity as defined under NEPA, although a significant or permanent adverse impact to EFH would qualify as a significant impact under NEPA.

Less than significant impacts to water column EFH and benthic habitat at the offshore construction area are anticipated and would constitute temporary adverse impacts (e.g., temporary turbidity plume due to dredging or disturbance to soft bottom habitat from pipeline and anchors). Similarly, temporary adverse impacts to lifestages of managed species are expected to occur as a result of the project. Since all dredged material will be disposed of at LA-5, no adverse effects to quality or quantity of HAPCs (e.g., rocky reefs) would occur. Protective measures have been implemented to avoid and/or minimize these impacts.

4.2 ALTERNATIVES 1B AND 2A

Implementation of Alternatives 1B and 2A would result in disposing of sediment at receiver sites, a nearshore receiver site, and an offshore stockpile site. The primary difference between the Alternatives is that 300,000 cy of sediment would be deposited in a nearshore disposal site for Alternative 1B, while under Alternative 2B, 500,000 cy of sediment would be place in the nearshore disposal site. The impact assessment is organized below according to receiver sites and offshore sites. Direct impacts are summarized and then followed by the assessment of indirect impacts.

4.2.1 Direct Impacts from Alternative 1B and 2A

Beach nourishment would result in direct impacts due to sand placement within the receiver site footprints. Other direct impacts may result from construction vehicle or equipment damage during construction activities. Indirect impacts would occur from turbidity generated during construction of the receiver sites, construction noise and activity disturbance to wildlife, and transport of sand away from the site via natural coastal processes up and down the coast and on and offshore.

Receiver Sites

Construction of the beach receiver sites would result in burial impacts to small marine invertebrates (e.g., clams, sand crabs, worms). During beach nourishment, large volumes of sand are placed above and through the intertidal zone. The amount of sand overburden varies in thickness across the footprint of the fill. From the back beach to the top of the slope, where sand depths would be deeper, all benthic organisms would be smothered. Organisms also would be buried under decreasing depths of sand towards the toe of the slope. The loss of benthic organisms within the receiver site footprint is an expected and unavoidable impact of beach replenishment projects. Most invertebrates within the receiver site footprint are not expected to survive, but studies have shown that some mobile animals are able to escape or burrow out from the outer or leading edges of the beach fills where overburden depths are generally 2 ft or less (NRC 1995). However, burrowing ability substantially decreases over short time frames (Mauer et al. 1986).

Most studies have reported rapid recovery within 1 year or less for sandy beach intertidal animals after beach nourishment (NRC 1995, Greene 2002, SAIC 2007b). This begins almost immediately after cessation of construction. Recovery occurs via two mechanisms, one is by animals that migrate to the affected area from surrounding habitat, and the second is from recruitment from the plankton. Substantial recovery of invertebrate abundance, species number, and biomass occurred within 4 months after placement of 1 mcy of sand at Imperial Beach (Parr et al. 1998), within a larger area than the RBSP I receiver site. Habitat functions were studied for 3 years after the RBSP I at several beach sites in Encinitas, and were found to be enhanced relative to prior to the RBSP I in having: increased invertebrate prey variety earlier in the season, greater sand depths and grunion habitat suitability, and increased bird use of wider beach habitat across tide conditions (SAIC 2006). Habitat enhancement also was observed after the RBSP I on an adjacent beach within 1,500 ft downcoast of the Cardiff receiver site, although seasonal differences in habitat quality varied more at that site than the receiver site.

Sand Placement

The primary direct impact associated with beach nourishment is burial of beach invertebrate animals (e.g., clams, sand crabs, worms) living within the substrate at the receiver site. There is the potential to directly impact California grunion individuals or eggs by equipment damage or sand burial, if sand placement or site mobilization activities took place within 10 to 14 days of a spawning run. Other direct impacts may result from equipment damage associated with placement of pipelines to pump sediment to the beaches, operation of vehicles to move and spread sand at the receiver sites, and movement of vehicles and equipment during access to and from the receiver site.

Placement of pipelines would occur across the beach face or along the back of the beach. No sensitive habitats occur in these areas within the receiver sites. Several sites have rocky intertidal or

subtidal reef areas in the vicinity, which would be avoided during placement of pipelines. A pre-construction survey would be conducted of all pipeline routes to ensure no sensitive resources would be directly impacted by the placement. With this measure, impacts would not be substantially adverse and would remain less than significant.

During the grunion season, construction activities and vehicles have the potential to damage eggs in the upper intertidal, if eggs are present. As part of RBSP I and II, a pre-construction habitat assessment to determine potential suitability for grunion spawning was conducted and implementation of a grunion monitoring program during construction to avoid and minimize adverse effects to this species during their spawning season. Vehicle routes also would be along the beach. The area of direct impact to beach habitat and invertebrate resources was conservatively estimated by calculation of area that includes the entire fill site from the top of the back beach to the toe of the slope. Actual impact to biological resources would be less at some sites given that marine invertebrates do not inhabit back beach non-tidal areas and some would escape mortality along the constructed slope and leading edge of the fill. Therefore, impacts would not be substantially adverse and would remain less than significant.

Approximately 61 acres of beach habitat, approximately 23 acres of nearshore sandy subtidal habitat, and up to 44 acres of offshore sandy subtidal habitat (SO-6) would be disturbed by construction of Alternatives 1B and 2A (Table 4-2). While impacts would be adverse, the temporary habitat disturbance would not be significant on a regional scale because sandy beach habitat is the dominant shoreline habitat in San Diego County and disturbance of sandy beach habitat functions would be temporary. After construction, sandy beach organisms would begin recolonizing the site almost immediately with recovery anticipated in relatively short timeframes (weeks. months, to < 1 year) depending on when each site is nourished within the overall construction schedule. Because beach construction is anticipated to take 10 month to complete, receiver sites would be in various stages of recovery over the course of the construction period; thereby, minimizing potential impacts to other wildlife from temporary reductions in invertebrate prey at individual receiver site locations. Therefore, impacts would not be substantially adverse and would remain less than significant.

Table 4-2. Estimated direct impact acreage from sand placement.

Receiver Site	Dimensions		Acres	Quantity of Material (cy)
	Length	Width		
Onshore				
Leucadia	2,700	260	16.1	117,000
Moonlight	770	300	5.3	105,000
Cardiff (onshore)	3,400	360	20.8	300,000
Solana Beach	1,900	200	8.7	146,000
Torrey Pines	-	-	10.0	245,000
Total Onshore	**8,770**	**1,120**	**60.9**	**913,000**
Nearshore				
Cardiff (nearshore)	1,250	1,250	23.4	500,000
Total Impacts	**10,020**	**2,370**	**84.3**	**1.4myc**

Direct impacts are summarized below for each receiver site.

Leucadia

The footprint of the receiver site would be approximately 16 acres with placement of 117,000 cy. Habitat within the site boundaries is predominantly sand, and sandstone was exposed in the lower intertidal after the January 2010 storm. No sensitive hard bottom or vegetated habitat occurs within the site boundaries. Direct impacts to marine life within the footprint of the fill would be adverse but not significant, and impacts to grunion would be avoided and minimized by pre-construction habitat assessments, monitoring, or other conditions established during the permitting process. Therefore, direct impacts would not be substantially adverse and would remain less than significant.

Moonlight Beach

A total of 105,000 cy would be placed at this receiver site, and the footprint would be approximately 5 acres. Habitat within the site boundaries is sand and cobbles, and sandstone was exposed in the lower intertidal after the January 2010 storm. No sensitive hard bottom or vegetated habitat occurs within the site boundaries. Similar to the summary for the Leucadia receiver site, direct impacts to marine life within the footprint of the fill would be adverse but not significant, and impacts to grunion would be avoided and minimized by pre-construction habitat assessments, monitoring, or other conditions established during the permitting process. Therefore, direct impacts would not be substantially adverse and would remain less than significant.

Cardiff

The footprint of the receiver site would be approximately 21 acres with placement of 300,000 cy. Habitat within the site boundaries is sand and cobbles. No sensitive hard bottom or vegetated habitat occurs within the site boundaries. Similar to the summary for the Leucadia receiver site, direct impacts to marine life within the footprint of the fill would be adverse but not significant, and impacts to grunion would be avoided and minimized by pre-construction habitat assessments, monitoring, or other conditions established during the permitting process. Therefore, direct impacts would not be substantially adverse and would remain less than significant..

Solana Beach

The footprint of the receiver site would be approximately 8.7 acres with placement of 146,000 cy. Habitat within the site boundaries is sand and cobbles. No sensitive hard bottom or vegetated habitat occurs within the site boundaries. Similar to the summary for the Leucadia receiver site, direct impacts to marine life within the footprint of the fill would adverse but not significant, and impacts to grunion would be avoided and minimized by pre-construction habitat assessments, monitoring, or other conditions established during the permitting process. Therefore, direct impacts would not be substantially adverse and would remain less than significant.

Torrey Pines

The footprint of the receiver site would be approximately 10 acres with placement of 245,000 cy. Habitat within the site boundaries is sand and cobbles. No sensitive hard bottom or vegetated habitat occurs within the site boundaries. Similar to the summary for the Leucadia receiver site, direct impacts to marine life within the footprint of the fill would be adverse but not significant, and impacts to grunion would be avoided and minimized by pre-construction habitat assessments,

monitoring, or other conditions established during the permitting process. Therefore, direct impacts would not be substantially adverse and would remain less than significant.

Nearshore Receiver and Offshore Stockpile Sites

There would be a temporary reduction in benthic invertebrate biomass and alteration of the benthic community species composition at the nearshore disposal and offshore stockpile sites associated with the sediment disposal. Studies indicate that recovery of the benthic invertebrate community depends on several factors such as placement method, local environmental conditions, hydrodynamics, and sediment infill rates. Reported recovery rates for dredging nearshore sandy subtidal habitat generally range from 2 to 4 years when hydrodynamics and sediment characteristics are not substantially changed within the dredged area (Oliver et al. 1977, Newell et al. 1988, Burlas et al. 2001, SAIC 2007b). Therefore, direct impacts would not be substantially adverse and would remain less than significant.

4.2.2 Indirect Impacts from Alternative 1B and 2A

The following types of potential indirect impacts may result from sand placement:

- forage reduction or alteration;
- disturbance, displacement, or interference;
- turbidity;
- sedimentation; and
- other construction issues.

In addition, benefits also would occur to sandy habitats after placement of additional sand on beaches. Monitoring after RBSP I demonstrated that beach nourishment enhanced sandy beach habitat functions at several beaches (SAIC 2006). This was most noticeable at beaches that transitioned from either cobble-covered beaches supporting few biological resources or beaches with highly seasonal periods of productivity coincident with seasonal sand accretion and erosion. The primary benefit was to increase the persistence of sandy beach habitat across seasons such that habitat was suitable early in the season to support the onset of the grunion spawning season and invertebrate recruitment period. This enhancement resulted in increased invertebrate diversity earlier in the season, increased bird use across tide conditions, and enhanced habitat for grunion spawning (e.g., increased beach width and reduction in cobble) Similar beneficial impacts would be anticipated after implementation of this project.

Each type of indirect impact is assessed for habitats and general wildlife. Potential indirect impacts to federally listed or state-listed endangered or threatened species are summarized at the end of this section. Many of the impacts can be generalized across the project receiver sites and are therefore not specifically discussed with respect to each site. Indirect impacts to nearshore resources due to project sedimentation could have localized effects, however, and these potential effects are discussed according to receiver site below.

Forage Reduction, Alteration, or Modification

There is potential for indirect effects to shorebird foraging from burial of invertebrates within the footprint of the receiver site. Each receiver site has unaffected shoreline nearby and recolonization of the receiver site by invertebrates would be rapid (e.g., weeks to months) following the conclusion

of sand placement activities. Therefore, impacts would not be substantially adverse and would remain less than significant.

Temporary attraction of birds, particularly gulls, to the discharge location is anticipated based on observations from RBSP I and other beach nourishment projects. The birds are attracted to the sand-slurry pumped onto the beach or its return water, where they opportunistically forage on deceased invertebrates and organic debris originating from the borrow site. Similarly, fish that feed on plankton or small organic particles may be attracted to turbidity plumes associated with hydraulic dredge-pump sediment projects; presumably to feed on discharged organic particulates. Fish-feeding birds may be attracted in turn to an increased concentration of fish where water clarity is sufficient for them to locate their prey. Such effects are temporary and therefore, impacts would not be substantially adverse and would remain less than significant.

No adverse effects on seabird or waterbird foraging were observed with implementation of RBSP I (AMEC 2002). Bird surveys in areas of the borrow and receiver sites identified no effects of dredging or discharge turbidity on bird foraging behavior or locations. Turbidity plumes are expected to be similar to those experienced during RBSP I and II; localizes and short-term in duration. Therefore, impacts would not be substantially adverse and would remain less than significant.

Disturbance, Displacement, or Interference

Operational noise from equipment and activities has the potential to disturb shorebirds, gulls, and other coastal birds that may forage or rest on beaches at or near receiver sites. This impact would not be substantially adverse and would remain less than significant because (1) disturbance effects would be temporary and limited to the period of construction; (2) the proximity of unaffected shoreline adjacent to the receiver sites that provides foraging opportunities; and, the (3) the forage base at the receiver site would rapidly recover following the conclusion of sand placement activities.

Artificial night lighting has the potential to disturb or attract wildlife. Grunion have been documented to spawn in the vicinity of beach disposal operations, including RBSP I. Some reports suggest that grunion spawning may be reduced in well-lighted areas, while other reports document spawning near lighted areas such as piers. It is not well understood to what extent grunion may be attracted or displaced from spawning at a beach from artificial lighting or other equipment-related disturbance. Impacts to grunion would not be substantially adverse and would remain less than significant because habitat suitability assessments and monitoring during construction as discussed above would be used to minimize impacts to the species.

Turbidity

Turbidity has the potential to indirectly impact plankton, fish, marine mammals, kelp, and vegetated reefs. Turbidity within the ocean environment is naturally variable depending on wave climate and season. Monitoring data from seven California beach nourishment projects indicate that turbidity measurements with a nephelometer were below or within ranges measured during storm or high wave conditions (SAIC 2007). As discussed in Section 4.1, turbidity would be expected to be localized to the discharge location, generally within 500 feet or less. Plumes would be expected to be largely confined within the surf zone but may be incorporated by rip currents and carried farther

offshore. Because the sediments are generally sandy, project-related turbidity is expected to quickly settle and plumes would be temporary.

Turbidity would be minimized by the construction of training dikes that would promote settlement of sediment on the beach and lower the amount of suspended sediment that is lost to the return waters. This design feature was implemented during RBSP I and II, and found to be effective for minimizing turbidity plumes at the receiver sites. With this project design feature, suspended sediment concentrations would be reduced, thereby minimizing potential effects associated with the range of exposure durations that may occur depending on equipment type and differences in receiver site configurations. Therefore, impacts would not be substantially adverse and would remain less than significant.

Plankton, Pelagic Fish, and Marine Mammals

As discussed above, the effects of suspended particulates on plankton are generally considered negligible because of the limited area affected and short exposure time as they drift through the affected areas. Similarly, potential effects on fish would be limited and temporary in nature, and a number of studies have documented variable responses by fish that range from attraction to avoidance. Pelagic fish offshore of the receiver sites, and any marine mammals that ventured close to shore, would not be expected to be adversely affected because the turbidity would remain localized and short term, and similar to conditions that may be experienced during storm events. Therefore, impacts would not be substantially adverse and would remain less than significant.

Kelp

Kelp beds occur from approximately 850 to 5,000 feet offshore of the receiver sites, which is outside the distance that turbidity plumes would be expected to travel offshore unless carried by rip currents. In the unlikely event that turbidity did extend offshore, the particulate concentration would be expected to be low as to have a negligible effect on the kelp bed. Therefore, impacts would not be substantially adverse and would remain less than significant.

Vegetated Reefs

Nearshore vegetated reefs have the potential to be impacted by reduced light transmittance and siltation associated with turbidity plumes. Turbidity also has the potential to cause physiological stress, reduced feeding, or displacement of mobile marine invertebrates or fish in reef areas. Actual effects would depend on the concentration and duration of turbidity. While marine invertebrates and bottom-associated fish are generally tolerant of high turbidity such as naturally occurs during high wave or storm conditions, adverse effects may result from exposure to very high concentrations or moderate to high concentrations for prolonged periods. As noted, turbidity plumes associated with the project would be relatively small, localized, and of short duration. Furthermore, suspended sediment concentrations in turbidity plumes would be minimized by use of training dikes, a key project design feature. Therefore, impacts would not be substantially adverse and would remain less than significant.

Sedimentation

Beach sand placed on receiver sites would eventually be washed by waves and redistributed offshore and alongshore through natural processes. There is the potential for sand introduced into the system to indirectly impact sensitive habitats and resources if sand deposits on those resources occur at sufficient depth and persistence to result in burial or degradation of those resources. To estimate potential impacts to sensitive habitats, a suite of indicator species of relatively higher quality reef habitats has been identified. As defined in Section 3.0, sensitive indicator species consist of surfgrass, feather boa kelp, sea fans, sea palms, and giant kelp.

Evaluating potential indirect sedimentation impacts is complex and impact conclusions must be determined in light of the dynamic ocean system, where seasonal and annual changes in sand elevation naturally occur, and an understanding must be developed of the life history of sensitive species and their relative distribution on nearshore reefs. A summary of the analysis and approach is provided below, but see Appendix A for a detailed memorandum.

Numerical modeling similar to that used for RBSP I and II, and the Encinitas-Solana Beach Shoreline Protection Project (USACE 2012) was used to simulate changes in shoreline morphology at North County beaches from the SELRP (see Moffat & Nichol 2012a for model assumptions). Shoreline modeling positions were output at each model cell within the GENESIS model domain. For each profile, the average shoreline position was calculated including data from one half the distance to the next downcoast profile up through one half the distance to the next upcoast profile.

Net differences between each project alternative and the without project condition were calculated. These net shoreline changes at each profile location were then converted into sand volumes using v/s ratios. These sand volumes were distributed across the profiles using historical cross shore sand thickness distributions. Sand thicknesses were interpolated between the profiles where data were non-existent. Model outputs consisted of predictions of with-project sand level increases produced at 10 ft intervals in the onshore-offshore direction along the profiles. Sand increase predictions were provided from the onshore beach to offshore distances corresponding to approximately-30 ft MLLW, which was defined as the average depth of beach closure for North County beaches. The sand level increase predictions were provided for both spring and fall seasons each year for five years and ten years after project implementation.

The approach initially included assessing potential impacts from the project alternative that could potentially have the greatest impact (i.e., Alternative 2A under both calm and energetic wave conditions), and then analyzing other scenarios using the more conservative approach. Therefore, the screening methodology included analyzing Alternative 2A under calm and energetic wave conditions for spring and fall for five years. Results indicated that the greatest impacts were observed under the calm wave condition, and therefore subsequent modeling only used calm wave condition, in addition to adding results for Year 10 to assess potential long-term impacts. Table 4-3 depicts the modeled scenarios.

For Alternatives 1B and 2A, the ebb bar was also incorporated into the analysis, using a conservative analytical approach by comparing ebb bar sedimentation results from an adjacent lagoon (i.e., Batiquitos Lagoon). It was assumed that approximately 100,000 cy of the sediment would migrate to the beach and this volume was incorporated into the GENESIS modeling. The analytical approach was applied to the remaining 400,000 cy to determine the dispersion of the material over time.

Table 4-3. Screening approach to assess potential impacts for various Alternative 2 scenarios.

	Scenario*	Wave Condition	Duration	Result
Initial Model Run	II	Calm	Spring and Fall for Years 1 to 5	Calm wave condition indicated greatest impact.
		Energetic	Spring and Fall for Years 1 to 5	
Subsequent Model Runs	II	Calm	Spring and Fall for Years 1 to 5, Year 10	Potential impacts to nearshore resources analyzed and carried forward.
	III	Calm	Spring and Fall for Years 1 to 5, Year 10	
	IV	Calm	Spring and Fall for Years 1 to 5, Year 10	

*Scenario II (not carried forward) - Existing inlet, 500k cy on the beach (Cardiff) and 500k cy to the nearshore.
Scenario III = similar to Alternative 2A - New inlet, 300k cy on the beach (Cardiff) and 1M cy in ebb bar.
Scenario IV = Alternative 2B (not carried forward) - New inlet, 700k cy on the beach (Cardiff) and 2M cy in ebb bar.

A GIS-based methodology was developed to automate what was done for previous efforts (i.e., SANDAG RBSP and the Encinitas-Solana Beach Shoreline Protection Project from 2005 through 2007), and was developed in coordination with three resource agencies (California Department of Fish and Game, National Marine Fisheries Service, and United States Fish and Wildlife Service), USACE, and the local sponsors. Similar to the previous method used for the Encinitas-Solana Beach Shoreline Feasibility Study, the 2004 LiDAR data (post RBSP I) was used as base bathymetry upon which changes in sand thickness were added. Substrate and vegetation data were added as a layer to provide a spatial representation (areal coverage) of the resources; a mosaic of habitat types (e.g., sandy areas, rocky reef) and resources (e.g., surfgrass, kelp) that also includes reef elevation. To estimate sedimentation and potential impacts to resources based on natural variation, a sand layer was created from empirical data provided from the 1996 to 2008 coastal profile dataset (Coastal Frontiers 2011). This sand layer was overlaid onto the baseline layer similar to the modeled sedimentation results, and the criteria described below were applied, and the area potentially impacted was calculated.

Two approaches were used to assess potential impacts. The first included assessing project-related impacts using burial criteria, and secondly, comparing potential impacts with natural variation. For this project, a burial criteria of greater or equal to 12 inches for one year (spring and fall) was used since similar criteria were used to assess impacts on biological resources for previous beach nourishment projects (e.g., RBSP I and II). Given the dynamic nature of the coastal environment and natural seasonal sediment transport, rocky habitat less than 12 inches typically supports ephemeral species due to sediment scour. Therefore, persistent project-related impacts above this level were considered to have potential impacts on perennial/indicator species and habitat. In addition, seasonal impacts were determined and compared with natural variation values. Therefore, any potential project-related impact was identified if any seasonal impact exceeded Natural Variation (i.e., any effect greater than that which would be above and beyond what would be expected to naturally occur).

The model predicted cross-shore sedimentation results for each project alternative indicated that sedimentation at all profiles was less than 1 ft, with the exception being in the vicinity of the ebb bar

at San Elijo Lagoon, which would be expected given that it is the area receiving the greatest amount of sediment (See Appendix A).

Seasonal impacts were determined based on Years 1 to 5 and Year 10, and the potential project-related impact was determined by comparing these estimated impacts with impacts associated with natural variation. All results indicated that project-related impacts were several orders of magnitude less than natural variation suggesting impacts would not be substantially adverse and would remain less than significant to sensitive nearshore marine resources from implementation of any of the project alternatives (see Appendix A). Table 4-4 provides a summary of the maximum seasonal impact for Alternative 1B and 2A relative to natural variation.

The analysis did not include any analysis for potential impacts of nourishment at the Torrey Pines receiver site since GIS data were not available; however, impacts associated with beach nourishment at the Torrey Pines receiver site were analyzed for RBSP I and II (SANDAG 2011). Modeling results predicted that sand elevations would average 0.5 to 0.7 ft higher in spring and 0.6 to 0.1 ft higher in fall between 350 and 600 ft, 0.2 to 1.0 ft higher between 600 and 800, and 0.2 to 0.6 ft higher at distances between 800 and 1,200 ft offshore profiles TP-0520 and TP-0530. Predicted sand increases were less than 0.1 ft approximately 1 mi downcoast of the receiver site. It was determined that the impacts of RBSP II on the hard-bottom habitat in the vicinity of the Torrey Pines receiver site would not be substantially adverse and would remain less than significant for the following reasons: 1) reef heights extend above the predicted level of seasonal sand elevation increase up- and downcoast of the receiver site, and 2) 2009 surveys did not indicate substantial sand influence except on low relief reef (SANDAG 2011).

Analytical modeling of the ebb bar indicated that there may be an area that measures approximately 2,200 ft alongshore and 1,600 ft cross-shore off Cardiff State Beach that would be affected by increased sedimentation. The only biological resources that could be affected by the increased sedimentation are those understory and giant kelp plants present on the rip rap associated with the San Elijo Outfall. Based on historical kelp canopy cover, up to 6 acres of understory and/or giant kelp plants could be affected. However, impacts to these resources are not included in the analysis since the intent of the rip rap is to support and protect the outfall pipe, and it was not created as an artificial reef to enhance biological productivity. In fact, the San Elijo Joint Powers Authority is under permit to maintain and remove kelp plants which may compromise the integrity of the rip rap. Therefore, impacts would not be substantially adverse and would remain less than significant.

Other Construction Issues

Operation of equipment on the beach or dredges and support vessels has the potential to introduce contaminants to the marine environment from minor spills and leaks. The potential for accidental discharge also could result from collision with or by another vessel. The probability of both types of accidental discharges is considered low. The dredging contractor would be required to develop a Spill Prevention Control and Containment plan (SPCC) prior to initiating construction. If a spill occurred, the contractor would utilize BMPs to prevent long-term degradation of water quality. For these reasons, impacts would not be substantially adverse and would remain less than significant.

Table 4-4. Summary of maximum seasonal impacts (acres) for all reaches under Alternative 2A.

Scenario*	Resource	Spring	Fall	Natural Variation**
III – Calm	Surfgrass	0.00 (Multiple Years)	0.00 (Multiple Years)	2.5
	Other Indicator Species	0.15 (Year 1)	0.06 (Year 1)	12.3

*Scenario III = similar to Alternative 2A - New inlet, 300k cy on the beach (Cardiff) and 1M cy in ebb bar.
**Natural Variation was determined using the standard deviation of empirical coastal profile data collected from 1996 to 2008.

4.2.3 Threatened and Endangered Species

California Least Tern

Dredging at the lagoon and placement of sand at the receiver sites would generate turbidity that would be expected to be localized and rapidly dissipate based on the sandy nature of the sediment. Plumes at the offshore sites would be expected to be similar to those generated during RBSP I, and monitoring demonstrated that turbidity plumes during RBSP I complied with RWQCB 401 certification requirements as well as specified environmental permitting conditions to protect least tern foraging. The environmental conditions required that water clarity in the upper 3 feet of surface waters not be reduced by more than 2.47 acres in the vicinity of borrow or receiver sites. Monitoring documented that plumes were typically much smaller than 2.47 acres and at the receiver sites were mainly restricted to the surf zone except when carried offshore by localized rip currents (AMEC 2002). The receiver sites are located more than 0.8 miles from least tern nesting sites and would not be expected to affect foraging of the species based on the localized nature of turbidity plumes expected during construction. Therefore, impacts would not be substantially adverse and would remain less than significant.

Western Snowy Plover

Since no construction would occur within designated or proposed critical habitat, impacts to western snowy plovers from Alternatives 1B and 2A would not be substantially adverse and would remain less than significant.

4.2.4 Essential Fish Habitat

As discussed in Section 3.2.2, the proposed project would encompass designated EFH, including nearshore areas adjacent to receiver sites, as well as the areas located farther offshore. In addition to EFH designations, certain areas may also be designated as HAPCs. HAPCs are discrete subsets of EFH that provide important ecological functions. HAPCs are vulnerable to degradation (50 C.F.R. 600.815[a][8]). Regional Fishery Management Councils may designate a specific habitat area as an HAPC in the FMP based on one or more of the following reasons: (1) importance of the ecological function provided by the habitat; (2) the extent to which the habitat is sensitive to human-induced environmental degradation; (3) whether, and to what extent, development activities are, or will be, stressing the habitat type; and (4) rarity of the habitat type (50 C.F.R. 600.815[a][8]). The HAPC designation does not confer additional protection or restrictions upon an area but can help prioritize conservation efforts.

Impacts to EFH are typically determined based on whether a project reduces quality and/or quantity of EFH, regardless of the degree to which that impact occurs. Based on the Magnuson-Stevens Act, adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species, and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 C.F.R. 600.810(a)). By definition, the threshold to have an adverse impact to EFH is low; however, the nature of the impact can be further qualified based on the type of impact (e.g., temporary or permanent). This is distinctly different from an adverse or significant impact determination made under NEPA and CEQA, which takes into account the context and intensity of a potential impact. Therefore, this section refers to impacts to EFH in terms of compliance with the Magnuson-Stevens Act and does not reflect impact severity as defined under NEPA, although a significant or permanent adverse impact to EFH would qualify as a significant impact under NEPA.

Less than significant impacts to water column EFH and soft-bottom benthic habitat at the nearshore and offshore construction area are anticipated and would constitute temporary adverse impacts (e.g., temporary turbidity plume due to dredging or disturbance to soft bottom habitat from pipeline and anchors, loss of prey items). Similarly, temporary adverse impacts to lifestages of managed species are expected to occur as a result of the project. Based on the analysis in the preceding sections, substantial adverse effects to quality or quantity of hard-bottom benthic habitat EFH and HAPCs (e.g., rocky reefs) are not anticipated. Protective measures have been implemented to avoid and/or minimize these impacts.

5.0 SUMMARY

The impact assessment included evaluation of the potential for direct and indirect impacts to onshore and nearshore marine biological resources from implementation of the SELRP. The considered study area included shoreline and nearshore habitats to a depth of approximately 100 ft between Batiquitos Lagoon and Torrey Pines.

The direct impact assessment considered potential impacts associated with placement of sand at onshore and nearshore receiver sites, as well as offshore stockpile sites, and relevant associated activities (e.g., anchoring, pipeline placement, and movement of vessels, vehicles, and equipment to these locations). The indirect impact assessment considered potential impacts associated with construction (e.g., noise, disturbance, turbidity, accidental discharges) and post-construction movement of sands by waves and currents (e.g., sedimentation of nearshore areas with sensitive hard-bottom habitats).

Three project alternatives were evaluated:

- Alternative 1 consists of dredging 160,000 cy, pumping the material to barges in the nearshore environment, and disposing of the material at LA-5.

- Alternative 1B consists of disposing of sediment at five receiver sites with similar volumes (except for Cardiff) used for RBSP I and II, disposing 300,000 cy of sediment at a nearshore disposal site, and disposing 1,000,000 cy of sediment at an offshore stockpile site.

- Alternative 2A is similar to Alternative 1B with the primary difference being disposal of 500,000 cy of sediment at a nearshore disposal site.

The following is a summary of the major findings of the impact evaluations:

1. Direct and indirect impacts to water resources would not be substantially adverse and would remain less than significant.

    - For Alternative 1A, turbidity would be generated from dewatering sediment in a barge and is not expected to occur for extended periods of time. No appreciable changes in other water quality parameters, including dissolved oxygen, pH, nutrients, bacteria, or chemical contaminants are anticipated. Factors considered in this assessment include the relatively localized nature of the expected turbidity plumes for the majority of the dredging period and diluting capacity of the receiving environment. Based on grain size characteristics at the borrow sites, turbidity plumes generally would be expected to be localized within 2,000 ft from the disposal operation.

    - For Alternatives 1B and 2A, because the lagoon sediments consist of clean sands, runoff from the receiver beaches would not contain contaminants, bacteria, excess nutrients, or other materials with a high oxygen demand, or otherwise degrade water quality in the surfzone.

    - Turbidity is expected to be localized within approximately 625 ft of the receiver sites based on grain size characteristics of sediments. However, there is the potential for turbidity plumes of greater dimensions if discharge waters are carried beyond the surfzone by rip

currents. Maximum turbidity plume distances were less than 1,000 ft with implementation of RBSP I and generally were 300 ft or less. Confining the discharge behind temporary training dikes constructed of sand was found to be effective for keeping nearshore turbidity plumes localized offshore the receiver sites during implementation of RBSP I and II, and would similarly be implemented with SELRP.

- Turbidity levels would return to background conditions within hours of the cessation of dredging or discharge operations consistent with observations during the RBSP I and II, as well as, other beach nourishment projects involving placement of sands with low silt/clay content.

- Water quality monitoring would be required as part of the Section 404 dredging and discharge permit and Section 401 water quality certification. If monitoring indicated exceedances, dredge or discharge operations would need to be modified to ensure compliance with the permit to protect beneficial uses of waters.

2. Direct impacts to biological resources would not be substantially adverse and would remain less than significant.

- Sand placement at the beach and nearshore receiver sites and offshore stockpile sites would result in unavoidable loss of small marine invertebrates (e.g., clams, crabs, worms) within the footprints of construction, representing forage for other invertebrates, fish, and additionally, birds at the receiver sites. Recovery of benthic organisms would begin almost immediately after cessation of construction via two mechanisms, one by animals that migrate to the affected area from surrounding habitat, and the other by recruitment from the plankton. Substantial recovery rates would be expected within 1 year for sandy beach habitat and within 4 years at the offshore sites based on results of other projects. This would be a temporary and relatively small impact regionally, representing less than 2% of the soft bottom habitats at similar depths within the county.

- Direct impact of approximately 61 acres of beach habitat, approximately 23 acres of nearshore sandy subtidal habitat, and up to 44 acres of offshore sandy subtidal habitat (SO-6) with implementation of Alternatives 1B and 2A.

3. Direct impacts to sensitive hard-bottom habitats would be avoided and minimized using similar measures that were implemented successfully with RBSP I and II, and therefore, would not be substantially adverse and would remain less than significant.

- Receiver site locations were selected to avoid direct impacts to sensitive hard-bottom habitat.

- A pre-construction survey would be conducted by diving biologists of all pipeline routes to ensure that no sensitive hard-bottom resources would be directly impacted.

- A minimum 500-ft buffer would be maintained between construction areas and natural hard-bottom habitats.

- Vessel transportation corridors would be established to avoid transiting of kelp beds to the maximum extent possible.

4. Direct and indirect impacts to threatened and endangered species and other wildlife would be avoided and minimized, and therefore, would not be substantially adverse and would remain less than significant.

- Training dikes would be used to minimize turbidity plumes at receiver sites, which would minimize interference with foraging activities of seabirds, fish, and other wildlife. Turbidity plume monitoring would be conducted during the breeding season within 1 mile of nesting sites for the endangered least tern, which visually forages on fish, to ensure plumes are localized and water clarity is not substantially reduced.

- Pre-construction habitat assessments would be conducted to determine potential habitat suitability of the receiver sites for California grunion spawning, and monitoring would be conducted during predicted runs, as warranted, to ensure that appropriate measures are taken during construction to avoid significant impacts to this managed fishery species. Details of the specific grunion monitoring program and protective measures for SELRP would be defined via the permitting process in coordination with the resource agencies.

5. Beneficial indirect impacts to sandy beach habitat are anticipated. Beach nourishment is expected to enhance sandy beach habitat within the region. Beneficial impacts to marine resources, including greater seasonal development of invertebrate populations, and better beach conditions for grunion spawning, shorebird foraging, and bird resting were documented with RBSP I and would be expected with RBSP II.

6. Indirect impacts to sensitive nearshore hard-bottom habitats would not be substantially adverse and would remain less than significant. Model estimates of impact acreages suggest that any project-related effect would be, in some cases, several orders of magnitude less than natural variation.

6.0 REFERENCES

Aleem, A.A. 1973. Ecology of a kelp-bed in southern California. Botanica Marina 16:38-95.

AMEC Earth & Environmental, Inc. (AMEC). 2002. Regional Beach Sand Project Preconstruction and Construction Monitoring Report. Prepared for San Diego Association of Governments.

AMEC. 2005. Regional Beach Sand Project, Year 4 (2004-2005) Post-Construction Monitoring Report for Intertidal, Shallow Subtidal, and Kelp Forest Resources and Comprehensive Analysis Report (2001-2005). Prepared for San Diego Association of Governments. Available at: http://www.sandag.org.

Bakus, G.J. 1989. The marine biology of southern California. Occ. Papers Allan Hancock Foundation. New Series 7:61pp.

Black, R. 1974. Some biological interactions affecting intertidal populations of the kelp *Egregia laevigata.* Marine Biology 28: 189-198.

Burlas, M., G. Ray, and D. Clarke. 2001. The New York District's Biological Monitoring Program for the Atlantic Coast of New Jersey, Asbury Park to Manasquan Section Beach Erosion Control Project. Final Report. U.S. Army Corps of Engineers, Waterways Experiment Station.

California Coastal Commission (CCC). 1987. California Coastal Resource Guide. University of California Press, Berkeley, CA.

California Department of Fish and Game (CDFG). 2002. Nearshore Fishery Management Plan. Prepared by California Department of Fish and Game, Marine Region. August 2002. Available at http://www.dfg.ca.gov/marine/nfmp/.

Coastal Frontiers Corporation. 2012 Regional Beach Monitoring Program, Annual Report. Prepared for San Diego Association of Governments (SANDAG). Available at: http://www.sandag.org.

Cooper, L.W. and C.P. McRoy. 1988. Anatomical adaptations to rocky substrates and surf exposure by the seagrass genus *Phyllospadix*. Aquat. Bot. 32:365-381.

Cross, J.N. and L.G. Allen. 1993. Chapter 9. Fishes. In Ecology of the Southern California Bight: A Synthesis and Interpretation. M.D. Dailey, D.J. Reish, and J.W. Anderson (eds.). University of California Press. Berkeley, CA. pp. 459-540.

Dayton PK, V. Currie, T. Gerrodette, B. Keller, R. Rosenthal, and D. Ven Tresca. 1984. Patch dynamics and stability of some California kelp communities. Ecol Monogr 54:253-289.

DeMartini, E.E. 1981. The spring-summer ichthyofauna of surfgrass (*Phyllospadix*) meadows near San Diego, California. Bull. Southern California Acad. Sci. 80: 81-90.

Foster, M.S. and D.R. Schiel. 1985. The Ecology of Giant Kelp Forests in California: A Community Profile. Prepared for U.S. Fish and Wildlife Service.

Garfield, J.L. 1994. The San Diego-La Jolla Underwater Park Ecological Reserve. A Field Guide. Picaro Publishing, San Diego, California. 64 pp.

Goodman, D., R.W. Eppley, and F.M.H. Reid. 1984 . Summer phytoplankton assemblages and their environmental correlates in the Southern California Bight. J. Mar. Res. 42(4):1019- 1050.

Greene, K. 2002. Beach Nourishment: A Review of the Biological and Physical Impacts. ASMFC Habitat Management Series #7. Atlantic States Marine Fisheries Commission.

Hickey, B. M. 1993. Physical Oceanography. Chapter 2. Pages 19-70 In Ecology of the Southern California Bight: A Synthesis and Interpretation. M. D. Dailey, D. J. Reish, and J. W. Anderson (eds.). University of California Press, Berkeley, CA.

James, R. and D. Stadlander. 1991. A Survey of the Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*) in California, 1991. California Department of Fish and Game Nongame Bird and Mammal Section Report, 91-05. Prepared by U.S. Fish and Wildlife Service, Carlsbad Office.

Leet, W.S., C.M. Dewees, and C.W. Haugen. 1992. California's Living Marine Resources and Their Utilization. California Sea Grant Extension Publication UCSGEP-92-12.

Littler, M.M., D.R. Martz, and D.S. Littler. 1983. Effects of recurrent sand deposition on rocky intertidal organisms: Importance of substrate heterogeneity in a fluctuating environment. Mar. Ecol. Prog. Ser. 11:129-139.

Loeb, V.J., P.E. Smith, and H.G. Moser. 1983. Recurrent groups of larval fish species in the California Current area. CalCOFI 24:152-164.

Martin, K. 2006. Introduction to Grunion Biology. Available online at: http://arachnid.pepperdine.edu/grunion/default.htm.

Mauer, D., R. T. Keck, J. C. Tinsman, W. A. Leathem, C. Wethe, C. Lord, and T. M. Church, 1986. Vertical migration and mortality of marine benthos in dredged material: A synthesis. Internationale Revue gesamten Hydrobiologie 71:49-63.

MBC Applied Environmental Sciences (MBC). 2009. Status of the Kelp Beds 2008, San Diego and Orange Counties. Prepared for the Region Nine Kelp Survey Consortium.

MBC Applied Environmental Sciences (MBC). 2012. Status of the Kelp Beds 2011, San Diego and Orange Counties. Prepared for the Region Nine Kelp Survey Consortium.

MEC Analytical Systems, Inc. (MEC). 1995. Evaluation of Potential Impacts to Marine Biota from the Beach Replenishment Component of the Proposed Lomas Santa Fe Drive Grade Separation Project.

MEC Analytical Systems, Inc. (MEC). 1997. Summary Report, Least Tern and Water Turbidity Monitoring Seal Beach Pier to Warner Avenue. Prepared for U.S. Army Corps of Engineers, Los Angeles District.

MEC Analytical Systems, Inc. (MEC). 2000. Appendix D to the SANDAG Regional Beach Sand Project EIR/EA. Evaluation of Impacts to Marine Resources and Water Quality from Dredging of Sands from Offshore Borrow Sites and Beach Replenishment at Oceanside, Carlsbad, Leucadia, Encinitas, Cardiff, Solana Beach, Del Mar, Torrey Pines, Mission Beach, and Imperial Beach, California. Prepared for KEA Environmental, Inc.

Moffat & Nichol. 2012a. Preliminary Draft Shoreline Morphology Study, San Eljio Lagoon Restoration Project. November.

Moffat & Nichol. 2012b. Geotechnical Data Report: San Elijo Lagoon Restoration Project. Prepared by URS Corporation. November.

Moffat & Nichol. 2013. Potential Impacts to Nearshore Marine Resources Associated with the San Elijo Lagoon Restoration Project. Prepared by Merkel & Associates, Inc. January.

National Audubon Society. 2010. Important Bird Areas in the U.S., North San Diego Lagoons. Available at http://www.audubon.org/bird/iba.

National Marine Fisheries Service (NMFS). 2008. Recovery Plan for White Abalone (*Haliotis sorenseni*). Southwest Regional Office National Marine Fisheries Service Long Beach, CA.

National Research Council (NRC). 1995. Beach Nourishment and Protection. Marine Board, Commission on Engineering and Technical Systems, Washington, D.C. National Academy Press, Washington, D.C.

Newell, R. C., L. J. Seiderer, and D. R. Hitchcock. 1998. The impact of dredging works in coastal waters: A review of the sensitivity to disturbance and subsequent recovery of biological resources on the sea bed. Oceanography and Marine Biology: An Annual Review 36:127-178.

Nordby Biological Consulting and Moffatt & Nichol . 2012. San Elijo Lagoon Restoration Project Draft Alternatives Assessment. June.

O'Brien, P.Y., M.M. Littler. 1977. Biological Features of Rocky Intertidal Communities at Coal Oil Point, Santa Barbara County, California. Spatial and Temporal Variations in the Distribution and Abundance of Rocky Intertidal and Tidepool Biotas in the Southern California Bight. M.M. Littler (ed.) Bureau of Land Management, U.S. Department of the Interior, Washington, D.C., pp. 317-405.

Oliver, J. S., P. N. Slattery, L. W. Hulberg, and J. W. Nybakken. 1977. Patterns of succession in benthic infaunal communities following dredging and dredged material disposal in Monterey Bay. Moss Landing Marine Laboratories. Prepared for: U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. Technical Report D-77-27. 186 pp.

Parr, T., D. Diener, and S. Lacy. 1978. Effects of Beach Replenishment on the Nearshore Sand Fauna at Imperial Beach, California. Prepared for U.S. Army, Corps of Engineers, Coastal Engineering Research Center, Fort Belvoir, Virginia. 125 pp.

Patton, R. 2012. Sensitive Avian Species at San Elijo Lagoon. Summary and Counts for 2010 and 2011. Prepared for the San Elijo Lagoon Conservancy.

Patton, R. 2010. Sensitive Avian Species at San Elijo Lagoon. Summary and Counts. Prepared for the San Elijo Lagoon Conservancy.

Pelchner, B. 1996. Effects of Sediment Depth and Season on Growth and Carbohydrate Allocation in *P. Torreyi*. Thesis in partial fulfillment of requirements for the degree of Master of Science.

Reish, D.J. 1972. Marine Life of Southern California. Kendall/Hunt Publishing Company. Dubuque, Iowa. 164 pp.

Riznyk, R. 1977. Phytoplankton. In A summary of Knowledge of the Central and Northern California C oastal Zone and Offshore Areas. R. Dornhelm (ed.). BLM Contract No. AA550-CT6-52.

San Diego Association of Governments (SANDAG). 2002. San Diego Nearshore Inventory Program. http://nearshore.ucsd.edu/.

San Diego Association of Governments (SANDAG). 2011. Environmental Assessment/Final Environmental Impact Report for the San Diego Regional Beach Sand Project II. Appendix C - Biological Technical Report ().

SCCWRP. 2003. Southern California Bight 2003 Regional Monitoring Program. Available at http://www.sccwrp.org/Documents/BightDocuments/Bight03 Documents.aspx.

Science Applications International Corporation (SAIC). 2006. Coastal Habitat Study, 2003-2005: Influence of Beach Nourishment on Biological Resources at Beaches in the City of Encinitas, California. Prepared for City of Encinitas.

Science Applications International Corporation (SAIC). 2007. Coastal Reef Habitat Survey of Encinitas and Solana Beach, California. Prepared for the City of Encinitas.

Science Applications International Corporation (SAIC). 2007b. Review of Biological Impacts Associated with Sediment Management and Protection of California Coastal Biota in Support of the California Sediment Management Master Plan. Prepared for the California Coastal Sediment Management Workgroup. Under Contract with the Beach Erosion Authority for Clean Oceans and Nourishment (BEACON).

Science Applications International Corporation (SAIC). 2009. Coastal Habitat Survey of Onshore and Nearshore Receiver Sites Proposed in the Coastal Regional Sediment Management Plan

San Diego, California. Prepared for Moffatt & Nichol Under contract to: U.S. Army Corps of Engineers, Los Angeles District.

Stewart, J. 1982. Anchor species and epiphytes in intertidal algal turf. Pacific Science 36(1):45-59.

Stewart, J. 1989. Maintenance of a balanced, shifting boundary between the seagrass *Phyllospadix* and algal turf. Aquat. Bot. 33:223-241.

Stewart, J. 1991. Marine Algae and Seagrasses of San Diego County. California Sea Grant College, Report No. T-CSGCP-020.

Stewart, J. and B. Myers. 1980. Assemblages of algae and invertebrates in southern California *Phyllospadix*-dominated intertidal habitats. Aquat. Bot. 9:73-94.

Straughan, D. 1981. Inventory of the Natural Resources of Sandy Beaches in Southern California. Technical Reports No. 6 of the Allan Hancock Foundation, University of Southern California, Los Angeles. 447 pp.

Taylor, P.R. and M.M. Littler. 1982. The roles of compensatory mortality, physical disturbance, and substrate retention in the development and organization of a sand-influenced, rocky-intertidal community . Ecology 63(1)135-146.

Tegner, M.J. and P.K. Dayton. 1987. El Niño effects on southern California kelp forest communities. Adv. Ecol. Res. 17 ISBN 0:013917-0.

Torrey Pines State Reserve. 1998. Wildlife Management Plan. Available at: http://www.torreypine.org/parks/wildlife-management.pdf.

Turner, T. 1985. Stability of rocky intertidal surfgrass beds: persistence, preemption, and recovery. Ecology 66: 83-92.

U.S. Army Corps of Engineers (USACE). 2012. Encinitas-Solana Beach Coastal Storm Damage Reduction Project Integrated Feasibility Study & Environmental Impact Statement/ Environmental Impact Report (EIS/EIR). San Diego County, California.

U.S. Navy. 1995. Final Environmental Impact Statement for the development of facilities in San Diego/Coronado to support the homeporting of one NIMITZ Class Aircraft Carrier, prepared by the Southwest Division, Naval Facilities Engineering Command, U.S. Department of the Navy in November 1995.

U.S. Navy. 1997a. Environmental Assessment for Beach Replenishment at South Oceanside and Cardiff/Solana Beach, California.

U.S. Navy. 1997b. Environmental Assessment for Beach Replenishment at North Carlsbad, South Carlsbad, Encinitas, and Torrey Pines, California.

U.S. Fish and Wildlife Service (USFWS). 2012. Pacific Coast Summer Window Survey for Snowy Plovers on U.S. Pacific Coast with 2005-2012 Results for Comparison. Available at: http://www.fws.gov/arcata/es/birds/WSP/plover.html.

Water Environment Federation (WEF). 1991. Manual of Practice No. 8, Design of Municipal Wastewater Treatment Plants, Vol. 1

Williams, S.L. 1995. Surfgrass (*Phyllospadix torreyi*) reproduction: Reproductive phenology, resource allocation, and male rarity. Ecology 76(6):1953-1970.

Zembal, R. and S. M. Hoffman. 2010. A Survey of the Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*) in California 2010. California Department of Fish and Game Nongame Wildlife Program Report No. 2010-10.

Appendix A
Potential Impacts to Nearshore Marine Resources Associated with the San Elijo Lagoon Restoration Project Technical Memo (Moffat & Nichol 2013)

Potential Impacts to Nearshore Marine Resources Associated with the San Elijo Lagoon Restoration Project

Prepared for:

Moffatt & Nichol
3780 Kilroy Airport Way, Suite 600
Long Beach, CA 90806
Attn: Chris Webb

Prepared by:

Merkel & Associates, Inc.
5434 Ruffin Road
San Diego, CA 92123
Phone: (858) 560-5465
Fax: (858) 560-7779

January 2013

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 Project Location and Lagoon Restoration Overview 1
1.2 Stakeholder Involvement and Project Alternatives 3
1.2.1 No Project - Existing Conditions 3
1.2.2 Alternative 1A – Minimum Changes 3
1.2.3 Alternative 1B – Maximum Habitat Diversity, Existing Inlet location 4
1.2.4 Alternative 2A – Maximum Habitat Diversity, New Inlet location 4
1.3 Materials Disposal 4
1.4 Report Purpose and Objective 10
2.0 ENVIRONMENTAL SETTING 11
2.1 Reach Discretization 11
2.2 Biological Setting 11
2.2.1 Data Sources 11
2.2.2 Reef and Vegetation Footprints 13
4.0 METHODS 21
4.1 Sediment Transport Modeling 21
4.2 GIS-Based Approach to Nearshore Habitat Impact Methodology 23
5.0 RESULTS 31
5.1 Estimated Impacts to Nearshore Resources 31
6.0 Discussion and Conclusions 41
7.0 REFERENCES 45

LIST OF FIGURES

Figure 1-1. Project study area (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS). 2
Figure 1-2. No Project - Existing Conditions 5
Figure 1-3. Alternative 1A 6
Figure 1-4. Alternative 1B 7
Figure 1-5. Alternative 2A 8
Figure 2-1. Study reaches in the project area (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS). 12
Figure 2-2. Seafloor substrate off Encinitas and Solana Beach (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS). 14
Figure 2-3. Marine vegetation off Encinitas and Solana Beach (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS). 15
Figure 2-4. Nearshore resources and receiver sites within study area. 18
Figure 2-5. Nearshore resources and proposed disposal footprint off San Elijo Lagoon under Alternative 1. 19
Figure 2-6. Nearshore resources and proposed disposal footprint off San Elijo Lagoon under Alternative 2. 20
Figure 4-1. Locations of 2001 SANDAG RBSP receiver sites and beach profile monitoring stations. 22
Figure 4-2. Close-up view of bathymetric contours. 25
Figure 4-3. Oblique view of bathymetry with vertical exaggeration to enhance the reef habitat. 25

Figure 4-4. Theoretical sand surface subtracted from bathymetric surface. This difference denotes reef elevation. 26
Figure 4-5. Substrate coverage based on 2004 LiDAR and 2002 vegetation surveys. 27
Figure 4-6. Vegetation coverage based on 2002 vegetation survey 27
Figure 4-7. Example of estimated cross-shore sediment deposition (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS). 28
Figure 4-8. Example of areas depicting sediment thickness on bedrock with surfgrass based on model results from one season (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS). 29
Figure 4-9. "Natural Variation" sediment thickness based empirical coastal profile data collected from 1996 to 2008. 30
Figure 5-1. Modeled dispersal area of ebb bar 32

LIST OF TABLES

Table 1-1. Materials Disposal and Beneficial Reuse Scenarios 9
Table 2-1. Summary of nearshore resources within each reach (in acres) 16
Table 2-2. Summary of bedrock by reef elevation within each reach (in acres). 16
Table 2-3. Summary of bedrock with surfgrass by reef elevation within each reach (in acres). 16
Table 2-4. Summary of bedrock with other indicator species by reef elevation within each reach (in acres) 17
Table 4-1. Screening approach to assess potential impacts for various Alternative 2 scenarios. 23
Table 5-1. Alternative 2 – Scenario II for the Energetic Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area. 33
Table 5-2. Alternative 2 – Scenario II for the Calm Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area. 34
Table 5-3. Alternative 2 – Scenario III for the Calm Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area. 35
Table 5-4. Alternative 2 – Scenario IV for the Calm Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area. 36
Table 5-5. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario II for the Energetic Wave Condition scenario 37
Table 5-6. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario II for the Calm Wave Condition scenario. 38
Table 5-7. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario III for the Calm Wave Condition scenario. 39
Table 5-8. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario IV for the Calm Wave Condition scenario. 40
Table 5-9. Summary of maximum seasonal impacts (acres) for all reaches under various scenarios under Alternative 2. 41
Table 6-1. Estimated Closest Distances to Hard Bottom and Vegetated Habitats from the Seaward Boundary of Proposed Receiver Site Alternatives (from SANDAG 2011). 43
Table 6-2. Summary of impacts under various scenarios under Alternative 2. 44

APPENDICES

Appendix A Alternative 2A, Scenario II, Energetic Wave Condition Sediment Transport Model Predictions, Spring and Fall, Years 1 to 5

Appendix B Alternative 2A, Scenario II, Calm Wave Condition Sediment Transport Model Predictions, Spring and Fall, Years 1 to 5, Year 10

Appendix C Alternative 2A, Scenario III, Calm Wave Condition Sediment Transport Model Predictions, Spring and Fall, Years 1 to 5, Year 10

Appendix D Alternative 2A, Scenario IV, Calm Wave Condition Sediment Transport Model Predictions, Spring and Fall, Years 1 to 5, Year 10

1.0 INTRODUCTION

1.1 PROJECT LOCATION AND LAGOON RESTORATION OVERVIEW

San Elijo Lagoon is located in the city of Encinitas, San Diego County, California, and is the dividing feature separating the city of Encinitas to the north and Solana Beach to the south (Figure 1-1). The lagoon is an "open system," and outside influences such as tides, stream flow, sediment input, weather, and development have a profound effect on the various communities and processes within the lagoon, particularly on its aquatic processes. The historical ecological condition of the lagoon has varied dramatically in response to long-term wet and dry precipitation cycles. In addition, the ecological capacity of the lagoon to maintain itself is being challenged due to encroachment by development adjacent to the lagoon and upstream within its 77-square-mile watershed.

Urbanization within the Escondido and La Orilla Creek watersheds has accelerated freshwater storm flows and increased chemical contaminant and nutrient loads within the lagoon associated with year-round urban run-off. The ecological effects of increased runoff have been compounded by obstructions to flow caused by an inefficient channel system and the three major transportation corridors that traverse the lagoon: Highway 101, the NCTD railroad, and I-5. These constraints on the hydraulic connection between the ocean and lagoon affect drainage of tides and stormflows. As a result, water surface elevations in the lagoon are not the same as those of the ocean, and habitat distribution and quality are affected. Such factors have led to a consistent degradation of water quality in the lagoon and adjacent to the lagoon mouth, leading to beach closures and elevated bacteria levels.

Efforts have been made since the mid-1990s to actively manage the lagoon. The San Elijo Lagoon Enhancement Plan, prepared by the County of San Diego in 1996, identified several opportunities for enhancement and restoration, mostly by reducing sedimentation and improving tidal exchange and circulation. A long-term financial endowment was established in the late 1990s to actively fund maintenance of tidal flushing. These management efforts improved habitat and water quality relative to the stagnant conditions that previously developed when the inlet was closed for prolonged periods. Other efforts involving removal of invasive species also resulted in some improvement to habitat quality. Although important, these efforts do not remedy the underlying hydraulic inefficiencies or loss of functional mudflat within the lagoon.

Actively maintaining a lagoon mouth that is more regularly open to the ocean has resulted in a change in circulation patterns, including a decrease in relative water elevations and inundation frequencies. Much of the functional mudflat habitat within San Elijo Lagoon is a result of historically perched water levels due to a constricted hydraulic connection to the ocean. When the mouth of the lagoon is opened through active maintenance activities, the lagoon is able to drain more efficiently and areas that were historically under water the majority of the time are now being exposed more frequently. These areas are then able to become vegetated, but cease to function as mudflats. Habitat within San Elijo Lagoon is rapidly transitioning from mudflat to mid-saltmarsh due to change in inundation frequency. The rapid and ongoing expansion of two key species, cordgrass and pickleweed, has been documented through focused vegetation mapping since 2001. If no action is taken to restore the lagoon, the loss of ecologically valuable mudflat habitat would continue, to the detriment of migratory and resident shorebird populations.

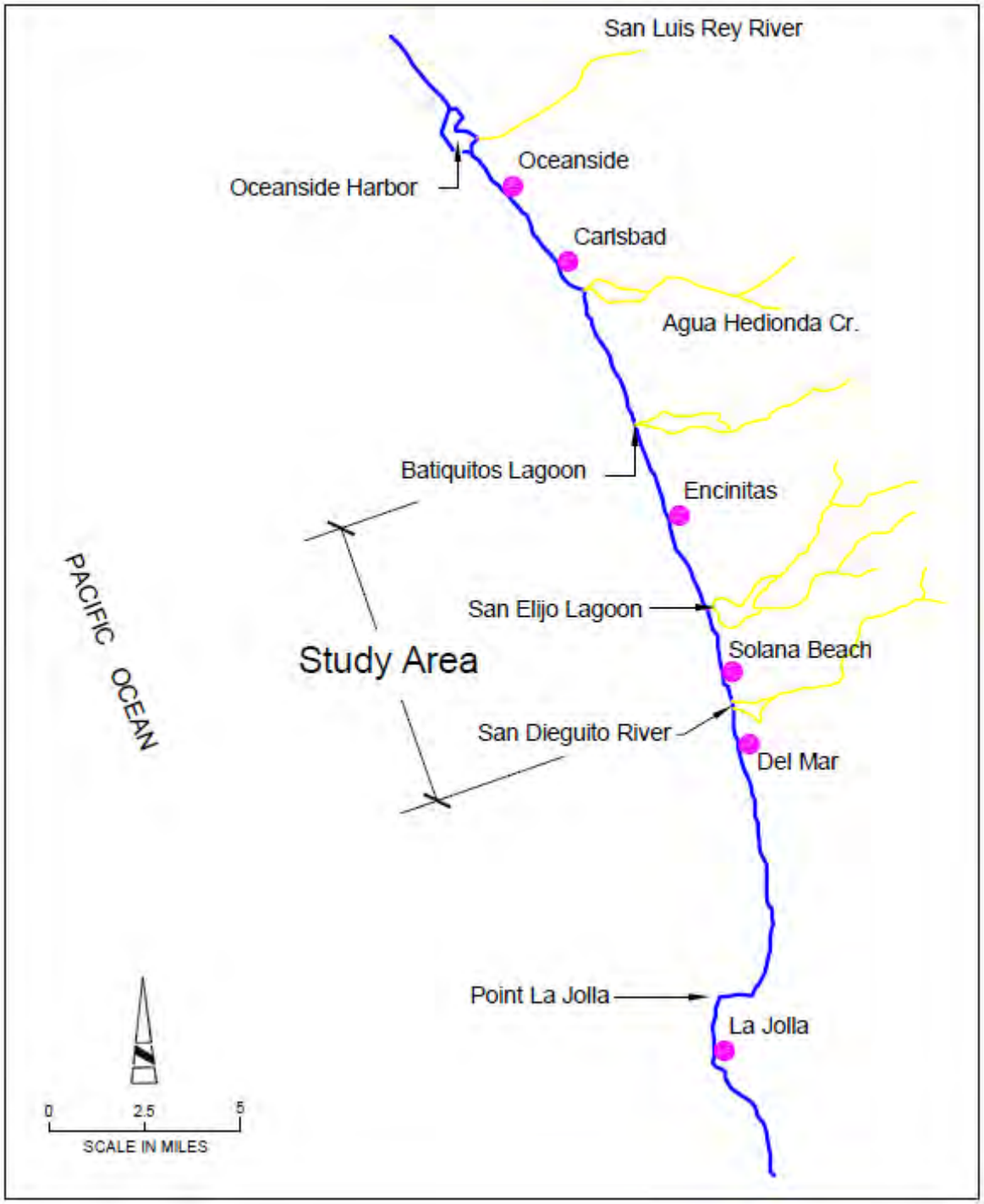


Figure 1-1. Project study area (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS).

Restoration of tidal influence to the lagoon would restore habitat values and aquatic functions that have been degraded over the years. For the estuarine environment to be highly productive, it must be continually replenished with water and nutrients from the ocean. Regular tidal action also provides high water quality. The moderating influence of ocean waters prevents extreme fluctuations in salinity and temperature, and maintains high levels of dissolved oxygen. Generally, the amount of time that portions of wetlands are submerged or exposed due to tidal fluctuation is referred to the "inundation frequency," and results in a zonation typical of tidal wetlands. The extent of each wetland zone within a lagoon is dependent on tidal influence and the relative water elevation.

1.2 STAKEHOLDER INVOLVEMENT AND PROJECT ALTERNATIVES

The San Elijo Lagoon Restoration Program (SELRP) brings together various public and private entities that share responsibility to protect, manage, and regulate the lagoon. Since late 2007, a group of stakeholders has met regularly to guide the development of the lagoon restoration with a holistic approach. The SELRP has been largely driven by this group of stakeholders, and the project alternatives being analyzed are a result of collaborative and iterative processes to incorporate stakeholder input into project design.

Four project alternatives have been identified by the Stakeholder Committee as likely to be included in the environmental document, and include:

- No Project – Existing Conditions;
- Alternative 1A – Minimum Changes;
- Alternative 1B – Maximum Habitat Diversity, Existing Inlet Location and;
- Alternative 2A – Maximum Habitat Diversity, New Inlet Location

The conceptual design of these alternatives is required to perform engineering analyses and numerical modeling of their performance. Brief descriptions of the alternatives are provided below, and more detailed descriptions of the alternatives are provided in the Final Alternatives Assessment Report (Nordby et al. 2012).

1.2.1 No Project - Existing Conditions

No Project assumes no changes are made to the project site and existing conditions remain into perpetuity. The lagoon presently experiences mouth constriction and manual re-opening annually, and sometimes more frequently. Tidal flushing is restricted, and water quality conditions are impaired for nutrients and sediment. Habitat is distributed at elevations and locations that are related to relic closed mouth conditions, and are progressively transitioning to distributions more reflective of managed mouth conditions. For example, mudflat habitat is located too high for a full tidal lagoon because it formed when the mouth was closed and lagoon water levels were higher from impoundment. Now that the mouth is managed to be open, the mudflat is converting to vegetated marsh because hydrologic conditions are favorable for salt marsh plant growth. Figure 1-2 illustrates the existing condition.

1.2.2 Alternative 1A – Minimum Changes

Alternative 1A provides minimal physical changes to the site, with the exception of enlarging the main feeder channel throughout the site and redirecting its course just west of I-5. The main tidal

channel is also extended farther into the East Basin and existing constricted channel connections are cleared and enlarged. Existing habitat areas will essentially remain intact. The tidal prism of Alternative 1A will be slightly increased compared to existing conditions. A relatively small area of transitional habitat above tidal elevations will be placed in the northwest portion of the Central Basin. Figure 1-3 illustrates the proposed conceptual plan under Alternative 1A.

1.2.3 Alternative 1B – Maximum Habitat Diversity, Existing Inlet location

Alternative 1B would create a greater diversity of habitats relative to Alternative 1A through more extensive modifications to existing conditions within the lagoon. The existing tidal inlet would remain, and the main tidal channel would extend throughout the lagoon. A new subtidal basin off the main channel would be created in the central basin. The main channel would be redirected just west of I-5 and extended farther into the east basin. The channel in the east basin would be substantially enlarged in cross-sectional area to promote more tidal exchange east of I-5. The tidal prism of Alternative 1B would be substantially increased compared to Alternative 1A. Nontidal habitat areas would still exist in the east basin, although, with the passage of time, passive habitat transition may occur due to proposed changes in inundation frequencies as tidal influence is extended. Several areas of transitional habitat above tidal elevations would be created in the central basin. Figure 1-4 illustrates the proposed conceptual plan under Alternative 1B.

1.2.4 Alternative 2A – Maximum Habitat Diversity, New Inlet location

Alternative 2A also provides changes to the existing site to create a greater diversity of habitats than presently exists. Seawater would enter the lagoon via a new tidal inlet located south of the existing inlet and a new subtidal basin would be created just landward of the new inlet in the West and Central Basins. The main tidal channel would extend throughout the lagoon and be redirected just west of I-5, and extend into the East Basin. The channel in the East Basin is identical to that for Alternative 1B. The tidal prism of Alternative 2A will increase compared to Alternative 1B. Non-tidal habitat areas remain in the East Basin. Transitional habitat areas above tidal elevations will also be included in the Central Basin as with Alternative 1B. Figure 1-5 illustrates the proposed conceptual plan under Alternative 2A.

1.3 MATERIALS DISPOSAL

The proposed project and its alternatives would generate a substantial amount of material for disposal, possibly through export to upland or offshore disposal or stockpiling sites, reuse for construction of infrastructure, or reuse for beach/nearshore nourishment. The materials disposal/reuse scenarios described in Table 1-1 are partially independent of the lagoon restoration alternative carried forward for analysis. The lagoon generally contains an approximately 3-foot layer of fine sediment overlying a much coarser sand base. The fine sand is not appropriate for beneficial reuse, but the course sand is. The fine material is also difficult to dispose of offsite in a cost effective manner. Therefore, a typical approach in lagoon restoration projects is to over excavate proposed sedimentation basins with coarser sand that is potentially suitable for reuse, then backfill those areas with the finer sediments that are not of suitable quality to be beneficially reused. The pit would then be capped with a layer of coarse sandy material. The remainder of the sandy material could be used for reuse within the lagoon, as beach nourishment along Cardiff beach or other regional beaches, as littoral cell nourishment in the nearshore zone off the lagoon or stored for future use in existing offshore borrow sites.

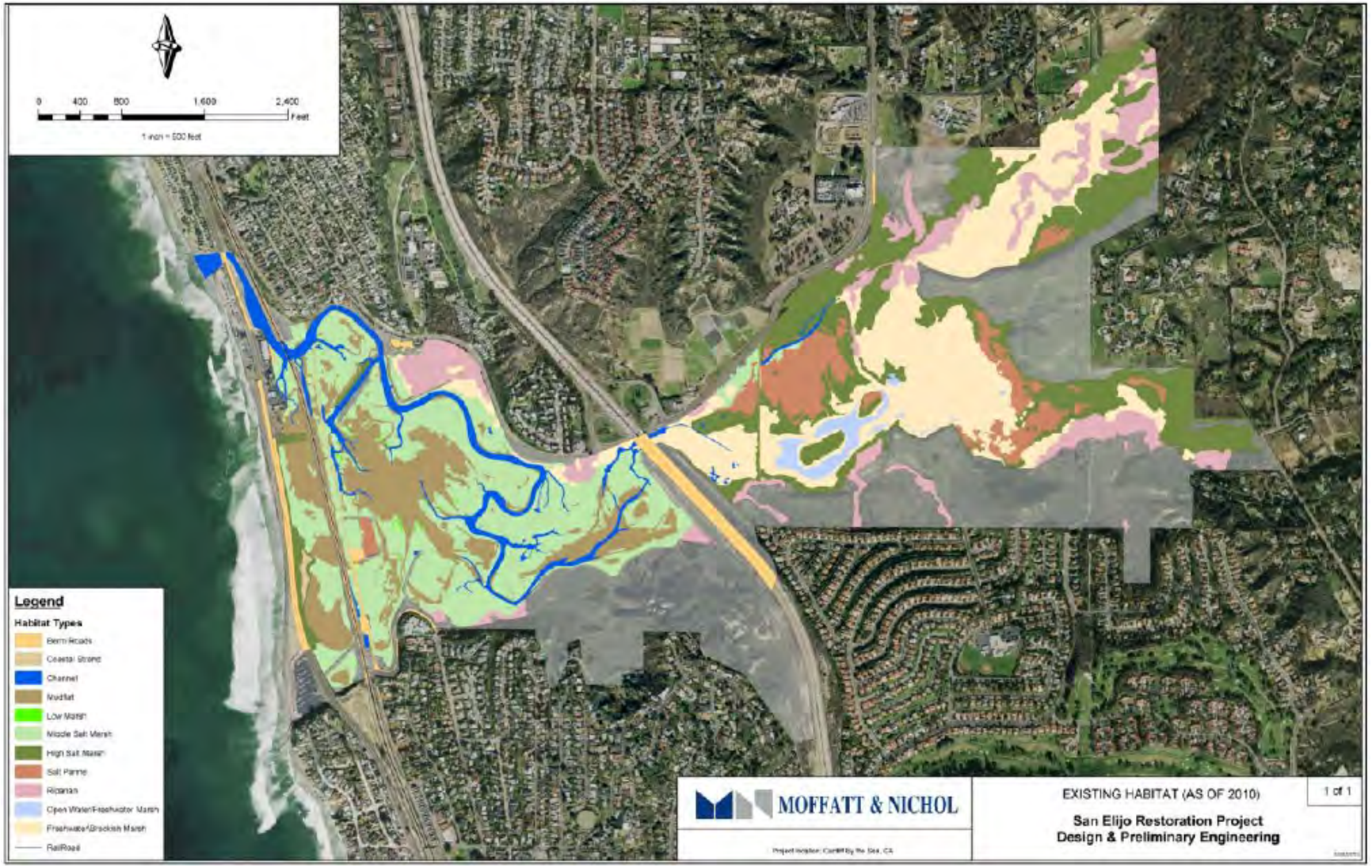


Figure 1-2. No Project - Existing Conditions

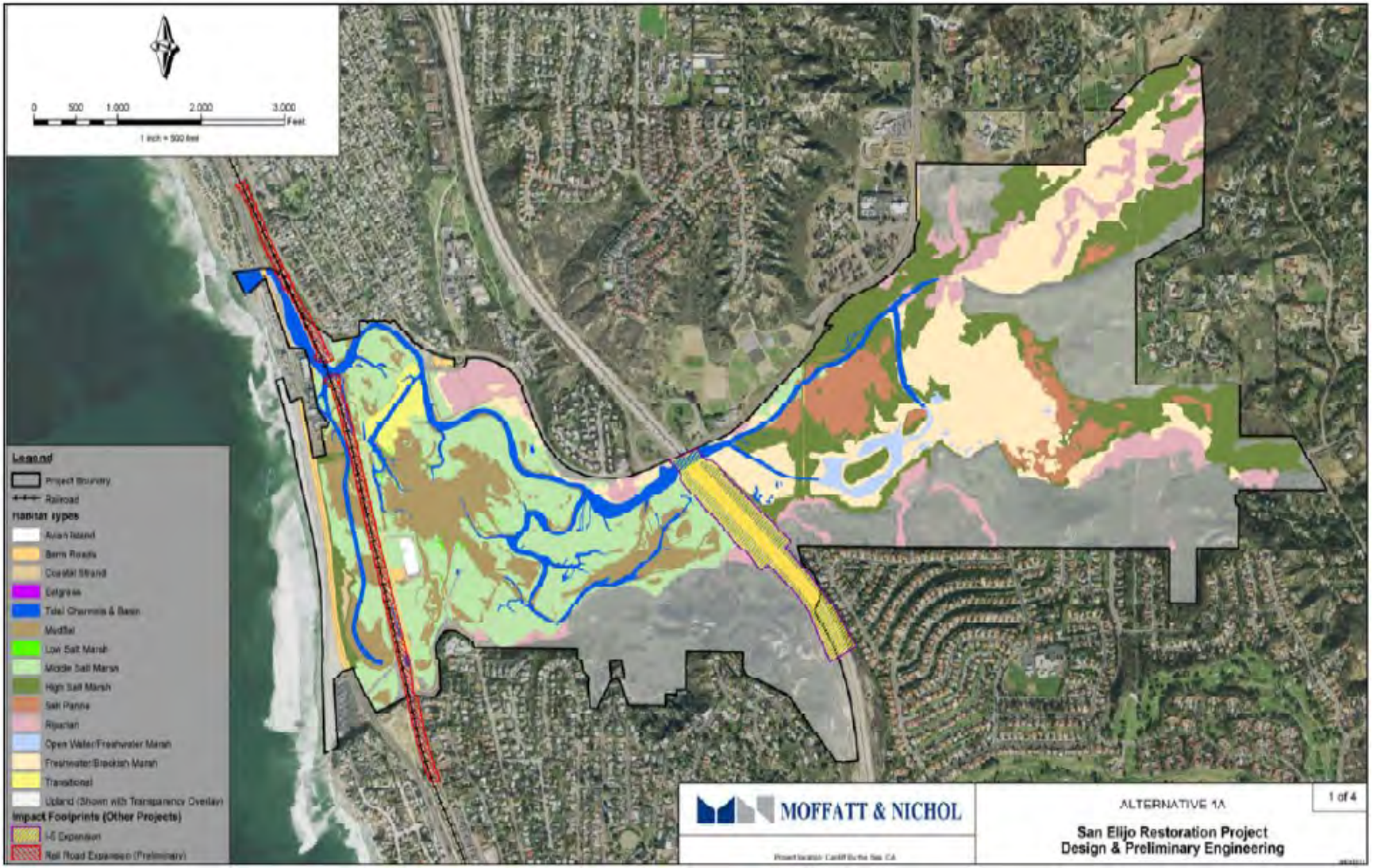


Figure 1-3. Alternative 1A

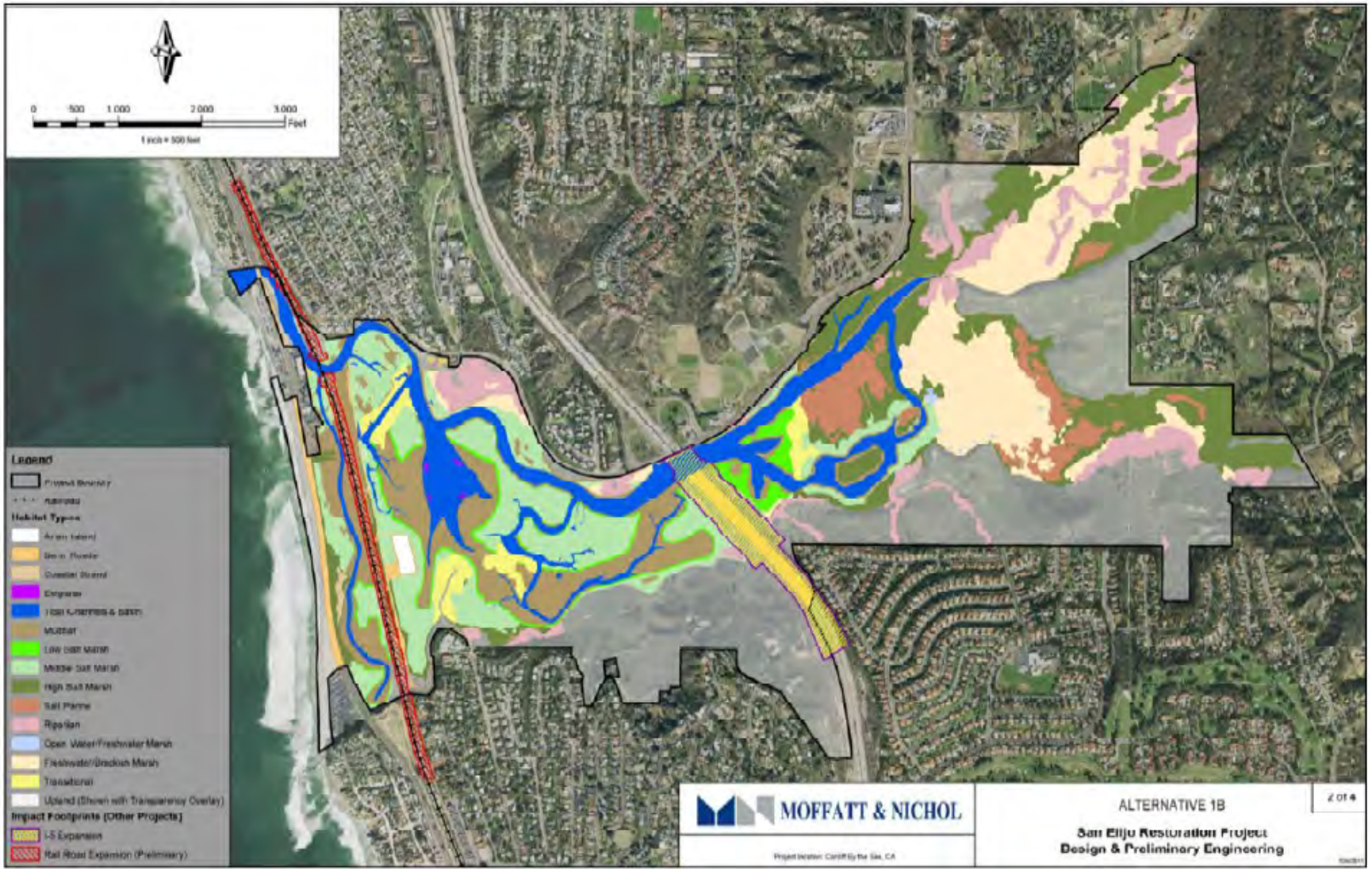


Figure 1-4. Alternative 1B

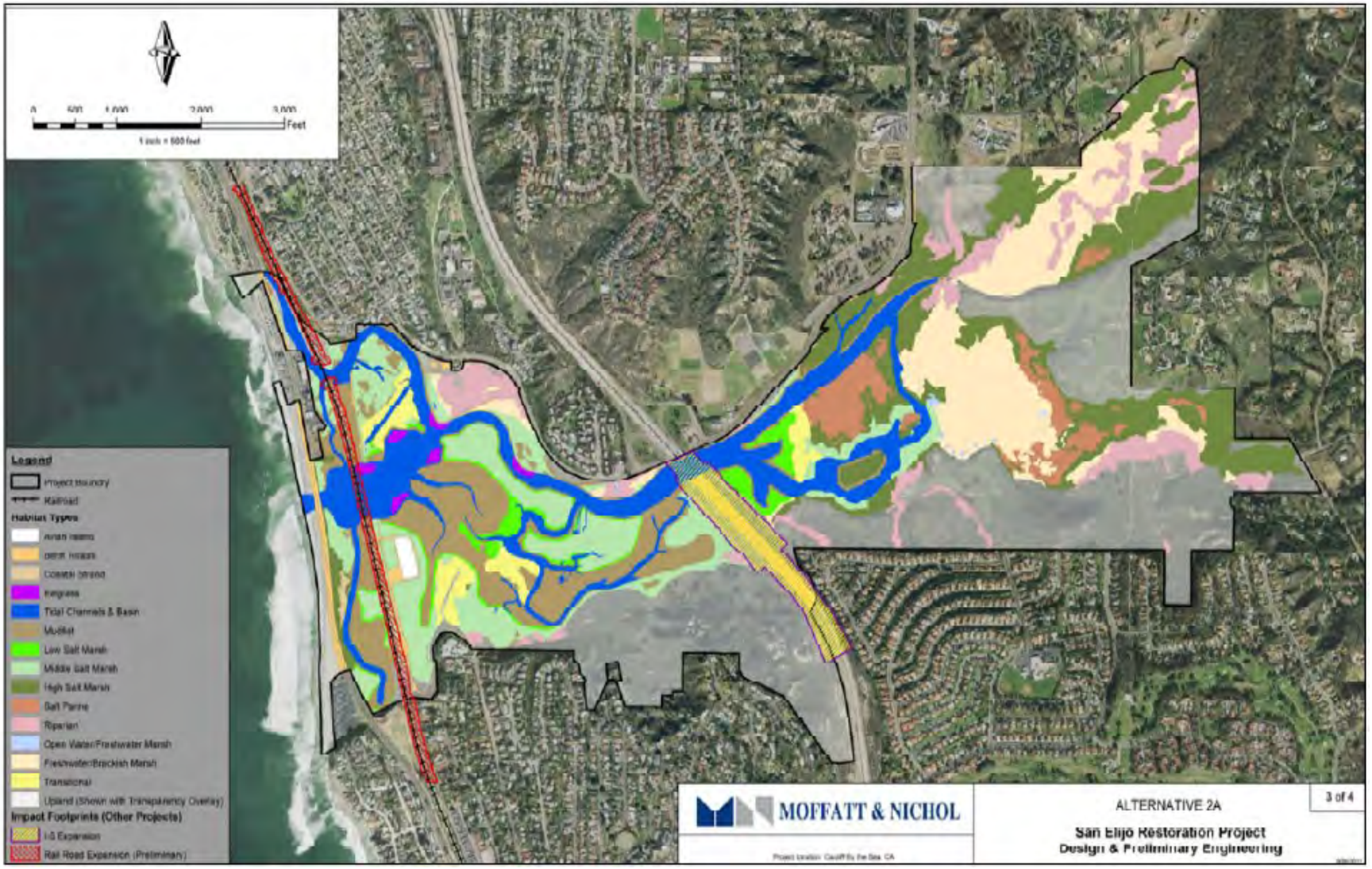


Figure 1-5. Alternative 2A

Table 1-1. Materials Disposal and Beneficial Reuse Scenarios

Approximate Net Quantity of Material: **Alt 1A = 150,000 cy of relatively poor quality material that is only suitable for offshore disposal at LA-5** **Alt 1B = 1.2 mcy (overdredging would occur to generate appropriate material for beneficial reuse)** **Alt 2A = 1.4 mcy (overdredging would occur to generate appropriate material for beneficial reuse)**				
Type of Materials Placement	**Potential Disposal Locations**	**Alternative 2A & 1B**		**Alternative 1A**
Offshore Disposal	LA 5	0		150,000
Offshore Stockpiling (outside littoral cell)	SO-5/SO-6	600,000		0
Nearshore (inside littoral cell)	Cardiff	Alt 2A	Alt 1B	0
		500,000	300,000	
Onshore (beach nourishment)	Cardiff	300,000		0
	Leucadia	117,000		0
	Moonlight Beach	105,000		0
	Solana Beach	146,000		0
	Torrey Pines	245,000		0
Onshore Fill	NCTD Railroad, I-5, HWY 101	Alt 2A	Alt 1B	0
		M&N	M&N	

Notes:
1. Nearshore materials placement quantity at Cardiff is greater in Alternative 2A because a new inlet would require construction of a pre-filled ebb bar.
2. Materials placement quantities exceed amount to be disposed of, or reused, to allow flexibility at individual placement sites.
3. Onshore beach sand placement sites are consistent with RBSP II (SCH# 2010051063) with the exception of Cardiff, which will extend slightly further north and south along the coastline. Refer to Figure XX to XX for the proposed project's sand placement sites.
4. SCOUP sites are not included as an option for materials placement in this EIR/EIS because the existing SCOUP programs assume construction methods and other conditions that are not consistent with the SELRP (e.g., daytime construction only).

Five scenarios for materials disposal/reuse are being carried forward for further analysis and as summarized in Table 1-1, anywhere from 150,000 cubic yards (cy) to 1.4 million cy of materials would need to be disposed of or reused depending on the lagoon restoration alternative. Therefore, the lagoon restoration alternatives only define the amount of material needed to be disposed of or reused, while most of the materials disposal/reuse scenarios themselves could be implemented across most of the lagoon restoration alternatives. Because of this flexibility, the materials disposal/reuse component of the project is evaluated independently from the lagoon restoration component throughout the document.

1.4 REPORT PURPOSE AND OBJECTIVE

A primary environmental concern for any beach nourishment project is the potential to impact nearshore reefs, which support sensitive aquatic vegetation and represent essential fish habitat (EFH). Kelp beds, which occur in relatively deeper nearshore waters, are highly diverse habitats supporting many fish and invertebrate species. Inshore reefs with surfgrass support a variety of species and serve as nursery areas for juvenile lobster. Impacts to surfgrass are of additional concern since that habitat is slow to recover if substantially impacted and is currently infeasible to restore if mitigation is required.

Approximately 480 acres of reef habitat occurs in the nearshore zone of the study area, and have patchy occurrence (non-continuous), varying in size and relative quality that is influenced by the local geology and natural sand movement (MEC 2000, SAIC 2007, San Diego Nearshore Program http://nearshore.ucsd.edu/). Nearshore reefs naturally are exposed to changes in sand depth associated with seasonal on and offshore movement of sand within the littoral zone. The littoral zone is bounded by the backshore and offshore "depth of closure", which ranges between approximately -13 and -30 feet (ft) Mean Lower Low Water (MLLW) off the cities of Encinitas and Solana Beach (Coastal Frontiers 2004). Specific concerns are the potential for sand elevation changes associated with beach nourishment to indirectly bury reefs and/or degrade reef habitat from increased scour and/or sedimentation.

Estimating impacts from beach nourishment projects is complex and includes inherent uncertainties. Models (e.g., GENESIS) have been developed to predict the long shore fate and transport of sand in sandy beach areas, although local physical conditions and model assumptions may influence model performance. In addition, available models do not include assumptions for geologic characteristics (e.g., reefs, rock outcrops), and the influences of nearshore reefs on local sand movement are also poorly understood and likely complex based on reef geometry and orientation (e.g., channels between reefs may facilitate sand movement [AMEC 2005] and reef structure may retain sand [SAIC 2007]).

Despite these limitations, sediment transport modeling has been successfully implemented within the region (e.g., Regional Beach Sand Project [RBSP] I and II). For RBSP I and II, modeling was used to predict sand increase and identify areas of more substantial deposition. No irreversible, long-term impacts to sensitive marine resources were predicted based on modeling results. All short-term impacts were considered within the range that would occur naturally, and monitoring conducted in support of the RBSP I generally confirmed that modeling (working with conservative assumptions) was a useful tool for predicting potential impacts to nearshore reefs.

For the SELRP, sediment transport modeling was used to estimate potential impacts to nearshore resources (Moffat & Nichol 2012). Additional data on nearshore reefs have been collected since the time of the RBSP and a more extensive record of beach profile data, including after the RBSP, was available for inclusion into the SELRP model. The beach profile monitoring stations provide an empirical record of seasonal sand elevation changes in the cross-shore direction from the backshore to approximate "depth of closure"

2.0 ENVIRONMENTAL SETTING

2.1 REACH DISCRETIZATION

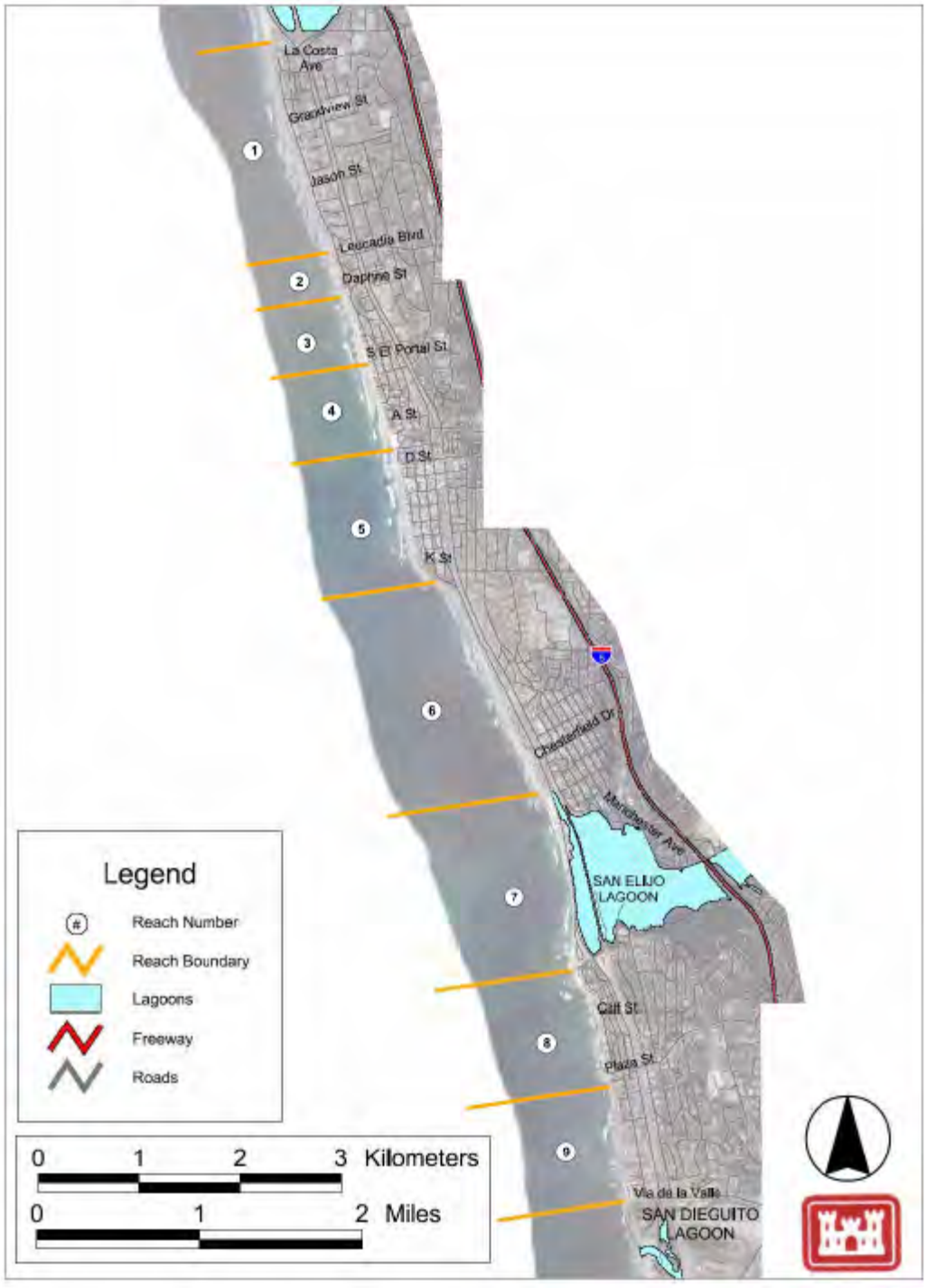
For the Encinitas-Solana Beach Shoreline Protection Project, to better characterize the coastal bluff and shoreline morphology, as well as, oceanographic conditions, the entire Encinitas/Solana Beach study area was divided into nine reaches as illustrated in Figure 2-1. The distinction between reaches was based on differences in seacliff geology, topography, coastal development, beach conditions, and is described in detail in the Encinitas-Solana Beach Shoreline Protection Project EIR/EIS. Given that San Elijo Lagoon is centrally located between Encinitas and Solana Beach, the recent completion of the Encinitas-Solana Beach Shoreline Protection Project which used the same methodology to assess potential project-related impacts, and to maintain consistency between projects, the same reach designations was used to analyze potential impacts for the project alternatives for the SELRP. The modeling results do not include any analysis for potential impacts of nourishment at the Torrey Pines receiver site; however, impacts associated with beach nourishment at the Torrey Pines receiver site were analyzed for the 2001 and 2012 Regional Beach Sand Project and a summary of the findings are provided in this report.

2.2 BIOLOGICAL SETTING

2.2.1 Data Sources

Several data sources were used to characterize nearshore reef dimensions, physical characteristics, and biological resources, and include:

- 2009 and 2010 reef dives and intertidal surfgrass mapping within the study area were used to provide representative information on reef heights and habitat quality indicators (San Diego Association of Governments [SANDAG] 2011).
- 2006 reef dives and intertidal surfgrass mapping within the study area were used to provide representative information on reef heights and habitat quality indicators (SAIC 2007).
- 2004 light detection and ranging imagery (LiDAR) data were used to provide bathymetric information for portions of the study area.
- 2002 California State Conservancy and SANDAG San Diego Nearshore Program GIS layers of bathymetry, hard substrate, and aquatic vegetation mapping served as the basis for reef and sensitive resource acreage calculations.
    - Substrate GIS data enabled calculation of reef dimensions and acreage.
    - Vegetation GIS data enabled calculation of acreage by dominant and/or sensitive resource categories (i.e., surfgrass, giant kelp, understory algae).
- 2000 reef dives and intertidal surfgrass mapping produced for the 2001 RBSP were used to provide additional representative information on reef heights and habitat quality indicators.



Source: USACE

Figure 2-1. Study reaches in the project area (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS).

2.2.2 Reef and Vegetation Footprints

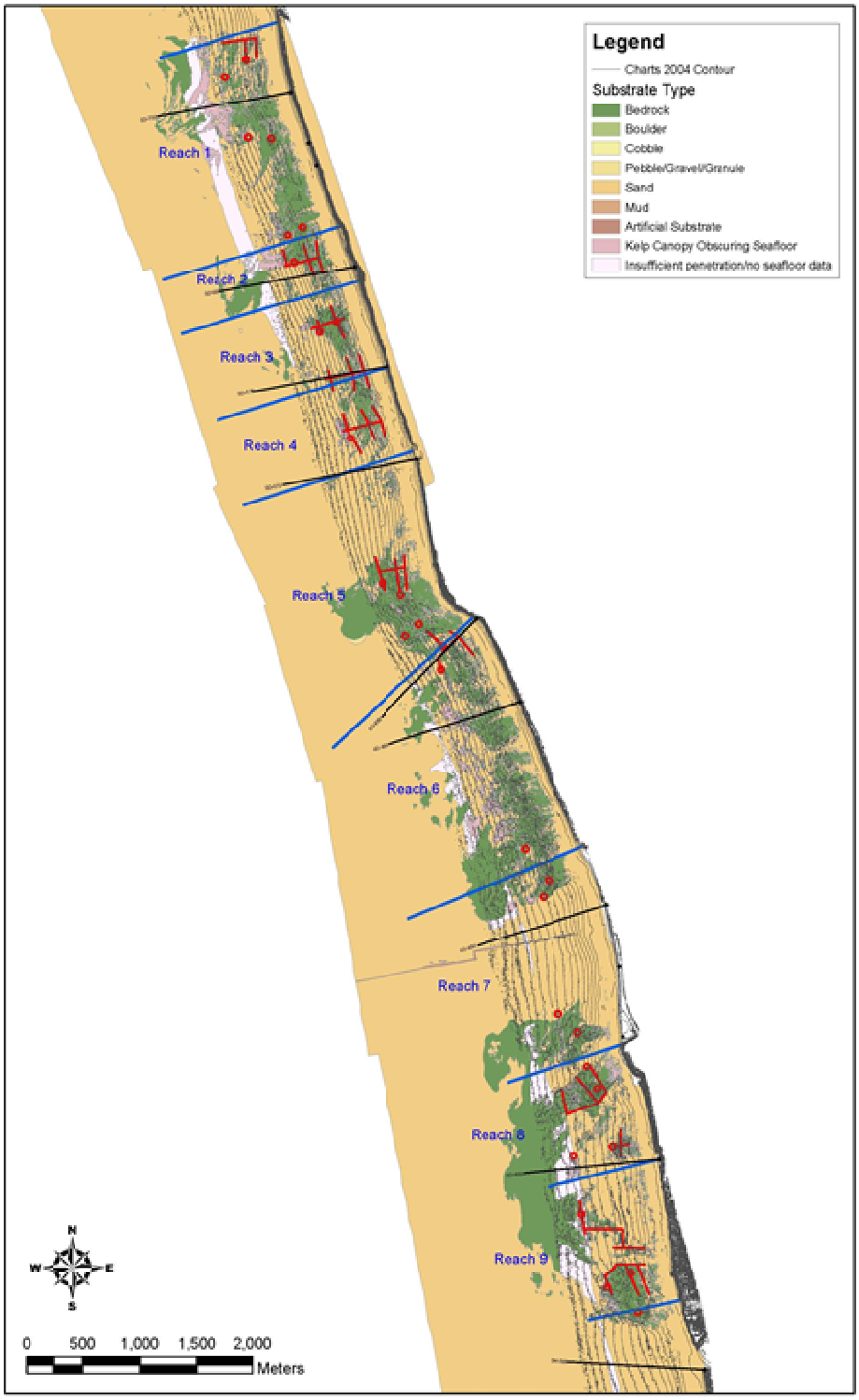
The 2002 SANDAG seafloor mapping provides the best available data of nearshore habitat in the study area (Figure 2-2). Similarly, the 2002 SANDAG vegetation map provides the best available quantitative estimates of the vegetative indicator species (Figure 2-3). Those data include acreage estimates for various habitat types: surfgrass, giant kelp (kelp canopy), and understory algae. The understory category includes several species, including feather boa kelp and sea palm indicators. Indicator species were selected in coordination with resource agencies to be consistent with previous reef characterization surveys and monitoring conducted in the study area (USDN 1997a, b; MEC 2000, AMEC 2005). The indicators represent dominant species that are sensitive to varying degrees of sand scour and sedimentation, as follows:

- Persistent indicator species considered relatively sensitive to sand scour and sedimentation (sea fans, giant kelp).
- Persistent indicator species considered relatively tolerant of some sand influence (surfgrass, sea palm).
- Opportunistic indicator species considered relatively sand tolerant (feather boa kelp).

The SELRP model area, which extends from the shoreline to approximately 1,600 ft offshore, includes approximately 480 acres of reef offshore Encinitas and Solana Beach. The combined total acreage of the vegetative categories is similar to that of bedrock on the substrate map (Table 2-1). While the amount of exposed reef may vary depending on time of year and environmental conditions, the 2002 substrate and vegetation acreage estimates are considered representative for the impact analysis, and is further supported by subsequent sampling and monitoring from 2003 to 2010.

Reef quality or the ability to support indicator species is directly correlated with reef elevation (i.e., height of the reef), as higher-relief reefs are more resistant to sedimentation and scour, and therefore, allows perennial species to persist. Reef heights in relatively higher quality areas include a greater percentage of heights >1 ft compared to relatively lower quality areas. Substrate heights along 70 percent of the transects surveyed in 2006 were predominantly <1 ft in relatively lower quality reef areas (SAIC 2007). In some cases, low-relief reefs may also support perennial indicator species, if other factors contribute to minimize the effects of sedimentation and scour. An example includes the presence of sand channels which allow sand to migrate on and off shore between low-relief reefs. A summary of reef elevation within the project area is provided in Table 2-2, with a further breakdown by surfgrass (Table 2-3) and other indicator species (Table 2-4).

Results from 2006 dive surveys also indicated that surfgrass extended farther offshore (i.e., to a water depth of approximately 23 ft) and that giant kelp extended farther inshore (i.e., to a water depth of approximately 15 ft) than depicted in the 2002 vegetation map (SAIC 2007), suggesting that acreage may be underestimated with the 2002 map data. It is possible that understory algae may have obscured detection of those species at mid-depths. The vegetation categories include two of the indicator species (surfgrass, giant kelp) and a combined understory algae category. Because the understory algae category does not distinguish among species, it may also represent a conservative overestimate of habitat associated with feather boa kelp and sea palm indicator species. However, those limitations should have a relatively minor influence on acreage associated with the 2002 vegetation map given the relatively small area affected.



Source: SANDAG 2002

Figure 2-2. Seafloor substrate off Encinitas and Solana Beach (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS).

Source: SANDAG 2002

Figure 2-3. Marine vegetation off Encinitas and Solana Beach (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS).

Table 2-1. Summary of nearshore resources within each reach (in acres).

Reach Name	Reach #	Total bedrock substrate	Bedrock with surfgrass	Bedrock w/other indicators
Batiquitos	1	99.3	24.1	71.7
Beacon's	2	23.1	6.1	16.2
Stone Steps	3	31.5	3.6	26.4
North of Moonlight	4	28.0	1.8	25.0
South of Moonlight to Swami's	5	65.7	13.0	50.5
San Elijo	6	127.9	27.5	95.5
Cardiff/Seaside	7	36.7	2.1	34.0
North of Fletcher Cove	8	31.9	3.7	26.2
Fletcher Cove to San Dieguito	9	30.2	0.7	27.0
TOTAL		**479.3**	**82.7**	**372.6**

Source: SANDAG 2002

Table 2-2. Summary of bedrock by reef elevation within each reach (in acres).

Bedrock		**Reef Elevation (ft)**			
Reach Name	**Reach #**	**(0 - 1)**	**(1 - 2)**	**(2 - 3)**	**(> 3)**
Batiquitos	1	53.6	20.6	14.0	11.1
Beacon's	2	16.6	4.6	1.7	0.2
Stone Steps	3	20.0	4.9	2.9	3.7
North of Moonlight	4	16.8	3.4	3.6	4.3
South of Moonlight to Swami's	5	25.1	6.2	4.7	29.8
San Elijo	6	74.3	27.9	15.0	10.9
Cardiff/Seaside	7	13.0	6.2	5.6	12.0
North of Fletcher Cove	8	12.2	2.6	1.5	15.6
Fletcher Cove to San Dieguito	9	13.5	3.0	3.3	10.3
TOTAL		**245.2**	**79.4**	**52.2**	**97.9**

Source: SANDAG 2002

Table 2-3. Summary of bedrock with surfgrass by reef elevation within each reach (in acres).

Bedrock with Surfgrass		**Reef Elevation (ft)**			
Reach Name	**Reach #**	**(0 - 1)**	**(1 - 2)**	**(2 - 3)**	**(> 3)**
Batiquitos	1	9.5	6.4	4.3	4.0
Beacon's	2	4.9	1.0	0.2	0.0
Stone Steps	3	2.1	0.8	0.3	0.4
North of Moonlight	4	1.4	0.2	0.2	0.0
South of Moonlight to Swami's	5	3.8	2.1	1.6	5.5
San Elijo	6	13.6	5.6	4.4	3.9
Cardiff/Seaside	7	0.7	0.3	0.3	0.8
North of Fletcher Cove	8	0.0	0.0	0.0	3.7
Fletcher Cove to San Dieguito	9	0.0	0.0	0.0	07
TOTAL		**36.0**	**16.4**	**11.2**	**19.1**

Source: SANDAG 2002

Table 2-4. Summary of bedrock with other indicator species by reef elevation within each reach (in acres).

Bedrock w/Other Indicators		Reef Elevation (ft)			
Reach Name	**Reach #**	**(0 - 1)**	**(1 - 2)**	**(2 - 3)**	**(> 3)**
Batiquitos	1	41.6	13.7	9.5	7.0
Beacon's	2	11.0	3.6	1.5	0.2
Stone Steps	3	16.6	4.0	2.6	3.3
North of Moonlight	4	14.3	3.1	3.3	4.3
South of Moonlight to Swami's	5	19.9	3.9	2.9	23.8
San Elijo	6	56.9	21.3	10.4	6.9
Cardiff/Seaside	7	11.8	5.8	5.2	11.1
North of Fletcher Cove	8	10.7	2.4	1.4	11.7
Fletcher Cove to San Dieguito	9	11.5	2.9	3.2	9.4
TOTAL		**194.4**	**60.6**	**40.0**	**77.6**

Source: SANDAG 2002

The SAIC 2007 study also noted relationships between indicator species occurrence and reef heights and suggest that it appeared to be influenced by depth distribution. Several examples include:

- Surfgrass, which primarily occurred at water depths ≤ 15 ft, was uncommon on reef heights < 1 ft and had denser cover on substrate heights ≥ 2 ft than on 1 ft heights.
- Giant kelp primarily occurred at water depths > 15 ft on reef heights ≥ 1 ft. Giant kelp had sparse occurrence on neashore reefs. Primary kelp canopies occur further offshore the beach depth of closure (MEC 2000).
- Sea palm and feather boa understory algae mainly occurred at water depths < 26 ft, with a similar or greater number of records between 15 and 26 ft. Both species had greater cover on reef heights > 1 ft.
- Sea fan occurrence increased with depth, with most records at depths > 26 ft (8 m). Although sea fans mainly occurred on ≥ 1 ft substrate, there were more records on reefs < 1 ft in height than observed for other indicator species, most likely related to less sand influence with increasing depth.
- Hard substrate with opportunistic turf algae, sparse occurrence of opportunistic feather boa kelp, and/or lacking vegetation has been used to distinguish substantially sand influenced (scoured) reef (MEC 2000, SAIC 2007).

Figure 2-4 illustrates the nearshore resources for the study area and the proposed receiver sites. It should be noted that with the exception of the Cardiff receiver site, all other receiver sites are those previously identified and constructed for either RBSP I or RBSP II. For the SELRP, the Cardiff receiver site differs from RBSP, and Figures 2-5 and 2-6 depict the nearshore resources and proposed disposal footprints off San Elijo Lagoon for Alternatives 1 and 2, respectively.

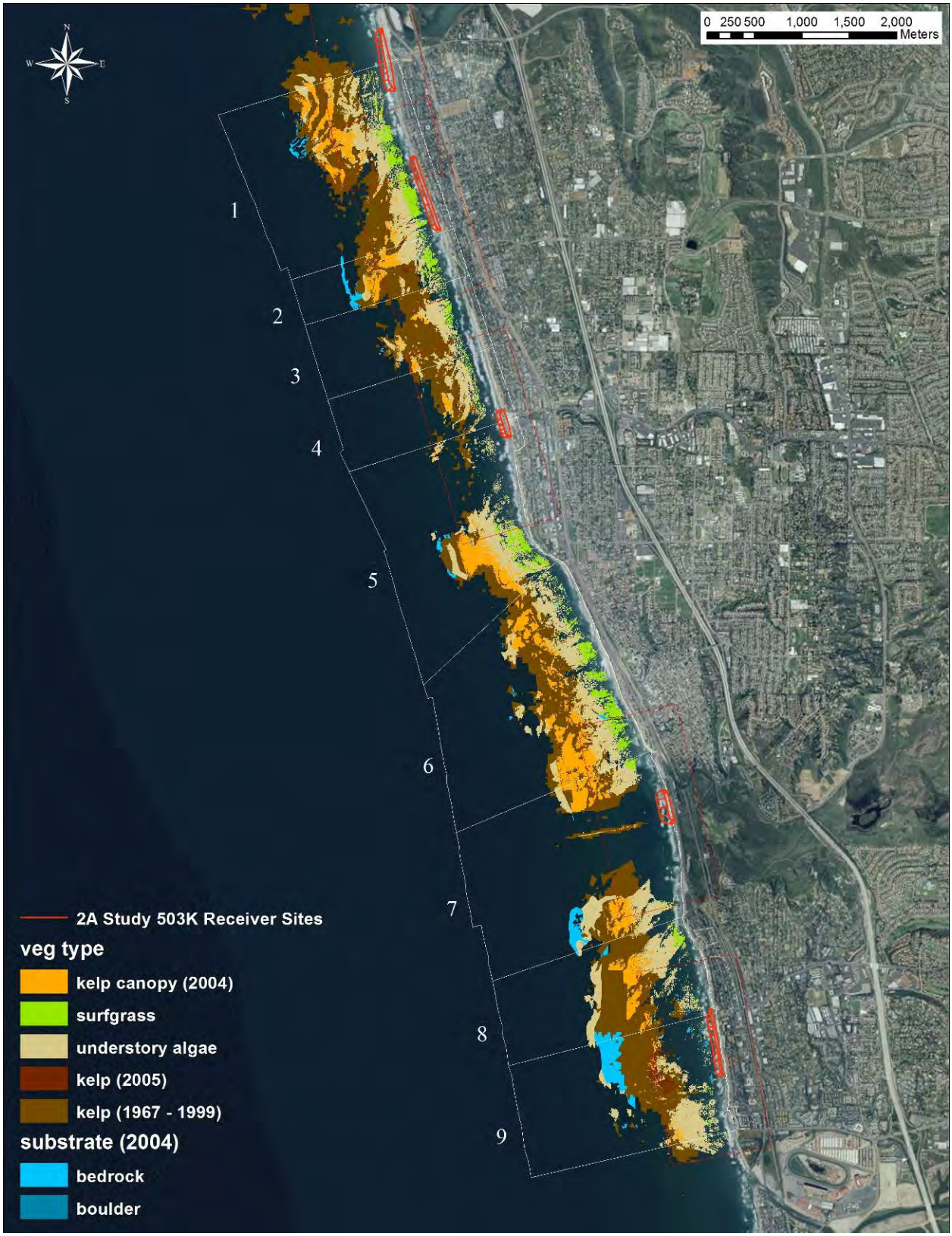


Figure 2-4. Nearshore resources and receiver sites within study area.

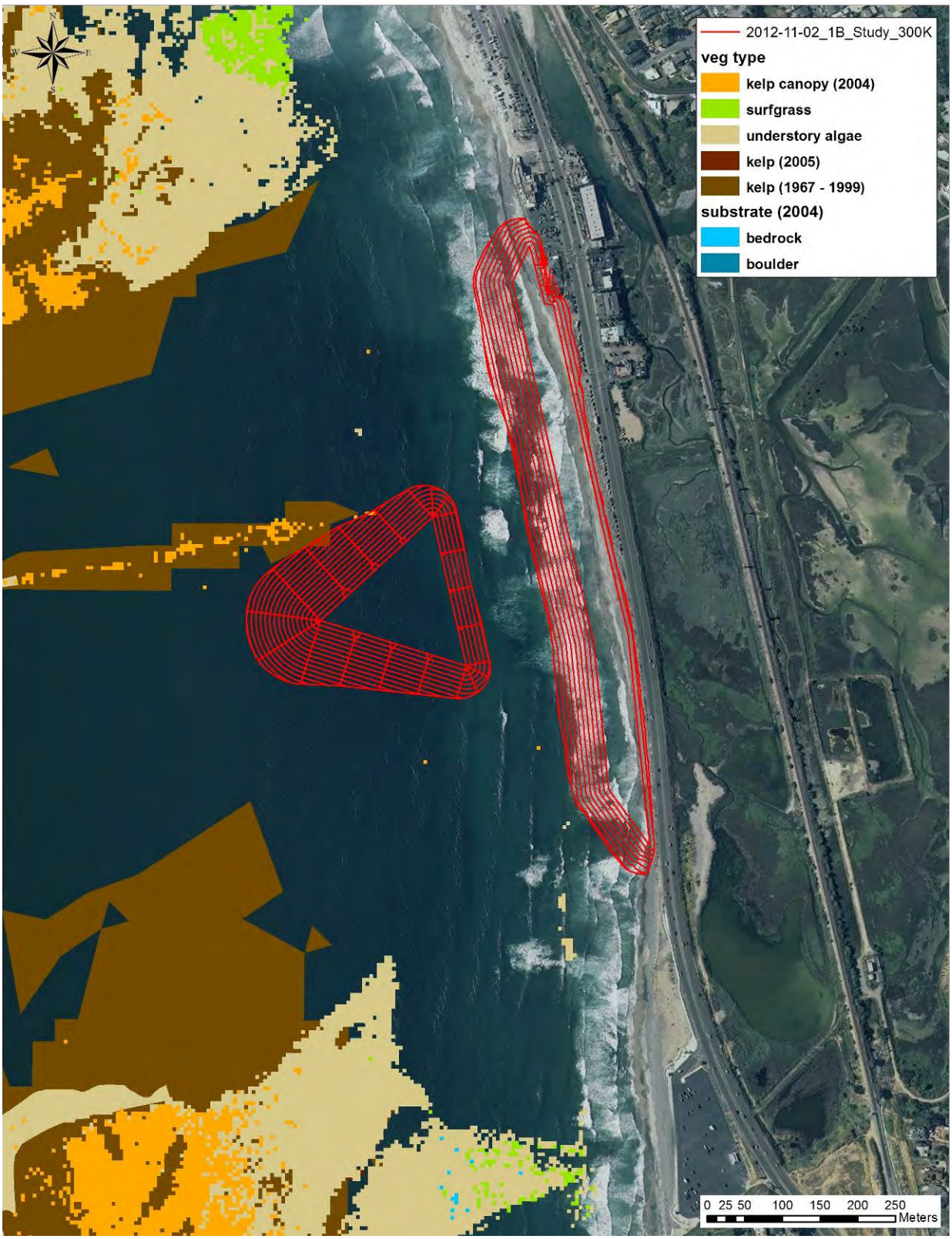


Figure 2-5. Nearshore resources and proposed disposal footprint off San Elijo Lagoon under Alternative 1.

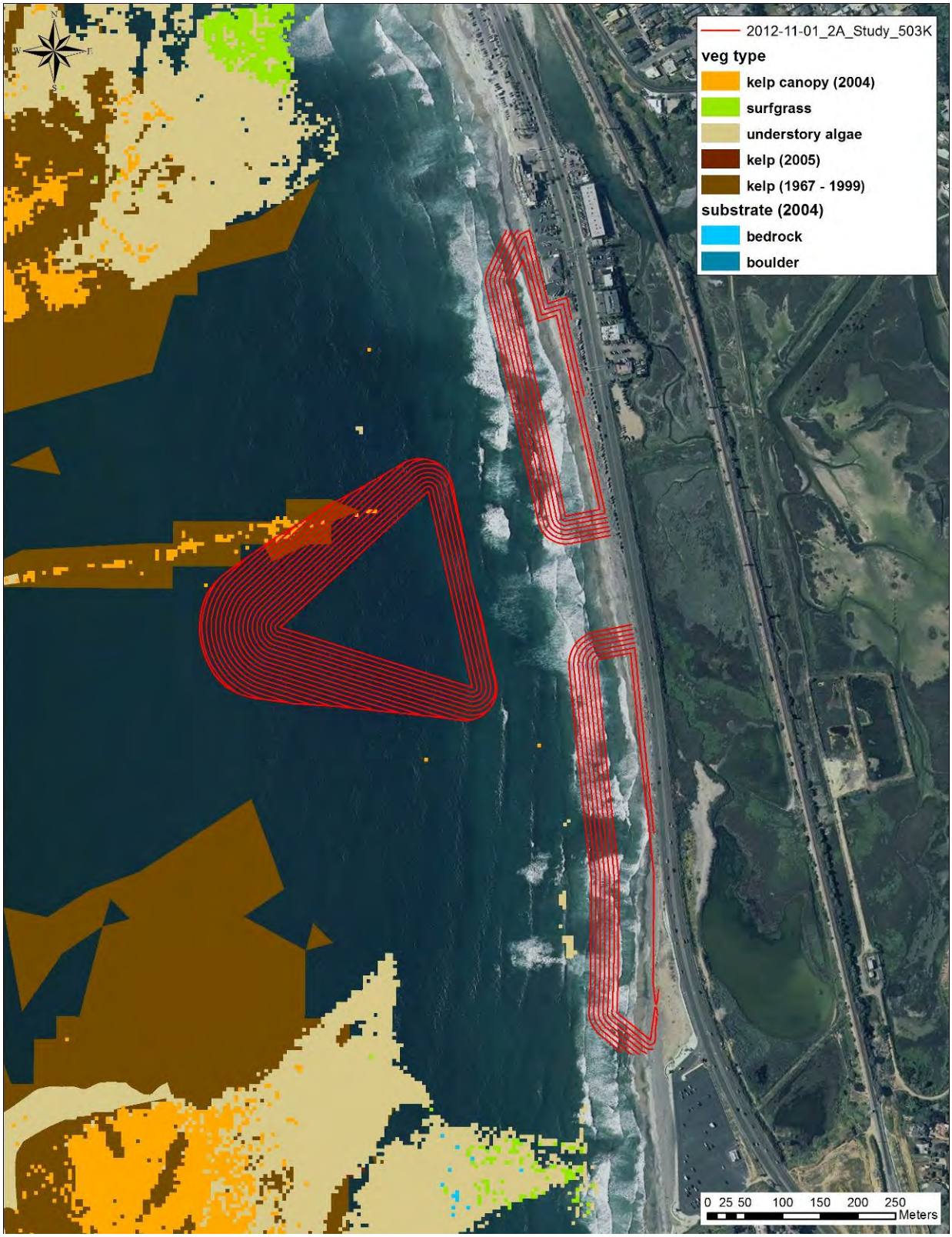


Figure 2-6. Nearshore resources and proposed disposal footprint off San Elijo Lagoon under Alternative 2.

4.0 METHODS

4.1 SEDIMENT TRANSPORT MODELING

Numerical modeling was used to simulate changes in shoreline morphology at North County beaches from the SELRP (see Moffat & Nichol 2012 for model assumptions). Shoreline modeling positions were output at each model cell within the GENESIS model domain. For each profile, the average shoreline position was calculated including data from one half the distance to the next downcoast profile up through one half the distance to the next upcoast profile (Figure 4-1).

Net differences between each project alternative and the without project condition were calculated. These net shoreline changes at each profile location were then converted into sand volumes using v/s ratios. These sand volumes were distributed across the profiles using historical cross shore sand thickness distributions. Sand thicknesses were interpolated between the profiles where data were non-existent. Model outputs consisted of predictions of with-project sand level increases produced at 10 ft intervals in the onshore-offshore direction along the profiles. Sand increase predictions were provided from the onshore beach to offshore distances corresponding to approximately-30 ft MLLW, which was defined as the average depth of beach closure for North County beaches. The sand level increase predictions were provided for both spring and fall seasons each year for five years and ten years after project implementation.

The approach initially included assessing potential impacts from the project alternative that could potentially have the greatest impact (i.e., Alternative 2, Scenario II under both calm and energetic wave conditions), and then analyzing other scenarios using the more conservative approach. Therefore, the screening methodology included analyzing Alternative 2 – Scenario II under calm and energetic wave conditions for spring and fall for five years. Results indicated that the greatest impacts were observed under the calm wave condition, and therefore subsequent modeling only used calm wave condition, in addition to adding results for Year 10 to assess potential long-term impacts. Table 4-1 depicts the modeled scenarios.

To incorporate the ebb bar into the analysis, a conservative analytical approach was used by comparing ebb bar sedimentation with an adjacent lagoon (i.e., Batiquitos Lagoon). It was assumed that approximately 100,000 cy of the sediment would migrate to the beach and this volume was incorporated into the GENESIS modeling. The analytical approach was applied to the remaining 400,000 cy to determine the dispersion of the material over time.

Figure 4-1. Locations of 2001 SANDAG RBSP receiver sites and beach profile monitoring stations.

Table 4-1. Screening approach to assess potential impacts for various Alternative 2 scenarios.

	Scenario	Wave Condition	Duration	Result
Initial Model Run	II	Calm	Spring and Fall for Years 1 to 5	Calm wave condition indicated greatest impact.
		Energetic	Spring and Fall for Years 1 to 5	
Subsequent Model Runs	II	Calm	Spring and Fall for Years 1 to 5, Year 10	Potential impacts to nearshore resources analyzed and carried forward.
	III	Calm	Spring and Fall for Years 1 to 5, Year 10	
	IV	Calm	Spring and Fall for Years 1 to 5, Year 10	

4.2 GIS-BASED APPROACH TO NEARSHORE HABITAT IMPACT METHODOLOGY

A GIS-based methodology was developed to automate what was done for previous efforts (i.e., SANDAG RBSP and the Encinitas-Solana Beach Shoreline Feasibility Study from 2005 through 2007), and was developed in coordination with three resource agencies (California Department of Fish and Game, National Marine Fisheries Service, and United States Fish and Wildlife Service), USACE, and the local sponsors. Similar to the previous method used for the Encinitas-Solana Beach Shoreline Feasibility Study, the 2004 LiDAR data was used as base bathymetry upon which changes in sand thickness was added. It is conceded that these data were collected at a snapshot in time, and it may be similar to a spring or fall profile, thereby not representing any long-term or average bathymetry.

The following are the key assumptions on which this methodology relied include:

- Bathymetry baseline model year is 2004 for the lifetime of the project. This baseline is more precise and accurate than anything conducted since, and is considered to be more representative of existing conditions than generating a new baseline based on erosion and accretion independent of the project without a firm knowledge of the underlying nearshore conditions.
- Substrate and vegetation data from the 2002 SANDAG Nearshore Habitat Inventory Survey is representative of existing conditions, and is supported with data collected in 2006, 2008, 2009, and 2010.
- The potential sensitive resources are similar to those analyzed in the earlier analysis for the Encinitas-Solana Beach Shoreline Feasibility Study, and consist of Bedrock with Surfgrass and Bedrock with Other Indicator Species (i.e., kelps).

The approach utilizes the same baseline data that was used for previous analyses regarding substrate, resources, etc.; however, uses a 4-dimensional, GIS-based approach. The key steps to applying the GIS-based approach included:

1. Create a base bathymetric surface (i.e., 2004 LiDAR and 2002 Nearshore Inventory Surveys). This provides the baseline depth from which any increase in sedimentation can be measured (Figures 4-2 and 4-3).
2. Create a theoretical sand surface based on existing data (i.e., 2004 LiDAR and 2002 Nearshore Inventory Surveys). This surface ties in and is overlaid on the bathymetric surface

to create a reference from which any increase in sedimentation can be measured. Therefore, the difference between the bathymetric surface and the sand surface denotes a change in elevation (presumably reef), and therefore provides reef elevations (Figure 4-4).

3. Overlay resource layers (e.g., substrate type and vegetation type) based on existing data (i.e., 2004 LiDAR and 2002 Nearshore Inventory Surveys). This layer provides a spatial representation (areal coverage) of the resources; a mosaic of habitat types (e.g., sandy areas, rocky reef) and resources (e.g., surfgrass, kelp) that also includes reef elevation (Figures 4-5 and 4-6).
4. Overlay cross-shore modeling results by creating a sand isopach. This isopach is a sand layer that denotes the model-based predictions of offshore sedimentation (Figure 4-7). When this layer is added to the baseline layers above, the areal coverage of any resource of interest can be calculated. The difference between this and the baseline data denotes potential burial or loss of the resource. Seasonal modeling results were provided for spring and fall seasons.
5. Establish a burial criteria. For this project, a burial criteria of ≥ 12 inches (in) was used for several reasons:
    a. Similar criteria were used to assess impacts on biological resources for previous beach nourishment projects (e.g., RBSP I and II).
    b. Given the dynamic nature of the environment and natural seasonal sediment transport, rocky habitat less than 12 in typically supports ephemeral species due to sediment scour. Therefore, project-related impacts above and beyond this level were considered to have potential impacts on perennial/indicator species and habitat.
    c. Although this approach could use any numeric criteria, it should be noted that the high degree of natural variation, the level of resolution and the margin of error of the baseline data, as well as the modeling results, brings into question the accuracy of fine-tuning a sediment criteria (i.e., any small incremental change in the criteria is overshadowed by the margin of error in baseline resolution, modeling results and natural variation).
6. Calculate acreage for potential impact areas that exceeds criteria for attribute(s) of interest (e.g., bedrock with surfgrass, bedrock with other indicators species, intertidal reef platform) (Figure 4-8).
7. To estimate sedimentation and impacts to resources based on "Natural Variation," a sand layer was created from empirical data provided from the 1996 to 2008 coastal profile dataset (Figure 4-9). Due to the high degree of variation of the coastal profile data (most likely a sampling artifact), the standard deviation of the sand layer depth was used instead of the maximum values. This sand layer was overlaid onto the baseline layer similar to the modeled sedimentation results, and the same ≥ 12 in criteria was applied, and area impacted calculated.
8. Seasonal impacts were determined and compared with Natural Variation values. Any potential project-related impact was identified if any seasonal impact exceeded Natural Variation (i.e., any effect greater than that which would be above and beyond what would be expected to naturally occur).

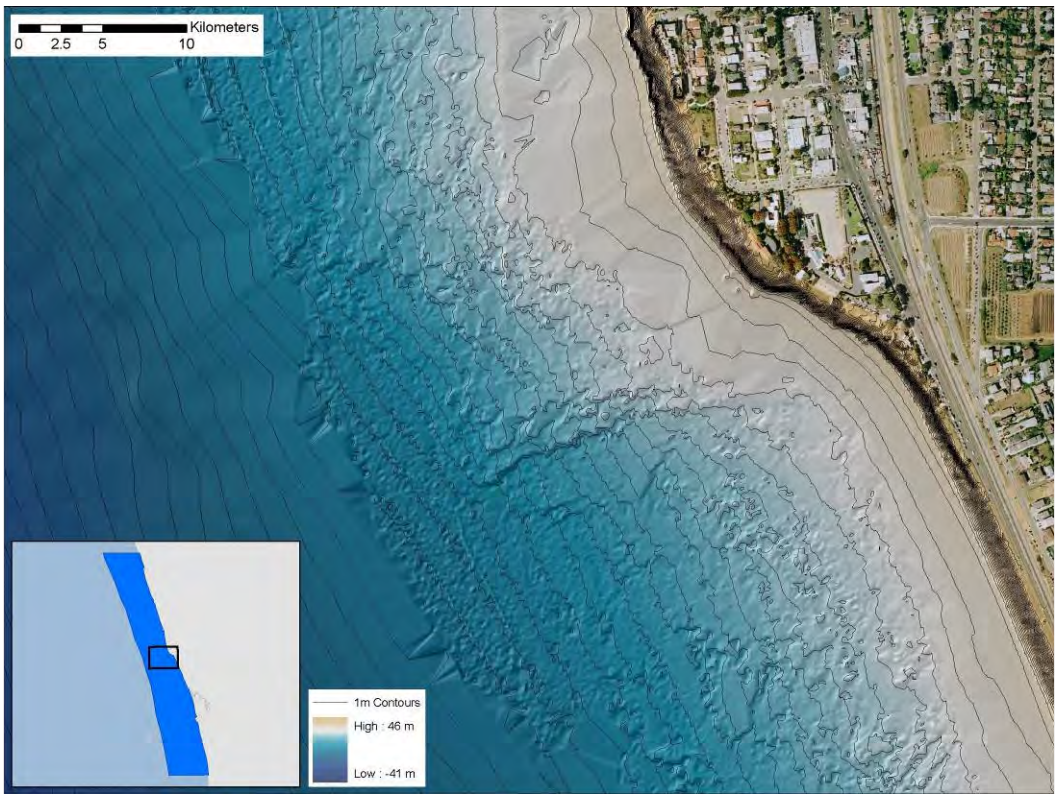


Figure 4-2. Close-up view of bathymetric contours.

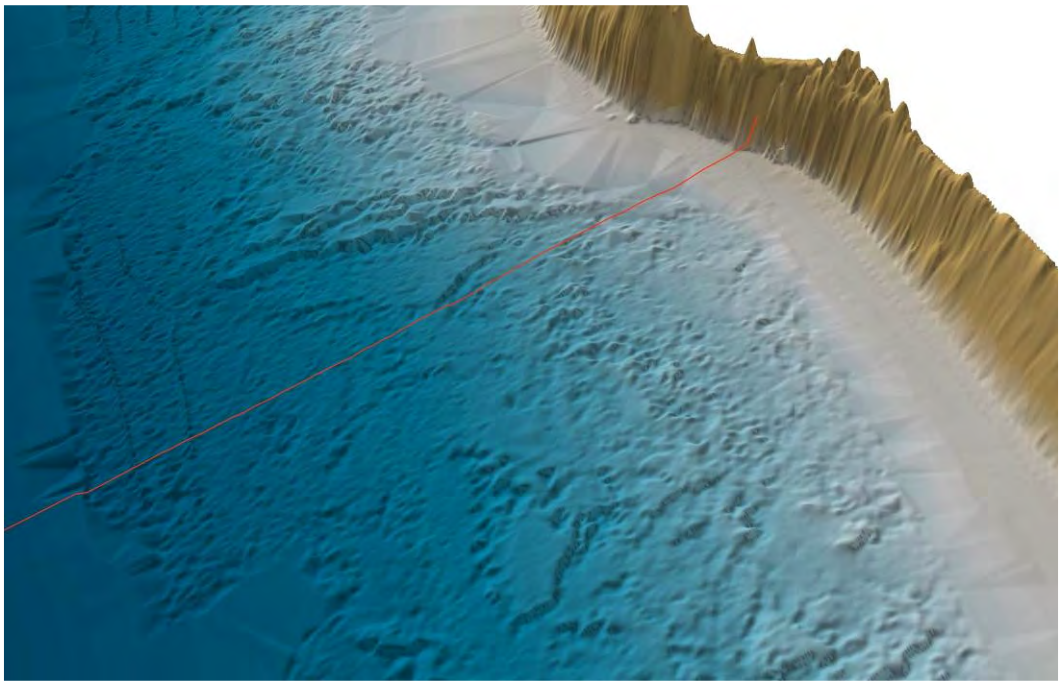


Figure 4-3. Oblique view of bathymetry with vertical exaggeration to enhance the reef habitat.

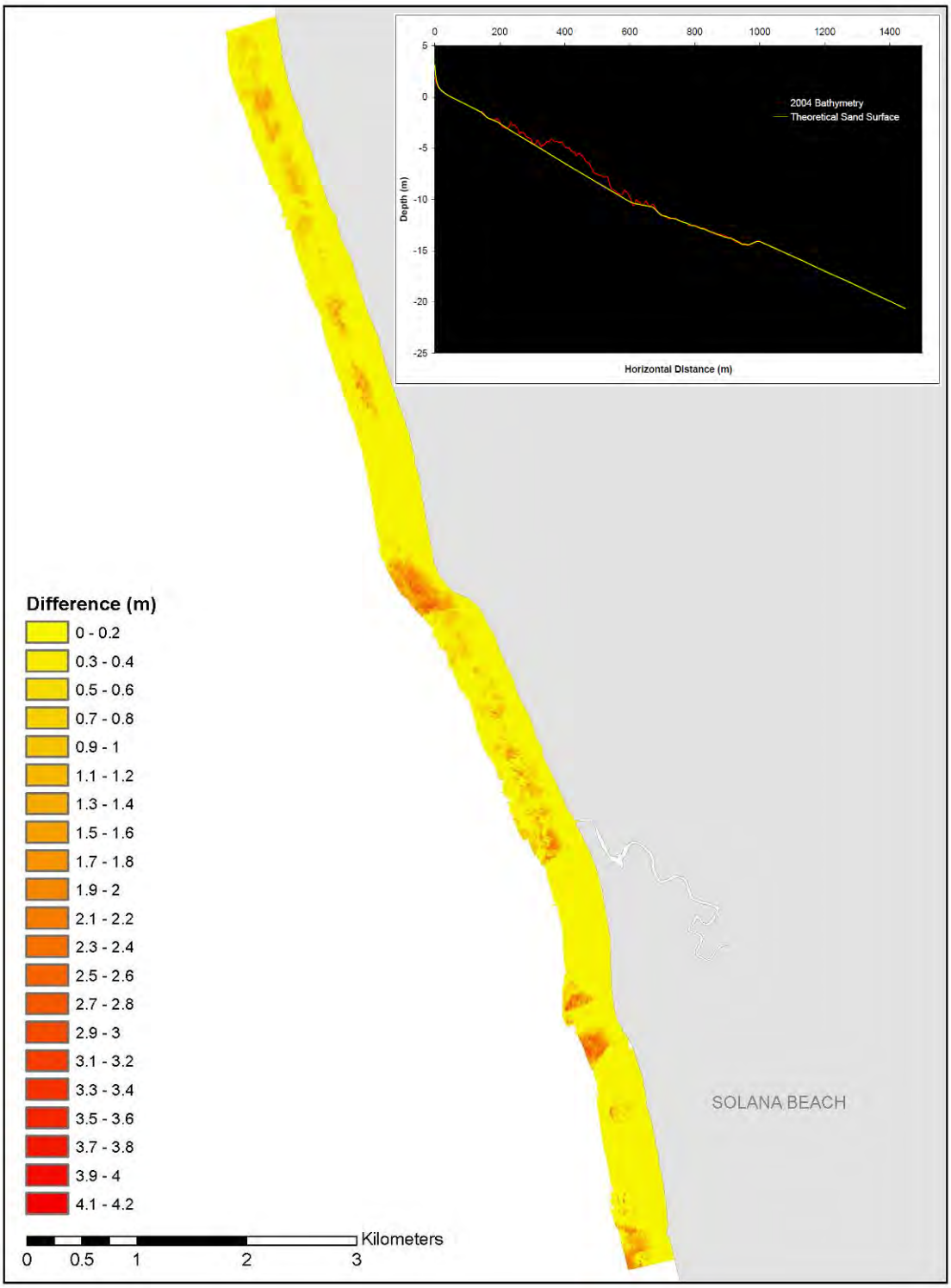


Figure 4-4. Theoretical sand surface subtracted from bathymetric surface. This difference denotes reef elevation.

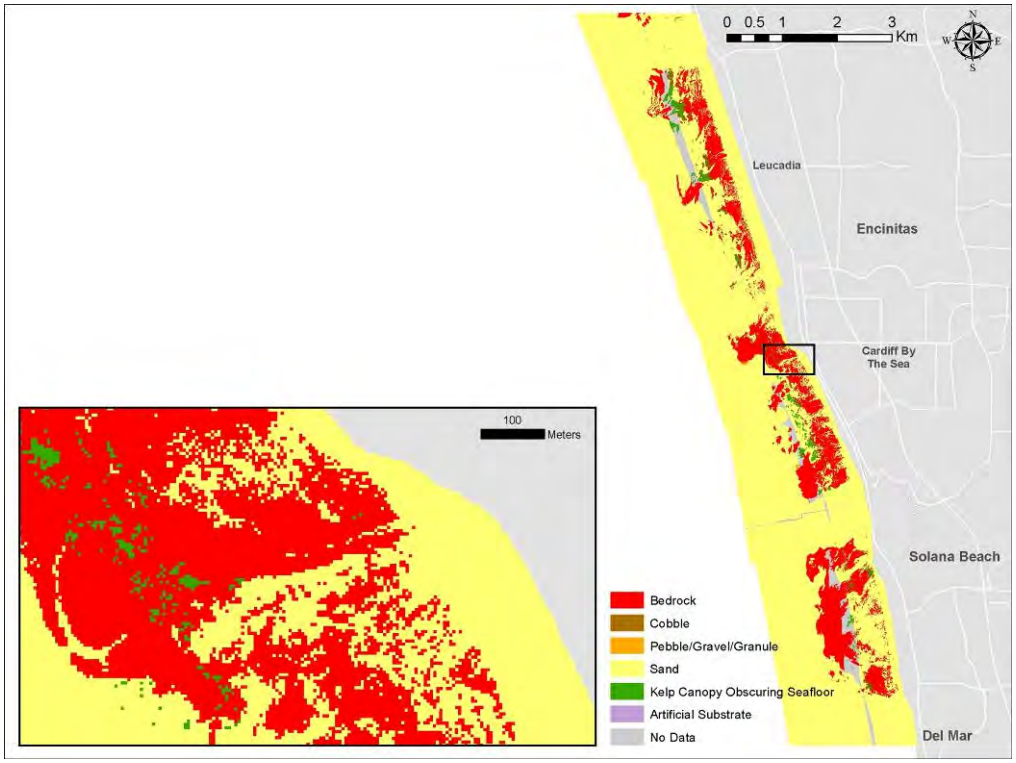


Figure 4-5. Substrate coverage based on 2004 LiDAR and 2002 vegetation surveys.

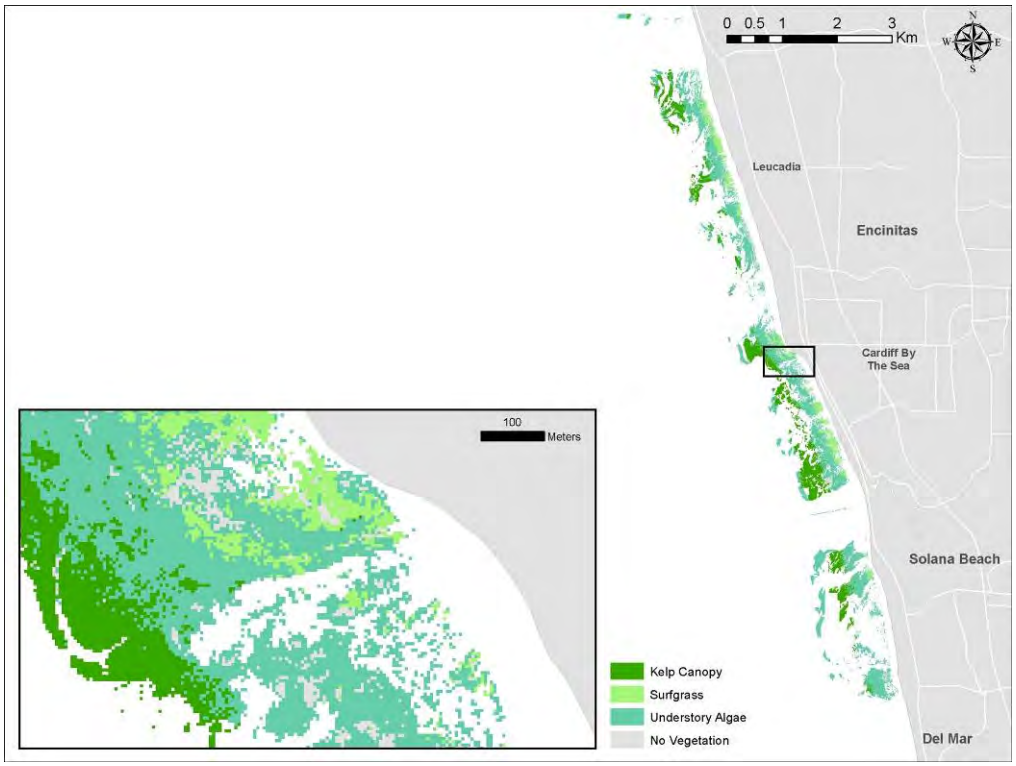


Figure 4-6. Vegetation coverage based on 2002 vegetation survey.

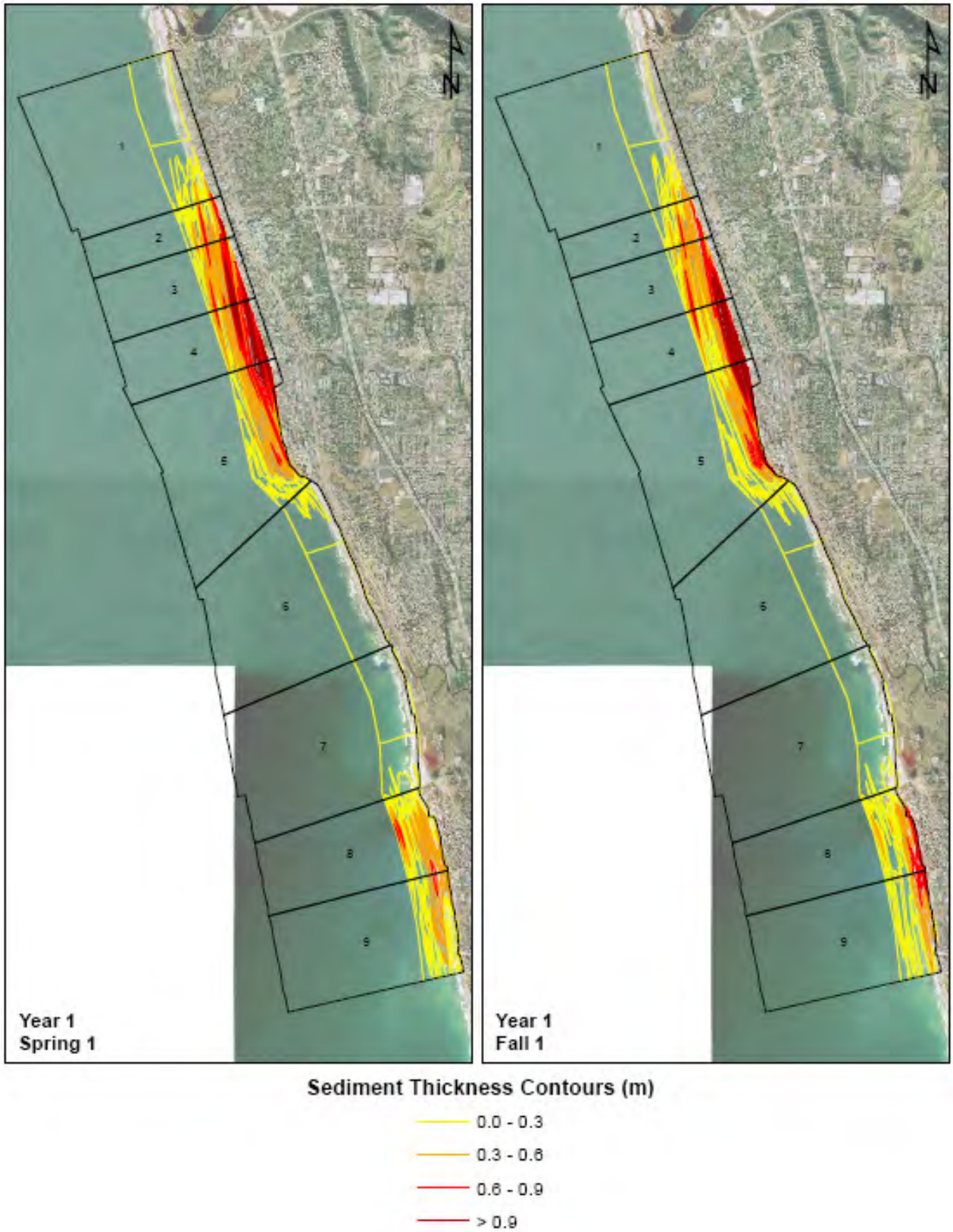


Figure 4-7. Example of estimated cross-shore sediment deposition (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS).

Figure 4-8. Example of areas depicting sediment thickness on bedrock with surfgrass based on model results from one season (from Encinitas-Solana Beach Shoreline Protection Project EIR/EIS).

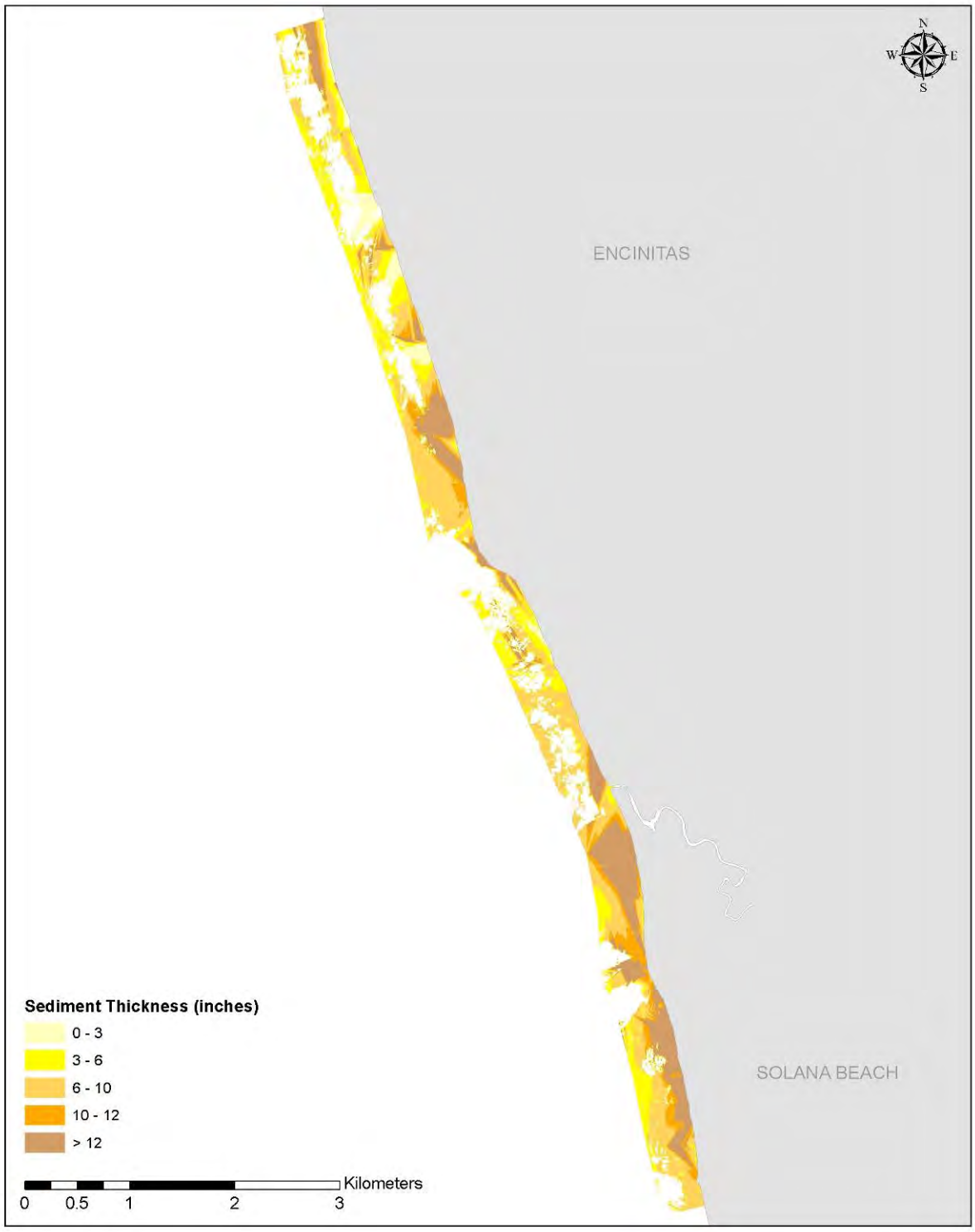


Figure 4-9. "Natural Variation" sediment thickness based empirical coastal profile data collected from 1996 to 2008.

5.0 RESULTS

5.1 ESTIMATED IMPACTS TO NEARSHORE RESOURCES

The model predicted cross-shore sedimentation results for each project alternative are provided in Appendices A through D. Tables 5-1 through 5-4 provide an example output for each profile at 500 ft from the back beach for each project alternative. Generally, sedimentation at all profiles was less than 1 ft, with the primary exception being in the vicinity of San Elijo which would be expected given that it is the area receiving the greatest amount of sediment. In addition, even when sediment levels exceeded 1 ft, it rarely persisted for more than one year.

Tables 5-5 through 5-8 summarize the estimated impact area to bedrock with surfgrass and other indicator species for spring and fall for Years 1 through 5 and Year 10. In addition, model-predicted natural variation is also provided for each reach. Modeling estimates indicated no project-related impact to nearshore resources that exceeded natural variation, and generally, impacts were several orders of magnitude less than natural variation. Table 5-9 provides a summary of the maximum seasonal impact for each project alternative relative to natural variation.

Analytical modeling of the ebb bar indicated that there may be an area that measures approximately 2,200 ft alongshore and 1,600 ft cross-shore off Cardiff State Beach that would be affected by increased sedimentation (Figure 5-1). The estimated depth of the sediment within that area would be approximately 3 ft if it were a 3-D rectangle with no variation. However, it would be more likely that sediment thickness would vary to have maximum thickness in the center and minimum thickness along the edges. For example, the center may be 6 ft thick while the edges may be 0 ft thick. The only biological resources that could be affected by the increased sedimentation are those understory and giant kelp plants present on the rip rap associated with the San Elijo Outfall. Based on historical kelp canopy cover, up to 6 acres of understory and/or giant kelp plants could be affected. However, impacts to these resources are not included in the analysis since the intent of the rip rap is to support and protect the outfall pipe, and it was not created as an artificial reef to enhance biological productivity. In fact, the San Elijo Joint Powers Authority is under permit to maintain and remove kelp plants which may compromise the integrity of the rip rap.

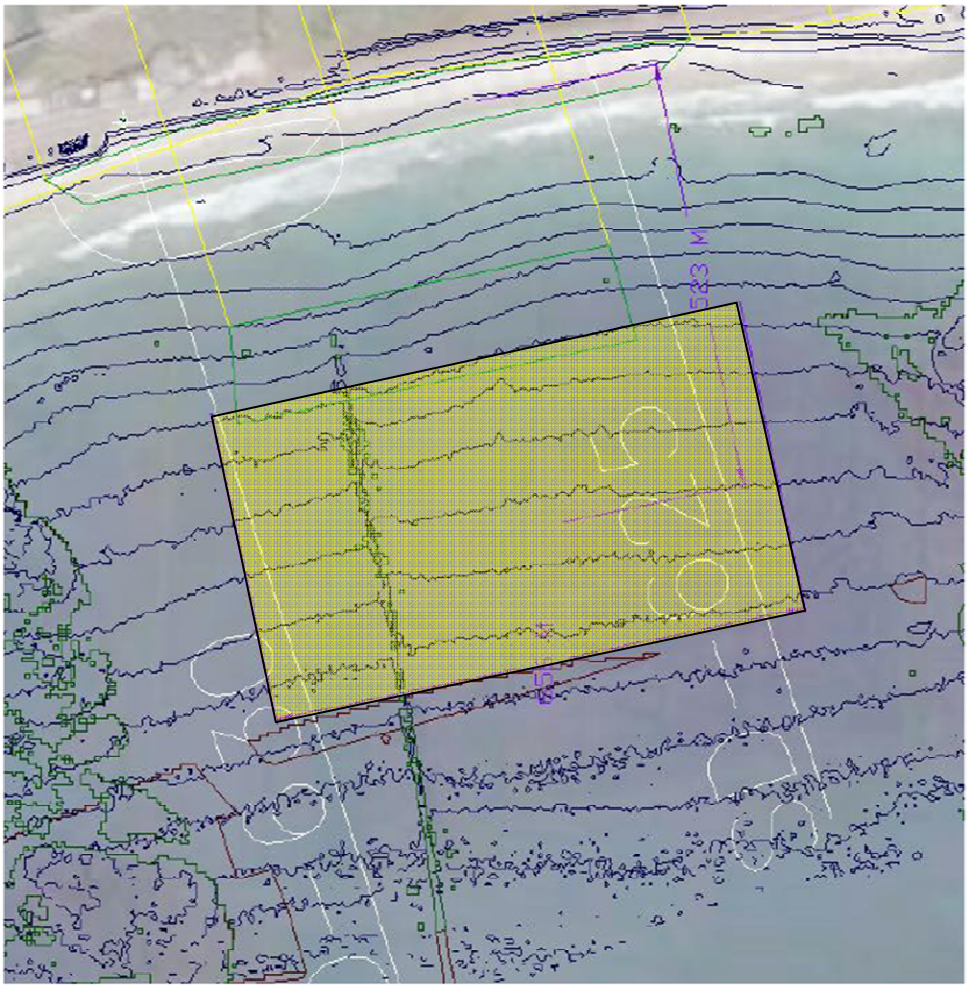


Figure 5-1. Modeled dispersal area of ebb bar.

Table 5-1. Alternative 2 – Scenario II for the Energetic Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area.

Profile		Year 1		Year 2		Year 3		Year 4		Year 5	
		Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
DM-0565	South Del Mar	0.00	0.01	0.05	0.14	0.07	0.23	0.09	0.29	0.10	0.32
DM-560	Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06
DM-580	Del Mar	0.00	0.00	0.04	0.06	0.08	0.11	0.11	0.15	0.14	0.19
DM-590	Del Mar	0.09	0.14	0.20	0.30	0.22	0.33	0.24	0.35	0.25	0.38
SD-595	Seascape Surf	0.19	0.64	0.15	0.51	0.15	0.49	0.14	0.48	0.13	0.43
SD-600	Fletcher Cove	0.74	0.64	0.66	0.57	0.62	0.54	0.54	0.46	0.36	0.31
SD-610	Tide Park	0.28	0.25	0.41	0.37	0.34	0.30	0.22	0.19	0.16	0.14
SD-620	Seaside Park	0.42	0.69	0.42	0.70	0.26	0.42	0.05	0.08	0.24	0.40
SD-625	San Elijo	1.41	1.37	0.69	0.67	0.18	0.17	0.00	0.00	1.06	1.02
SD-630	Cardiff	0.69	0.81	0.36	0.42	0.04	0.05	0.00	0.00	0.81	0.96
SD-650	San Elijo Park	0.01	0.01	0.17	0.10	0.24	0.14	0.21	0.13	0.15	0.09
SD-660	Swami's	0.06	0.07	0.12	0.16	0.15	0.19	0.16	0.20	0.15	0.20
SD-670	Moonlight	0.69	0.96	0.48	0.66	0.41	0.57	0.38	0.53	0.37	0.51
SD-0675	Stone Steps	0.62	0.46	0.73	0.53	0.69	0.51	0.65	0.48	0.61	0.45
SD-0680	Beacons	0.25	0.36	0.37	0.52	0.38	0.54	0.37	0.53	0.36	0.51
SD-0690	Leucadia	0.33	0.32	0.23	0.23	0.23	0.22	0.23	0.22	0.23	0.22
SD-0695	Leucadia	0.20	0.13	0.14	0.09	0.13	0.09	0.13	0.09	0.13	0.09
SD-0700	Grandview	0.31	0.22	0.30	0.21	0.29	0.20	0.29	0.21	0.30	0.21
SD-0710	Batiquitos	0.08	0.12	0.16	0.23	0.17	0.24	0.17	0.25	0.19	0.27
CB-0720	Batiquitos	0.00	0.00	0.03	0.06	0.04	0.09	0.05	0.10	0.03	0.07

Table 5-2. Alternative 2 – Scenario II for the Calm Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area.

Profile		Year 1		Year 2		Year 3		Year 4		Year 5		Year 10	
		Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
DM-0565	South Del Mar	0.00	0.00	0.03	0.09	0.06	0.18	0.08	0.24	0.09	0.28	0.12	0.38
DM-560	Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.11
DM-580	Del Mar	0.00	0.00	0.02	0.03	0.06	0.08	0.08	0.11	0.10	0.14	0.19	0.26
DM-590	Del Mar	0.06	0.09	0.18	0.27	0.21	0.31	0.22	0.33	0.24	0.36	0.23	0.34
SD-595	Seascape Surf	0.20	0.68	0.16	0.52	0.15	0.51	0.15	0.50	0.14	0.48	0.10	0.33
SD-600	Fletcher Cove	0.81	0.70	0.68	0.58	0.66	0.57	0.61	0.53	0.44	0.38	0.35	0.30
SD-610	Tide Park	0.22	0.19	0.42	0.37	0.37	0.33	0.27	0.24	0.17	0.15	0.15	0.13
SD-620	Seaside Park	0.36	0.59	0.44	0.72	0.28	0.46	0.07	0.11	0.23	0.37	0.00	0.00
SD-625	San Elijo	1.54	1.49	0.72	0.69	0.17	0.17	0.00	0.00	1.12	1.08	0.00	0.00
SD-630	Cardiff	0.70	0.83	0.37	0.43	0.03	0.04	0.00	0.00	0.83	0.98	0.00	0.00
SD-650	San Elijo Park	0.00	0.00	0.13	0.08	0.20	0.12	0.19	0.11	0.06	0.04	0.33	0.20
SD-660	Swami's	0.03	0.04	0.11	0.14	0.14	0.17	0.15	0.19	0.15	0.19	0.14	0.18
SD-670	Moonlight	0.76	1.05	0.52	0.71	0.44	0.61	0.41	0.56	0.39	0.54	0.32	0.44
SD-0675	Stone Steps	0.57	0.42	0.75	0.55	0.72	0.53	0.69	0.51	0.66	0.48	0.75	0.55
SD-0680	Beacons	0.21	0.31	0.35	0.50	0.38	0.54	0.38	0.54	0.38	0.54	0.55	0.78
SD-0690	Leucadia	0.38	0.37	0.24	0.23	0.23	0.22	0.23	0.22	0.23	0.23	0.28	0.27
SD-0695	Leucadia	0.22	0.15	0.15	0.10	0.13	0.09	0.13	0.09	0.14	0.09	0.12	0.08
SD-0700	Grandview	0.29	0.21	0.32	0.23	0.29	0.21	0.29	0.21	0.31	0.22	0.09	0.07
SD-0710	Batiquitos	0.05	0.08	0.16	0.22	0.16	0.23	0.18	0.25	0.19	0.27	0.00	0.00
CB-0720	Batiquitos	0.00	0.00	0.02	0.04	0.04	0.07	0.04	0.08	0.02	0.05	0.00	0.00

Table 5-3. Alternative 2 – Scenario III for the Calm Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area.

Profile		Year 1		Year 2		Year 3		Year 4		Year 5		Year 10	
		Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
DM-0565	South Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DM-560	Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
DM-580	Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
DM-590	Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
SD-595	Seascape Surf	0.00	0.00	0.00	0.00	0.01	0.04	0.03	0.09	0.03	0.10	0.01	0.03
SD-600	Fletcher Cove	0.00	0.00	0.11	0.09	0.19	0.16	0.19	0.16	0.04	0.04	0.05	0.04
SD-610	Tide Park	0.06	0.05	0.20	0.17	0.16	0.14	0.07	0.06	0.00	0.00	0.00	0.00
SD-620	Seaside Park	0.33	0.55	0.31	0.52	0.13	0.22	0.00	0.00	0.07	0.12	0.00	0.00
SD-625	San Elijo	1.56	1.51	0.65	0.63	0.03	0.03	0.00	0.00	0.93	0.90	0.00	0.00
SD-630	Cardiff	0.71	0.83	0.38	0.45	0.04	0.04	0.00	0.00	0.80	0.95	0.00	0.00
SD-650	San Elijo Park	0.01	0.01	0.14	0.09	0.17	0.10	0.12	0.07	0.00	0.00	0.09	0.06
SD-660	Swami's	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
SD-670	Moonlight	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
SD-0675	Stone Steps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
SD-0680	Beacons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SD-0690	Leucadia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SD-0695	Leucadia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SD-0700	Grandview	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SD-0710	Batiquitos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CB-0720	Batiquitos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 5-4. Alternative 2 – Scenario IV for the Calm Wave Condition scenario model-predicted sand depth (feet) at 500 feet for profiles within study area.

Profile		Year 1		Year 2		Year 3		Year 4		Year 5		Year 10	
		Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
DM-0565	South Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
DM-560	Del Mar	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
DM-580	Del Mar	0.00	0.00	0.02	0.03	0.06	0.09	0.09	0.12	0.11	0.15	0.16	0.23
DM-590	Del Mar	0.06	0.09	0.18	0.27	0.21	0.31	0.22	0.33	0.25	0.37	0.23	0.34
SD-595	Seascape Surf	0.20	0.68	0.16	0.52	0.15	0.51	0.15	0.50	0.14	0.48	0.10	0.33
SD-600	Fletcher Cove	0.81	0.70	0.68	0.58	0.66	0.57	0.61	0.53	0.44	0.38	0.35	0.31
SD-610	Tide Park	0.22	0.19	0.42	0.37	0.37	0.33	0.27	0.24	0.17	0.15	0.15	0.13
SD-620	Seaside Park	0.36	0.59	0.44	0.72	0.28	0.46	0.07	0.11	0.23	0.37	0.00	0.00
SD-625	San Elijo	1.54	1.49	0.72	0.69	0.17	0.17	0.00	0.00	1.12	1.08	0.00	0.00
SD-630	Cardiff	0.70	0.83	0.37	0.43	0.03	0.04	0.00	0.00	0.83	0.98	0.00	0.00
SD-650	San Elijo Park	0.00	0.00	0.13	0.08	0.20	0.12	0.19	0.12	0.06	0.04	0.33	0.20
SD-660	Swami's	0.03	0.04	0.11	0.14	0.14	0.18	0.15	0.20	0.15	0.19	0.13	0.16
SD-670	Moonlight	0.77	1.06	0.52	0.72	0.43	0.60	0.39	0.53	0.36	0.50	0.27	0.37
SD-0675	Stone Steps	0.57	0.42	0.65	0.48	0.58	0.43	0.54	0.39	0.49	0.36	0.55	0.40
SD-0680	Beacons	0.00	0.01	0.12	0.17	0.17	0.24	0.19	0.27	0.20	0.28	0.27	0.38
SD-0690	Leucadia	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05	0.07	0.07	0.01	0.01
SD-0695	Leucadia	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
SD-0700	Grandview	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
SD-0710	Batiquitos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CB-0720	Batiquitos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 5-5. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario II for the Energetic Wave Condition scenario.

Bedrock with Surfgrass												
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**		**NV***
Reach 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.600
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 3	0.000	0.000	0.038	0.000	0.019	0.000	0.004	0.000	0.000	0.000		0.100
Reach 4	0.004	0.000	0.012	0.000	0.002	0.000	0.000	0.000	0.000	0.000		0.000
Reach 5	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.800
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.200
Reach 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Reach 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
SUM	**0.006**	**0.000**	**0.050**	**0.000**	**0.021**	**0.000**	**0.004**	**0.000**	**0.000**	**0.000**		**2.500**

Bedrock with Understory Algae or Kelp Canopy												
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**		**NV***
Reach 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.700
Reach 3	0.000	0.000	0.084	0.000	0.048	0.000	0.002	0.000	0.000	0.000		0.400
Reach 4	0.028	0.001	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.000
Reach 5	0.109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		2.400
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 7	0.146	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
SUM	**0.283**	**0.038**	**0.118**	**0.000**	**0.048**	**0.000**	**0.002**	**0.000**	**0.000**	**0.000**		**12.300**

Notes:
*Natural Variation (NV) was determined using the standard deviation of empirical coastal profile data collected from 1996 to 2008.

Table 5-6. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario II for the Calm Wave Condition scenario.

Bedrock with Surfgrass														
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**	**Spring 10**	**Fall 10**		**NV***
Reach 1	0.000	0.069	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.600
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 3	0.000	0.000	0.050	0.000	0.034	0.000	0.020	0.000	0.006	0.000	0.079	0.000		0.100
Reach 4	0.019	0.000	0.031	0.000	0.005	0.000	0.002	0.000	0.000	0.000	0.029	0.000		0.000
Reach 5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.800
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.200
Reach 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Reach 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
SUM	**0.024**	**0.069**	**0.080**	**0.000**	**0.039**	**0.000**	**0.022**	**0.000**	**0.006**	**0.000**	**0.107**	**0.000**		**2.500**

Bedrock with Understory Algae or Kelp Canopy														
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**	**Spring 10**	**Fall 10**		**NV***
Reach 1	0.000	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.700
Reach 3	0.000	0.000	0.107	0.000	0.081	0.000	0.049	0.000	0.007	0.000	0.154	0.000		0.400
Reach 4	0.070	0.010	0.044	0.000	0.026	0.000	0.000	0.000	0.000	0.000	0.076	0.000		1.000
Reach 5	0.452	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		2.400
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 7	0.148	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 9	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
SUM	**0.670**	**0.098**	**0.151**	**0.000**	**0.107**	**0.000**	**0.049**	**0.000**	**0.007**	**0.000**	**0.230**	**0.000**		**12.300**

Notes:
*Natural Variation (NV) was determined using the standard deviation of empirical coastal profile data collected from 1996 to 2008.

Table 5-7. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario III for the Calm Wave Condition scenario.

Bedrock with Surfgrass														
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**	**Spring 10**	**Fall 10**		**NV***
Reach 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.600
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.100
Reach 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Reach 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.800
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.200
Reach 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Reach 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
SUM	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**2.500**

Bedrock with Understory Algae or Kelp Canopy														
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**	**Spring 10**	**Fall 10**		**NV***
Reach 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.700
Reach 3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.000
Reach 5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		2.400
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 7	0.148	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
SUM	**0.148**	**0.056**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**12.300**

Notes:
*Natural Variation (NV) was determined using the standard deviation of empirical coastal profile data collected from 1996 to 2008.

Table 5-8. Estimated impact (in acres) to bedrock with surfgrass and other indicator species (12 inch burial criteria) and natural variation by reach for Alternative 2 – Scenario IV for the Calm Wave Condition scenario.

Bedrock with Surfgrass														
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**	**Spring 10**	**Fall 10**		**NV***
Reach 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.600
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 3	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.100
Reach 4	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Reach 5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.800
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.200
Reach 7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
Reach 9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
SUM	**0.025**	**0.000**	**0.004**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**2.500**

Bedrock with Understory Algae or Kelp Canopy														
	Spring 1	**Fall 1**	**Spring 2**	**Fall 2**	**Spring 3**	**Fall 3**	**Spring 4**	**Fall 4**	**Spring 5**	**Fall 5**	**Spring 10**	**Fall 10**		**NV***
Reach 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.700
Reach 3	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
Reach 4	0.072	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.000
Reach 5	0.477	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		2.400
Reach 6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 7	0.148	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.800
Reach 8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.900
Reach 9	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.400
SUM	**0.697**	**0.073**	**0.001**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**12.300**

Notes:
*Natural Variation (NV) was determined using the standard deviation of empirical coastal profile data collected from 1996 to 2008.

Table 5-9. Summary of maximum seasonal impacts (acres) for all reaches under various scenarios under Alternative 2.

Scenario	Resource	Spring	Fall	Natural Variation*
II - Energetic	Surfgrass	0.05 (Year 2)	0.00 (Multiple Years)	2.5
	Other Indicator Species	0.28 (Year 1)	0.03 (Year 1)	12.3
II - Calm	Surfgrass	0.08 (Year 2)	0.07 (Year 1)	2.5
	Other Indicator Species	0.67 (Year 1)	0.09 (Year 1)	12.3
III - Calm	Surfgrass	0.00 (Multiple Years)	0.00 (Multiple Years)	2.5
	Other Indicator Species	0.15 (Year 1)	0.06 (Year 1)	12.3
IV – Calm	Surfgrass	0.03 (Year 1)	0.00 (Multiple Years)	2.5
	Other Indicator Species	0.69 (Year 1)	0.07 (Year 1)	12.3

*Natural Variation was determined using the standard deviation of empirical coastal profile data collected from 1996 to 2008.

6.0 DISCUSSION AND CONCLUSIONS

Impacts to biological resources may be direct or they may be indirect resulting in reduction of habitat quality, interference with foraging or impaired growth, diminished reproduction, or interruption of wildlife movement.

Direct impacts to marine biological resources may occur through removal of sediment and organisms at borrow sites during dredging, burial or smothering of organisms during sand placement at receiver sites, or equipment damage to habitats or animals during construction activities. Indirect impacts may result from decreases in marine water quality associated with dredging and sand placement activities, sediment transport related to movement of sands from the receiver sites, noise from construction equipment, or interference of normal movement or behaviors of animals due to construction activities or operational effects.

The primary focus of this analysis was to assess indirect impacts associated with sediment transport following placement. Beach sand placed on receiver sites would eventually be washed by waves and redistributed offshore and alongshore through natural processes. There is the potential for sand introduced into the system to indirectly impact sensitive habitats and resources if sand deposits on those resources occur at sufficient depth and persistence to result in burial or degradation of those resources. To estimate potential impacts to sensitive habitats, a suite of indicator species of relatively higher quality reef habitats has been identified. As defined in Section 2.2, sensitive habitats are defined to include high-relief reefs and vegetated low-relief reefs with one or more of the following indicator species: feather boa kelp, giant kelp, surfgrass, large sea fans, or sea palms.

Evaluating potential indirect sedimentation impacts is complex and impact conclusions must be determined in light of the dynamic ocean system, where seasonal and annual changes in sand elevation naturally occur, and an understanding must be developed of the life history of sensitive species and their relative distribution on nearshore reefs. A key feature of the shoreline morphology analysis was consideration of the results of the coastal numerical modeling predictions of the influence of the project on sand elevation in the vicinity of the receiver sites over time. Additionally,

empirical observations from RBSP I and other biological surveys conducted in the project area were considered to inform the conclusions.

The approach for analysis of indirect sedimentation impacts involved the following steps:

1. Review of project-specific modeling predictions to identify sand elevation changes over time after project implementation at historical beach profile locations in the study area.
2. Review of historical average sand elevation differences between spring and fall beach profiles according to distance offshore.
3. Review of empirical observations of nearshore reef heights and biological resources based on dive surveys conducted between 2006 and 2010 in the project area.
4. Review of empirical data on reef heights from the 2004 LiDAR bathymetry survey.
5. Comparison of average sand level increase predictions with reef heights and resources to identify the potential for increased sedimentation impacts.
6. Comparison of the RBSP II modeling predictions and impact estimates with those of RBSP I.
7. Review of the results of the RBSP I monitoring of nearshore reefs and kelp beds relative to impact estimates.

Sediment transport modeling was used to predict the influence of the project on sand elevations in the vicinity of the receiver sites over time. A GIS-based methodology was developed to automate what was done for previous efforts (i.e., RBSP I and II, and the Encinitas-Solana Beach Shoreline Feasibility Study from 2005 through 2007). This methodology was developed in coordination with three resource agencies (CDFG, NMFS, and USFWS). Similar to the previous method used for the Encinitas-Solana Beach Shoreline Feasibility Study, the 2004 LiDAR data (post RBSP I) was used as base bathymetry upon which changes in sand thickness were added. Substrate and vegetation data were added as a layer to provide a spatial representation (areal coverage) of the resources; a mosaic of habitat types (e.g., sandy areas, rocky reef) and resources (e.g., surfgrass, kelp) that also includes reef elevation. To estimate sedimentation and potential impacts to resources based on natural variation, a sand layer was created from empirical data provided from the 1996 to 2008 coastal profile dataset (Coastal Frontiers 2011). This sand layer was overlaid onto the baseline layer similar to the modeled sedimentation results, and the criteria described below were applied, and the area potentially impacted was calculated.

For previous beach nourishment projects (e.g., RBSP I and II), a significant impact to these habitats was defined as a long-term, adverse impact from sediment transport that would result in the irreversible removal, disturbance, or destruction of sensitive habitat. However, a key component to previous beach nourishment projects was the selection of receiver sites to: 1) avoid direct impacts to sensitive marine resources, and 2) place them as far away from any sensitive marine resources to minimize potential sedimentation impacts. This also included determining the maximum volume for each receiver site to minimize potential sedimentation impacts. Monitoring following RBSP I indicated that beach nourishment beneficially enhanced sandy beach habitat functions at several beaches, and that no long-term significant impacts occurred to sensitive nearshore marine resources. With the exception of Cardiff, all of the other receiver sites and volumes proposed for the SELRP are identical to those constructed during RBSP I or II. The closest distances to sensitive habitats from receiver site boundaries are summarized in Table 6-1.

Table 6-1. Estimated Closest Distances to Hard Bottom and Vegetated Habitats from the Seaward Boundary of Proposed Receiver Site Alternatives (from SANDAG 2011).

Proposed Receiver Sites	Distance (ft) From Receiver Site to Hard Bottom or Vegetated Habitats				
	Hard Bottom (2002)	Intertidal Surfgrass (2002)	Subtidal Surfgrass (2002)	Understory Algae (2002)	Kelp Bed (2008)
Batiquitos	200	1400	240	240	1500
Leucadia	150	150	150	290	1000
Moonlight Beach	330	3000	500	400	850
Cardiff (beach)	700	1800	1000	1500	1500
Solana Beach	120	1500	240	200	2500
Torrey Pines	150	200	200	1000	>5000

Note: Historical kelp bed represents maximum extent of kelp across multiple years, 1967-2002; Distances are estimates based on receiver site footprints, 2002 Habitat Inventory maps, and 2008 kelp cover.

For this project, a burial criteria of greater or equal to 12 inches was used since similar criteria were used to assess impacts on biological resources for previous beach nourishment projects (e.g., RBSP I and II). Given the dynamic nature of the coastal environment and natural seasonal sediment transport, rocky habitat less than 12 inches typically supports ephemeral species due to sediment scour. Therefore, project-related impacts above this level were considered to have potential impacts on perennial/indicator species and habitat. Seasonal impacts were determined based on Years 1 to 5 and Year 10, and the potential project-related impact was determined by comparing these estimated impacts with impacts associated with natural variation. All results indicated that project-related impacts were several orders of magnitude less than natural variation suggesting that no impact to sensitive nearshore marine resources are predicted from implementation of any of the project alternatives (Table 6-2).

As noted in Section 2.1, this report does not include any analysis for potential impacts of nourishment at the Torrey Pines receiver site; however, impacts associated with beach nourishment at the Torrey Pines receiver site were analyzed for RBSP I and II (SANDAG 2011). Modeling results predicted that sand elevations would average 0.5 to 0.7 ft higher in spring and 0.6 to 0.1 ft higher in fall between 350 and 600 ft, 0.2 to 1.0 ft higher between 600 and 800, and 0.2 to 0.6 ft higher at distances between 800 and 1,200 ft offshore profiles TP-0520 and TP-0530. Predicted sand increases were less than 0.1 ft approximately 1 mi downcoast of the receiver site. It was determined that the impacts of RBSP II on the hard-bottom habitat in the vicinity of the Torrey Pines receiver site would be less than significant for the following reasons: 1) reef heights extend above the predicted level of seasonal sand elevation increase up- and downcoast of the receiver site, and 2) 2009 surveys did not indicate substantial sand influence except on low relief reef (SANDAG 2011).

Table 6-2. Summary of impacts under various scenarios under Alternative 2.

Scenario	Resource	Impact Determination*
II - Calm	Surfgrass	Short-term and less than significant
	Other Indicator Species	Short-term and less than significant
III - Calm	Surfgrass	Short-term and less than significant
	Other Indicator Species	Short-term and less than significant
IV – Calm	Surfgrass	Short-term and less than significant
	Other Indicator Species	Short-term and less than significant

*Note: Significant impact was defined as a long-term, adverse impact from sediment transport that would result in the irreversible removal, disturbance, or destruction of sensitive habitat.

7.0 REFERENCES

AMEC 2005. Regional Beach Sand Project, Year 4 (2004-2005) Post-Construction Monitoring Report for Intertidal, Shallow Subtidal, and Kelp Forest Resources and Comprehensive Analysis Report (2001-2005). Prepared for San Diego Association of Governments. Available at: http://www.sandag.org.

Coastal Frontiers Corporation. 2004 Regional Beach Monitoring Program, Annual Report. Prepared for San Diego Association of Governments (SANDAG). Available at: http://www.sandag.org.

MEC Analytical Systems, Inc. (MEC). 2000. Appendix D to the SANDAG Regional Beach Sand Project EIR/EA. Evaluation of Impacts to Marine Resources and Water Quality from Dredging of Sands from Offshore Borrow Sites and Beach Replenishment at Oceanside, Carlsbad, Leucadia, Encinitas, Cardiff, Solana Beach, Del Mar, Torrey Pines, Mission Beach, and Imperial Beach, California. Prepared for KEA Environmental, Inc.

Moffat & Nichol. 2012. Preliminary Draft Shoreline Morphology Study, San Eljio Lagoon Restoration Project. November.

Nordby Biological Consulting and Moffatt & Nichol . 2012. San Elijo Lagoon Restoration Project Draft Alternatives Assessment. June.

San Diego Association of Governments (SANDAG). 2002. San Diego Nearshore Inventory Program. http://nearshore.ucsd.edu/.

San Diego Association of Governments (SANDAG). 2011. Environmental Assessment/Final Environmental Impact Report for the San Diego Regional Beach Sand Project II – Biology Technical Appendix.

Science Applications International Corporation (SAIC). 2007. Coastal Reef Habitat Survey of Encinitas and Solana Beach, California. Prepared for the City of Encinitas.

U.S. Department of the Navy, Southwest Division (USDN). 1997a. Environmental Assessment for Beach Replenishment at South Oceanside and Cardiff/Solana Beach, California.

U.S. Department of the Navy, Southwest Division (USDN). 1997b. Environmental Assessment for Beach Replenishment at North Carlsbad, South Carlsbad, Encinitas, and Torrey Pines, California.

Appendix A
Alternative 2A
Scenario II Energetic Wave Condition
Sediment Transport Model Predictions
Spring and Fall
Years 1 to 5

DM-0565	South Del Mar	0	0	Avg. Net SL	0.06	0.73	1.20	1.47	1.66					
DM-0565	251.646	0	149.46	1770			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	9.672	0.038	3.985	0.027	0.02	0.03	0.23	0.34	0.38	0.55	0.47	0.68	0.53	0.76
180	7.710	0.031	2.281	0.015	0.01	0.02	0.13	0.27	0.22	0.44	0.27	0.54	0.30	0.61
190	6.092	0.024	1.144	0.008	0.01	0.02	0.07	0.21	0.11	0.35	0.13	0.43	0.15	0.48
200	4.460	0.018	1.082	0.007	0.00	0.01	0.06	0.15	0.10	0.25	0.13	0.31	0.14	0.35
210	2.848	0.011	1.022	0.007	0.00	0.01	0.06	0.10	0.10	0.16	0.12	0.20	0.14	0.22
220	2.565	0.010	1.035	0.007	0.00	0.01	0.06	0.09	0.10	0.15	0.12	0.18	0.14	0.20
230	2.598	0.010	1.008	0.007	0.00	0.01	0.06	0.09	0.10	0.15	0.12	0.18	0.13	0.20
240	2.670	0.011	1.018	0.007	0.00	0.01	0.06	0.09	0.10	0.15	0.12	0.19	0.13	0.21
250	2.768	0.011	1.074	0.007	0.00	0.01	0.06	0.10	0.10	0.16	0.13	0.19	0.14	0.22
260	2.711	0.011	1.050	0.007	0.00	0.01	0.06	0.09	0.10	0.15	0.12	0.19	0.14	0.21
270	2.576	0.010	0.954	0.006	0.00	0.01	0.06	0.09	0.09	0.15	0.11	0.18	0.13	0.20
280	2.502	0.010	0.873	0.006	0.00	0.01	0.05	0.09	0.08	0.14	0.10	0.17	0.12	0.20
290	2.538	0.010	0.845	0.006	0.00	0.01	0.05	0.09	0.08	0.14	0.10	0.18	0.11	0.20
300	2.600	0.010	0.830	0.006	0.00	0.01	0.05	0.09	0.08	0.15	0.10	0.18	0.11	0.20
310	2.662	0.011	0.815	0.005	0.00	0.01	0.05	0.09	0.08	0.15	0.10	0.19	0.11	0.21
320	2.752	0.011	0.799	0.005	0.00	0.01	0.05	0.10	0.08	0.16	0.09	0.19	0.11	0.22
330	2.871	0.011	0.802	0.005	0.00	0.01	0.05	0.10	0.08	0.16	0.09	0.20	0.11	0.23
340	2.961	0.012	0.789	0.005	0.00	0.01	0.05	0.10	0.08	0.17	0.09	0.21	0.10	0.23
350	2.951	0.012	0.701	0.005	0.00	0.01	0.04	0.10	0.07	0.17	0.08	0.21	0.09	0.23
360	2.950	0.012	0.624	0.004	0.00	0.01	0.04	0.10	0.06	0.17	0.07	0.21	0.08	0.23
370	3.017	0.012	0.638	0.004	0.00	0.01	0.04	0.10	0.06	0.17	0.07	0.21	0.08	0.24
380	3.254	0.013	0.841	0.006	0.00	0.01	0.05	0.11	0.08	0.18	0.10	0.23	0.11	0.26
390	3.521	0.014	1.067	0.007	0.00	0.01	0.06	0.12	0.10	0.20	0.13	0.25	0.14	0.28
400	3.772	0.015	1.296	0.009	0.01	0.01	0.08	0.13	0.12	0.21	0.15	0.26	0.17	0.30
410	3.990	0.016	1.502	0.010	0.01	0.01	0.09	0.14	0.14	0.23	0.18	0.28	0.20	0.31
420	4.080	0.016	1.532	0.010	0.01	0.01	0.09	0.14	0.15	0.23	0.18	0.28	0.20	0.32
430	4.011	0.016	1.266	0.008	0.01	0.01	0.07	0.14	0.12	0.23	0.15	0.28	0.17	0.32
440	3.928	0.016	0.961	0.006	0.00	0.01	0.06	0.14	0.09	0.22	0.11	0.27	0.13	0.31
450	3.961	0.016	0.774	0.005	0.00	0.01	0.05	0.14	0.07	0.22	0.09	0.28	0.10	0.31
460	4.328	0.017	0.918	0.006	0.00	0.01	0.05	0.15	0.09	0.25	0.11	0.30	0.12	0.34
470	4.576	0.018	0.999	0.007	0.00	0.01	0.06	0.16	0.10	0.26	0.12	0.32	0.13	0.36
480	4.487	0.018	0.887	0.006	0.00	0.01	0.05	0.16	0.08	0.25	0.10	0.31	0.12	0.35
490	4.383	0.017	0.815	0.005	0.00	0.01	0.05	0.15	0.08	0.25	0.10	0.31	0.11	0.34
500	4.111	0.016	0.781	0.005	0.00	0.01	0.05	0.14	0.07	0.23	0.09	0.29	0.10	0.32
510	3.578	0.014	0.669	0.004	0.00	0.01	0.04	0.12	0.06	0.20	0.08	0.25	0.09	0.28
520	2.882	0.011	0.467	0.003	0.00	0.01	0.03	0.10	0.04	0.16	0.05	0.20	0.06	0.23
530	2.369	0.009	0.421	0.003	0.00	0.01	0.02	0.08	0.04	0.13	0.05	0.17	0.06	0.19
540	2.264	0.009	0.814	0.005	0.00	0.01	0.05	0.08	0.08	0.13	0.10	0.16	0.11	0.18
550	2.167	0.009	1.286	0.009	0.01	0.01	0.08	0.08	0.12	0.12	0.15	0.15	0.17	0.17
560	1.959	0.008	1.582	0.011	0.01	0.01	0.09	0.07	0.15	0.11	0.19	0.14	0.21	0.15
570	1.844	0.007	1.853	0.012	0.01	0.01	0.11	0.06	0.18	0.10	0.22	0.13	0.25	0.14
580	1.676	0.007	1.956	0.013	0.01	0.00	0.11	0.06	0.19	0.10	0.23	0.12	0.26	0.13
590	1.262	0.005	1.740	0.012	0.01	0.00	0.10	0.04	0.17	0.07	0.20	0.09	0.23	0.10
600	1.019	0.004	1.634	0.011	0.01	0.00	0.10	0.04	0.16	0.06	0.19	0.07	0.22	0.08
610	1.091	0.004	1.650	0.011	0.01	0.00	0.10	0.04	0.16	0.06	0.19	0.08	0.22	0.09
620	1.034	0.004	1.421	0.010	0.01	0.00	0.08	0.04	0.14	0.06	0.17	0.07	0.19	0.08
630	1.044	0.004	1.225	0.008	0.01	0.00	0.07	0.04	0.12	0.06	0.14	0.07	0.16	0.08
640	1.114	0.004	1.094	0.007	0.01	0.00	0.06	0.04	0.10	0.06	0.13	0.08	0.14	0.09
650	1.135	0.005	0.972	0.007	0.00	0.00	0.06	0.04	0.09	0.06	0.11	0.08	0.13	0.09
660	1.091	0.004	0.885	0.006	0.00	0.00	0.05	0.04	0.08	0.06	0.10	0.08	0.12	0.09
670	1.078	0.004	0.800	0.005	0.00	0.00	0.05	0.04	0.08	0.06	0.09	0.08	0.11	0.08
680	1.043	0.004	0.707	0.005	0.00	0.00	0.04	0.04	0.07	0.06	0.08	0.07	0.09	0.08
690	1.125	0.004	0.681	0.005	0.00	0.00	0.04	0.04	0.07	0.06	0.08	0.08	0.09	0.09
700	1.493	0.006	0.686	0.005	0.00	0.00	0.04	0.05	0.07	0.08	0.08	0.10	0.09	0.12
710	2.125	0.008	0.997	0.007	0.00	0.01	0.06	0.07	0.10	0.12	0.12	0.15	0.13	0.17
720	1.804	0.007	0.748	0.005	0.00	0.00	0.04	0.06	0.07	0.10	0.09	0.13	0.10	0.14
730	1.711	0.007	0.792	0.005	0.00	0.00	0.05	0.06	0.08	0.10	0.09	0.12	0.10	0.13
740	2.098	0.008	1.125	0.008	0.01	0.01	0.07	0.07	0.11	0.12	0.13	0.15	0.15	0.16
750	2.131	0.008	1.371	0.009	0.01	0.01	0.08	0.07	0.13	0.12	0.16	0.15	0.18	0.17
760	1.930	0.008	1.410	0.009	0.01	0.01	0.08	0.07	0.13	0.11	0.17	0.13	0.19	0.15
770	2.055	0.008	1.125	0.008	0.01	0.01	0.07	0.07	0.11	0.12	0.13	0.14	0.15	0.16
780	2.077	0.008	0.979	0.007	0.00	0.01	0.06	0.07	0.09	0.12	0.12	0.15	0.13	0.16
790	1.912	0.008	0.792	0.005	0.00	0.01	0.05	0.07	0.08	0.11	0.09	0.13	0.10	0.15
800	1.617	0.006	0.643	0.004	0.00	0.00	0.04	0.06	0.06	0.09	0.08	0.11	0.09	0.13
810	1.671	0.007	0.826	0.006	0.00	0.00	0.05	0.06	0.08	0.09	0.10	0.12	0.11	0.13
820	1.692	0.007	1.319	0.009	0.01	0.00	0.08	0.06	0.13	0.10	0.16	0.12	0.17	0.13
830	1.416	0.006	1.444	0.010	0.01	0.00	0.08	0.05	0.14	0.08	0.17	0.10	0.19	0.11
840	1.406	0.006	1.216	0.008	0.01	0.00	0.07	0.05	0.12	0.08	0.14	0.10	0.16	0.11
850	1.565	0.006	1.620	0.011	0.01	0.00	0.09	0.05	0.15	0.09	0.19	0.11	0.21	0.12
860	1.029	0.004	1.658	0.011	0.01	0.00	0.10	0.04	0.16	0.06	0.19	0.07	0.22	0.08
870	1.348	0.005	1.996	0.013	0.01	0.00	0.12	0.05	0.19	0.08	0.23	0.09	0.26	0.11
880	0.781	0.003	1.142	0.008	0.01	0.00	0.07	0.03	0.11	0.04	0.13	0.05	0.15	0.06
890	0.784	0.003	0.743	0.005	0.00	0.00	0.04	0.03	0.07	0.04	0.09	0.05	0.10	0.06
900	0.748	0.003	0.839	0.006	0.00	0.00	0.05	0.03	0.08	0.04	0.10	0.05	0.11	0.06
910	0.976	0.004	0.850	0.006	0.00	0.00	0.05	0.03	0.08	0.06	0.10	0.07	0.11	0.08
920	1.687	0.007	1.042	0.007	0.00	0.00	0.06	0.06	0.10	0.10	0.12	0.12	0.14	0.13
930	1.070	0.004	1.443	0.010	0.01	0.00	0.08	0.04	0.14	0.06	0.17	0.07	0.19	0.08
940	0.687	0.003	1.469	0.010	0.01	0.00	0.09	0.02	0.14	0.04	0.17	0.05	0.19	0.05
950	1.787	0.007	2.283	0.015	0.01	0.00	0.13	0.06	0.22	0.10	0.27	0.12	0.30	0.14
960	2.892	0.011	2.749	0.018	0.01	0.01	0.16	0.10	0.26	0.16	0.32	0.20	0.36	0.23
970	2.983	0.012	2.355	0.016	0.01	0.01	0.14	0.10	0.23	0.17	0.28	0.21	0.31	0.23
980	2.332	0.009	2.037	0.014	0.01	0.01	0.12	0.08	0.19	0.13	0.24	0.16	0.27	0.18
990	1.943	0.008	1.755	0.012	0.01	0.01	0.10	0.07	0.17	0.11	0.21	0.14	0.23	0.15
1000	2.006	0.008	1.437	0.010	0.01	0.01	0.08	0.07	0.14	0.11	0.17	0.14	0.19	0.16
1010	2.234	0.009	1.665	0.011	0.01	0.01	0.10	0.08	0.16	0.13	0.20	0.16	0.22	0.18
1020	1.840	0.007	1.985	0.013	0.01	0.01	0.12	0.06	0.19	0.10	0.23	0.13	0.26	0.14
1030	1.721	0.007	2.162	0.014	0.01	0.00	0.13	0.06	0.21	0.10	0.25	0.12	0.29	0.14
1040	1.339	0.005	2.246	0.015	0.01	0.00	0.13	0.05	0.21	0.08	0.26	0.09	0.30	0.11
1050	1.036	0.004	1.966	0.013	0.01	0.00	0.12	0.04	0.19	0.06	0.23	0.07	0.26	0.08
1060	0.673	0.003	1.930	0.013	0.01	0.00	0.11	0.02	0.18	0.04	0.23	0.05	0.26	0.05
1070	0.698	0.003	2.104	0.014	0.01	0.00	0.12	0.02	0.20	0.04	0.25	0.05	0.28	0.05
1080	0.997	0.004	2.198	0.015	0.01	0.00	0.13	0.03	0.21	0.06	0.26	0.07	0.29	0.08
1090	1.471	0.006	2.303	0.015	0.01	0.00	0.13	0.05	0.22	0.08	0.27	0.10	0.30	0.12
1100	2.367	0.009	2.898	0.019	0.01	0.01	0.17	0.08	0.28	0.13	0.34	0.17	0.38	0.19
1110	1.931	0.008	2.032	0.014	0.01	0.01	0.12	0.07	0.19	0.11	0.24	0.13	0.27	0.15
1120	0.551	0.002	1.363	0.009	0.01	0.00	0.08	0.02	0.13	0.03	0.16	0.04	0.18	0.04
1130	0.769	0.003	1.126	0.008	0.01	0.00	0.07	0.03	0.11	0.04	0.13	0.05	0.15	0.06
1140	0.483	0.002	0.668	0.004	0.00	0.00	0.04	0.02	0.06	0.03	0.08	0.03	0.09	0.04
1150	0.693	0.003	0.676	0.005	0.00	0.00	0.04	0.02	0.06	0.04	0.08	0.05	0.09	0.05
1160	0.683	0.003	0.666	0.004	0.00	0.00	0.04	0.02	0.06	0.04	0.08	0.05	0.09	0.05
1170	0.673	0.003	0.656	0.004	0.00	0.00	0.04	0.02	0.06	0.04	0.08	0.05	0.09	0.05
1180	0.663	0.003	0.646	0.004	0.00	0.00	0.04	0.02	0.06	0.04	0.08	0.05	0.09	0.05
1190	0.653	0.003	0.636	0.004	0.00	0.00	0.04	0.02	0.06	0.04	0.07	0.05	0.08	0.05
1200	0.643	0.003	0.626	0.004	0.00	0.00	0.04	0.02	0.06	0.04	0.07	0.04	0.08	0.05
1210	0.633	0.003	0.616	0.004	0.00	0.00	0.04	0.02	0.06	0.04	0.07	0.04	0.08	0.05
1220	0.623	0.002	0.606	0.004	0.00	0.00	0.04	0.02	0.06	0.04	0.07	0.04	0.08	0.05
1230	0.613	0.002	0.596	0.004	0.00	0.00	0.03	0.02	0.06	0.03	0.07	0.04	0.08	0.05
1240	0.603	0.002	0.586	0.004	0.00	0.00	0.03	0.02	0.06	0.03	0.07	0.04	0.08	0.05
1250	0.593	0.002	0.576	0.004	0.00	0.00	0.03	0.02	0.06	0.03	0.07	0.04	0.08	0.05
1260	0.583	0.002	0.566	0.004	0.00	0.00	0.03	0.02	0.05	0.03	0.07	0.04	0.07	0.05
1270	0.573	0.002	0.556	0.004	0.00	0.00	0.03	0.02	0.05	0.03	0.07	0.04	0.07	0.05
1280	0.563	0.002	0.546	0.004	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.07	0.04
1290	0.553	0.002	0.536	0.004	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.07	0.04
1300	0.543	0.002	0.526	0.004	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.07	0.04
1310	0.533	0.002	0.516	0.003	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.07	0.04
1320	0.523	0.002	0.506	0.003	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.07	0.04
1330	0.513	0.002	0.496	0.003	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.07	0.04
1340	0.503	0.002	0.486	0.003	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.06	0.04
1350	0.493	0.002	0.476	0.003	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.03	0.06	0.04
1360	0.483	0.002	0.466	0.003	0.00	0.00	0.03	0.02	0.04	0.03	0.05	0.03	0.06	0.04
1370	0.473	0.002	0.456	0.003	0.00	0.00	0.03	0.02	0.04	0.03	0.05	0.03	0.06	0.04
1380	0.463	0.002	0.446	0.003	0.00	0.00	0.03	0.02	0.04	0.03	0.05	0.03	0.06	0.04
1390	0.453	0.002	0.436	0.003	0.00	0.00	0.03	0.02	0.04	0.03	0.05	0.03	0.06	0.04
1400	0.443	0.002	0.426	0.003	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.03	0.06	0.03
1410	0.433	0.002	0.416	0.003	0.00	0.00	0.02	0.02	0.04	0.02	0.05	0.03	0.06	0.03
1420	0.423	0.002	0.406	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.05	0.03
1430	0.413	0.002	0.396	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.05	0.03
1440	0.403	0.002	0.386	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.05	0.03
1450	0.393	0.002	0.376	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.03	0.05	0.03
1460	0.383	0.002	0.366	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.05	0.03
1470	0.373	0.001	0.356	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.05	0.03
1480	0.363	0.001	0.346	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.05	0.03
1490	0.353	0.001	0.336	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.03
1500	0.343	0.001	0.326	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.03
1510	0.333	0.001	0.316	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.03
1520	0.323	0.001	0.306	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.03
1530	0.313	0.001	0.296	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02
1540	0.303	0.001	0.286	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02
1550	0.293	0.001	0.276	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02
1560	0.283	0.001	0.266	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02
1570	0.273	0.001	0.256	0.002	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02
1580	0.263	0.001	0.246	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02
1590	0.253	0.001	0.236	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02
1600	0.243	0.001	0.226	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02
1610	0.233	0.001	0.216	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02
1620	0.223	0.001	0.206	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1630	0.213	0.001	0.196	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1640	0.203	0.001	0.186	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02
1650	0.193	0.001	0.176	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02
1660	0.183	0.001	0.166	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1670	0.173	0.001	0.156	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1680	0.163	0.001	0.146	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1690	0.153	0.001	0.136	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1700	0.143	0.001	0.126	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01
1710	0.133	0.001	0.116	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01
1720	0.123	0.000	0.106	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1730	0.113	0.000	0.096	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1740	0.103	0.000	0.086	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1750	0.093	0.000	0.076	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1760	0.083	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01
1770	0.073	0.000	0.056	0.000	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01

DM-560	Del Mar	0	0	Avg. Net SL	-0.04	-0.17	0.05	0.37	0.68					
DM-0560	242.943	0	328.557	1800			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.571	0.002	0.553	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02
10	1.204	0.005	1.921	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
20	3.535	0.015	3.567	0.011	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06	0.09	0.12
30	4.270	0.018	4.278	0.013	0.00	0.00	0.00	0.00	0.01	0.01	0.06	0.08	0.11	0.14
40	3.862	0.016	3.380	0.010	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.07	0.08	0.13
50	4.049	0.017	2.298	0.007	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.07	0.06	0.13
60	3.839	0.016	1.639	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.07	0.04	0.13
70	3.266	0.013	1.314	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.03	0.11
80	2.918	0.012	1.161	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.03	0.10
90	2.701	0.011	1.114	0.003	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.03	0.09
100	2.492	0.010	1.147	0.003	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.03	0.08
110	2.287	0.009	1.188	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.03	0.08
120	2.151	0.009	1.191	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.03	0.07
130	2.137	0.009	1.235	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.03	0.07
140	2.163	0.009	1.316	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.03	0.07
150	2.185	0.009	1.402	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.03	0.07
160	2.228	0.009	1.516	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
170	2.190	0.009	1.553	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
180	2.024	0.008	1.453	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
190	1.966	0.008	1.428	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
200	2.069	0.009	1.530	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
210	2.276	0.009	1.716	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.08
220	2.600	0.011	2.009	0.006	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.05	0.09
230	2.768	0.011	2.170	0.007	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.05	0.09
240	2.598	0.011	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.05	0.09
250	2.355	0.010	1.835	0.006	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.05	0.08
260	2.114	0.009	1.644	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
270	1.868	0.008	1.452	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.06
280	1.626	0.007	1.258	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05
290	1.399	0.006	1.060	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.05
300	1.286	0.005	0.968	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04
310	1.312	0.005	0.994	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04
320	1.283	0.005	0.944	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04
330	1.204	0.005	0.848	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04
340	1.091	0.004	0.756	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04
350	0.954	0.004	0.657	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
360	0.829	0.003	0.568	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03
370	0.814	0.003	0.579	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03
380	0.932	0.004	0.696	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
390	1.121	0.005	0.846	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04
400	1.408	0.006	1.065	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.05
410	1.688	0.007	1.280	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.06
420	1.938	0.008	1.471	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.06
430	2.041	0.008	1.552	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
440	1.960	0.008	1.486	0.005	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.04	0.07
450	1.696	0.007	1.313	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.06
460	1.553	0.006	1.326	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05
470	1.716	0.007	1.649	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.06
480	1.769	0.007	1.847	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.06
490	1.769	0.007	1.943	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06
500	1.779	0.007	1.986	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06
510	1.812	0.007	2.035	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06
520	1.789	0.007	2.045	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06
530	1.681	0.007	1.999	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06
540	1.563	0.006	1.979	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05
550	1.467	0.006	1.985	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05
560	1.451	0.006	2.080	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05
570	1.624	0.007	2.359	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05
580	1.828	0.008	2.666	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.07	0.06
590	1.780	0.007	2.712	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.07	0.06
600	1.587	0.007	2.629	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.06	0.05
610	1.487	0.006	2.676	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.07	0.05
620	1.412	0.006	2.738	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.07	0.05
630	1.311	0.005	2.764	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
640	1.231	0.005	2.787	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
650	1.155	0.005	2.789	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
660	1.184	0.005	2.830	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
670	1.163	0.005	2.837	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
680	1.043	0.004	2.760	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.03
690	0.969	0.004	2.746	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.03
700	0.908	0.004	2.699	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.03
710	0.796	0.003	2.586	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.06	0.03
720	0.779	0.003	2.600	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.06	0.03
730	0.805	0.003	2.627	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.06	0.03
740	0.809	0.003	2.701	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.07	0.03
750	0.834	0.003	2.826	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.03
760	0.828	0.003	2.902	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.07	0.03
770	0.796	0.003	2.946	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.07	0.03
780	0.771	0.003	2.993	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.07	0.03
790	0.802	0.003	3.098	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.08	0.03
800	0.820	0.003	3.177	0.010	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.08	0.03
810	0.814	0.003	3.227	0.010	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.08	0.03
820	0.804	0.003	3.342	0.010	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.08	0.03
830	0.813	0.003	3.408	0.010	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.01	0.08	0.03
840	0.881	0.004	3.525	0.011	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.09	0.03
850	0.996	0.004	3.678	0.011	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.09	0.03
860	1.111	0.005	3.768	0.011	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.09	0.04
870	1.185	0.005	3.773	0.011	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.09	0.04
880	1.237	0.005	3.703	0.011	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.09	0.04
890	1.195	0.005	3.602	0.011	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.09	0.04
900	1.130	0.005	3.425	0.010	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.08	0.04
910	1.032	0.004	3.168	0.010	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.08	0.03
920	0.986	0.004	2.967	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.03
930	1.068	0.004	2.923	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
940	1.248	0.005	2.961	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
950	1.432	0.006	3.069	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.08	0.05
960	1.498	0.006	3.047	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.08	0.05
970	1.397	0.006	2.913	0.009	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.07	0.05
980	1.266	0.005	2.770	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
990	1.163	0.005	2.665	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.02	0.07	0.04
1000	1.116	0.005	2.583	0.008	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.02	0.06	0.04
1010	1.052	0.004	2.466	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1020	1.014	0.004	2.410	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.03
1030	0.996	0.004	2.379	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.03
1040	1.061	0.004	2.443	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1050	1.206	0.005	2.525	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1060	1.210	0.005	2.476	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1070	1.242	0.005	2.444	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1080	1.338	0.006	2.457	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1090	1.348	0.006	2.371	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1100	1.340	0.006	2.260	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
1110	1.347	0.006	2.191	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1120	1.288	0.005	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1130	1.190	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1140	1.248	0.005	1.934	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1150	1.284	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1160	1.184	0.005	1.843	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.04
1170	1.113	0.005	1.749	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04
1180	1.113	0.005	1.787	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04
1190	1.255	0.005	1.931	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1200	1.342	0.006	2.003	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1210	1.340	0.006	1.984	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1220	1.345	0.006	1.949	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04
1230	1.378	0.006	1.929	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.05
1240	1.305	0.005	1.820	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04
1250	1.205	0.005	1.708	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04
1260	1.205	0.005	1.632	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04
1270	1.267	0.005	1.668	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04
1280	1.491	0.006	1.799	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05
1290	1.617	0.007	1.903	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05
1300	1.643	0.007	1.900	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05
1310	1.645	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.05
1320	1.688	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.06
1330	1.576	0.006	1.719	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05
1340	1.319	0.005	1.480	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04
1350	1.081	0.004	1.289	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1360	1.078	0.004	1.274	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1370	0.999	0.004	1.222	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03
1380	0.889	0.004	1.080	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03
1390	0.820	0.003	0.985	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1400	0.832	0.003	0.913	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
1410	0.730	0.003	0.773	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1420	0.984	0.004	1.008	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
1430	1.140	0.005	1.194	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1440	0.821	0.003	0.928	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1450	0.896	0.004	1.009	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
1460	1.117	0.005	1.175	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1470	1.290	0.005	1.329	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1480	1.360	0.006	1.413	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.05
1490	1.208	0.005	1.308	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1500	1.143	0.005	1.333	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1510	1.083	0.004	1.239	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1520	1.017	0.004	1.182	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03
1530	1.131	0.005	1.306	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04
1540	0.904	0.004	1.066	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03
1550	0.819	0.003	1.001	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1560	0.874	0.004	1.073	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03
1570	0.987	0.004	1.120	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03
1580	1.002	0.004	1.139	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03
1590	0.768	0.003	0.914	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1600	0.681	0.003	0.788	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1610	0.838	0.003	0.873	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
1620	1.118	0.005	1.041	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04
1630	0.982	0.004	0.870	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03
1640	0.752	0.003	0.658	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1650	0.596	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02
1660	0.524	0.002	0.378	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02
1670	0.500	0.002	0.442	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02
1680	0.453	0.002	0.432	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02
1690	0.390	0.002	0.455	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1700	0.525	0.002	0.655	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1710	0.550	0.002	0.706	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1720	0.304	0.001	0.449	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1730	0.369	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1740	0.399	0.002	0.552	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1750	0.409	0.002	0.597	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1760	0.374	0.002	0.567	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1770	0.361	0.001	0.525	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1780	0.348	0.001	0.488	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1790	0.307	0.001	0.464	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1800	0.284	0.001	0.456	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01

DM-580	Del Mar	0	0	Avg. Net Sl	-0.123	0.342	0.626	0.851	1.100					
DM-0580	427.197	0	422.914	1899			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft^2/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	3.615	0.008	3.265	0.008	0.00	0.00	0.03	0.03	0.06	0.06	0.08	0.09	0.10	0.11
20	2.757	0.006	2.138	0.005	0.00	0.00	0.02	0.03	0.04	0.05	0.05	0.07	0.07	0.08
30	2.818	0.007	1.975	0.005	0.00	0.00	0.02	0.03	0.03	0.05	0.05	0.07	0.06	0.09
40	3.146	0.007	1.892	0.004	0.00	0.00	0.02	0.03	0.03	0.05	0.05	0.07	0.06	0.10
50	3.882	0.009	2.057	0.005	0.00	0.00	0.02	0.04	0.04	0.07	0.05	0.09	0.06	0.12
60	4.365	0.010	1.994	0.005	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.10	0.06	0.13
70	4.912	0.011	1.997	0.005	0.00	0.00	0.02	0.05	0.04	0.09	0.05	0.12	0.06	0.15
80	5.309	0.012	1.877	0.004	0.00	0.00	0.02	0.05	0.03	0.09	0.05	0.13	0.06	0.16
90	5.529	0.013	1.723	0.004	0.00	0.00	0.02	0.05	0.03	0.10	0.04	0.13	0.05	0.17
100	5.464	0.013	1.581	0.004	0.00	0.00	0.02	0.05	0.03	0.10	0.04	0.13	0.05	0.17
110	5.187	0.012	1.466	0.003	0.00	0.00	0.01	0.05	0.03	0.09	0.04	0.12	0.05	0.16
120	4.946	0.012	1.537	0.004	0.00	0.00	0.01	0.05	0.03	0.09	0.04	0.12	0.05	0.15
130	5.075	0.012	1.876	0.004	0.00	0.00	0.02	0.05	0.03	0.09	0.05	0.12	0.06	0.16
140	5.015	0.012	2.044	0.005	0.00	0.00	0.02	0.05	0.04	0.09	0.05	0.12	0.06	0.15
150	4.995	0.012	2.249	0.005	0.00	0.00	0.02	0.05	0.04	0.09	0.05	0.12	0.07	0.15
160	4.999	0.012	2.489	0.006	0.00	0.00	0.02	0.05	0.04	0.09	0.06	0.12	0.08	0.15
170	4.877	0.011	2.568	0.006	0.00	0.00	0.02	0.05	0.05	0.09	0.06	0.12	0.08	0.15
180	4.754	0.011	2.644	0.006	0.00	0.00	0.03	0.05	0.05	0.08	0.06	0.11	0.08	0.15
190	4.627	0.011	2.717	0.006	0.00	0.00	0.03	0.04	0.05	0.08	0.07	0.11	0.08	0.14
200	4.537	0.011	2.918	0.007	0.00	0.00	0.03	0.04	0.05	0.08	0.07	0.11	0.09	0.14
210	4.481	0.010	3.079	0.007	0.00	0.00	0.03	0.04	0.05	0.08	0.07	0.11	0.10	0.14
220	4.486	0.011	3.262	0.008	0.00	0.00	0.03	0.04	0.06	0.08	0.08	0.11	0.10	0.14
230	4.565	0.011	3.438	0.008	0.00	0.00	0.03	0.04	0.06	0.08	0.08	0.11	0.11	0.14
240	4.662	0.011	3.584	0.008	0.00	0.00	0.03	0.04	0.06	0.08	0.09	0.11	0.11	0.14
250	4.776	0.011	3.741	0.009	0.00	0.00	0.04	0.05	0.07	0.08	0.09	0.11	0.12	0.15
260	4.939	0.012	3.918	0.009	0.00	0.00	0.04	0.05	0.07	0.09	0.09	0.12	0.12	0.15
270	5.128	0.012	4.077	0.010	0.00	0.00	0.04	0.05	0.07	0.09	0.10	0.12	0.13	0.16
280	5.050	0.012	3.951	0.009	0.00	0.00	0.04	0.05	0.07	0.09	0.09	0.12	0.12	0.16
290	4.801	0.011	3.655	0.009	0.00	0.00	0.04	0.05	0.06	0.08	0.09	0.11	0.11	0.15
300	4.544	0.011	3.356	0.008	0.00	0.00	0.03	0.04	0.06	0.08	0.08	0.11	0.10	0.14
310	4.320	0.010	3.008	0.007	0.00	0.00	0.03	0.04	0.05	0.08	0.07	0.10	0.09	0.13
320	4.106	0.010	2.575	0.006	0.00	0.00	0.02	0.04	0.05	0.07	0.06	0.10	0.08	0.13
330	3.798	0.009	2.033	0.005	0.00	0.00	0.02	0.04	0.04	0.07	0.05	0.09	0.06	0.12
340	3.742	0.009	1.759	0.004	0.00	0.00	0.02	0.04	0.03	0.07	0.04	0.09	0.05	0.11
350	3.598	0.008	1.496	0.004	0.00	0.00	0.01	0.03	0.03	0.06	0.04	0.09	0.05	0.11
360	3.251	0.008	1.075	0.003	0.00	0.00	0.01	0.03	0.02	0.06	0.03	0.08	0.03	0.10
370	3.671	0.009	1.442	0.003	0.00	0.00	0.01	0.04	0.03	0.06	0.03	0.09	0.04	0.11
380	4.175	0.010	1.816	0.004	0.00	0.00	0.02	0.04	0.03	0.07	0.04	0.10	0.06	0.13
390	4.518	0.011	2.027	0.005	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.11	0.06	0.14
400	4.547	0.011	2.014	0.005	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.11	0.06	0.14
410	4.559	0.011	2.073	0.005	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.11	0.06	0.14
420	4.558	0.011	2.083	0.005	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.11	0.06	0.14
430	4.773	0.011	2.315	0.005	0.00	0.00	0.02	0.05	0.04	0.08	0.06	0.11	0.07	0.15
440	5.074	0.012	2.635	0.006	0.00	0.00	0.03	0.05	0.05	0.09	0.06	0.12	0.08	0.16
450	5.379	0.013	3.003	0.007	0.00	0.00	0.03	0.05	0.05	0.09	0.07	0.13	0.09	0.17
460	5.672	0.013	3.389	0.008	0.00	0.00	0.03	0.05	0.06	0.10	0.08	0.13	0.11	0.17
470	5.960	0.014	3.840	0.009	0.00	0.00	0.04	0.06	0.07	0.10	0.09	0.14	0.12	0.18
480	6.253	0.015	4.236	0.010	0.00	0.00	0.04	0.06	0.07	0.11	0.10	0.15	0.13	0.19
490	6.468	0.015	4.521	0.011	0.00	0.00	0.04	0.06	0.08	0.11	0.11	0.15	0.14	0.20
500	6.277	0.015	4.418	0.010	0.00	0.00	0.04	0.06	0.08	0.11	0.11	0.15	0.14	0.19
510	6.086	0.014	4.334	0.010	0.00	0.00	0.04	0.06	0.08	0.11	0.10	0.14	0.13	0.19
520	5.855	0.014	4.299	0.010	0.00	0.00	0.04	0.06	0.08	0.10	0.10	0.14	0.13	0.18
530	5.622	0.013	4.262	0.010	0.00	0.00	0.04	0.05	0.08	0.10	0.10	0.13	0.13	0.17
540	5.352	0.013	4.213	0.010	0.00	0.00	0.04	0.05	0.07	0.09	0.10	0.13	0.13	0.16
550	5.054	0.012	4.155	0.010	0.00	0.00	0.04	0.05	0.07	0.09	0.10	0.12	0.13	0.16
560	4.665	0.011	4.032	0.010	0.00	0.00	0.04	0.04	0.07	0.08	0.10	0.11	0.13	0.14
570	4.259	0.010	3.904	0.009	0.00	0.00	0.04	0.04	0.07	0.07	0.09	0.10	0.12	0.13
580	3.845	0.009	3.863	0.009	0.00	0.00	0.04	0.04	0.07	0.07	0.09	0.09	0.12	0.12
590	3.409	0.008	3.817	0.009	0.00	0.00	0.04	0.03	0.07	0.06	0.09	0.08	0.12	0.10
600	3.257	0.008	4.034	0.010	0.00	0.00	0.04	0.03	0.07	0.06	0.10	0.08	0.13	0.10
610	3.227	0.008	4.387	0.010	0.00	0.00	0.04	0.03	0.08	0.06	0.11	0.08	0.14	0.10
620	3.266	0.008	4.708	0.011	0.00	0.00	0.05	0.03	0.08	0.06	0.11	0.08	0.15	0.10
630	3.325	0.008	4.964	0.012	0.00	0.00	0.05	0.03	0.09	0.06	0.12	0.08	0.15	0.10
640	3.354	0.008	5.247	0.012	0.00	0.00	0.05	0.03	0.09	0.06	0.13	0.08	0.16	0.10
650	3.401	0.008	5.477	0.013	0.00	0.00	0.05	0.03	0.10	0.06	0.13	0.08	0.17	0.10
660	3.437	0.008	5.682	0.013	0.00	0.00	0.05	0.03	0.10	0.06	0.14	0.08	0.18	0.11
670	3.371	0.008	5.855	0.014	0.00	0.00	0.06	0.03	0.10	0.06	0.14	0.08	0.18	0.10
680	3.210	0.008	5.806	0.014	0.00	0.00	0.06	0.03	0.10	0.06	0.14	0.08	0.18	0.10
690	3.002	0.007	5.837	0.014	0.00	0.00	0.06	0.03	0.10	0.05	0.14	0.07	0.18	0.09
700	2.892	0.007	5.698	0.013	0.00	0.00	0.05	0.03	0.10	0.05	0.14	0.07	0.18	0.09
710	2.791	0.007	5.569	0.013	0.00	0.00	0.05	0.03	0.10	0.05	0.13	0.07	0.17	0.09
720	2.527	0.006	5.362	0.013	0.00	0.00	0.05	0.02	0.09	0.04	0.13	0.06	0.17	0.08
730	2.298	0.005	5.154	0.012	0.00	0.00	0.05	0.02	0.09	0.04	0.12	0.05	0.16	0.07
740	2.095	0.005	4.962	0.012	0.00	0.00	0.05	0.02	0.09	0.04	0.12	0.05	0.15	0.06
750	1.895	0.004	4.765	0.011	0.00	0.00	0.05	0.02	0.08	0.03	0.11	0.05	0.15	0.06
760	1.709	0.004	4.588	0.011	0.00	0.00	0.04	0.02	0.08	0.03	0.11	0.04	0.14	0.05
770	1.548	0.004	4.370	0.010	0.00	0.00	0.04	0.01	0.08	0.03	0.10	0.04	0.14	0.05
780	1.519	0.004	4.231	0.010	0.00	0.00	0.04	0.01	0.07	0.03	0.10	0.04	0.13	0.05
790	1.468	0.003	4.137	0.010	0.00	0.00	0.04	0.01	0.07	0.03	0.10	0.03	0.13	0.05
800	1.378	0.003	3.994	0.009	0.00	0.00	0.04	0.01	0.07	0.02	0.10	0.03	0.12	0.04
810	1.343	0.003	3.877	0.009	0.00	0.00	0.04	0.01	0.07	0.02	0.09	0.03	0.12	0.04
820	1.308	0.003	3.749	0.009	0.00	0.00	0.04	0.01	0.07	0.02	0.09	0.03	0.12	0.04
830	1.293	0.003	3.633	0.009	0.00	0.00	0.03	0.01	0.06	0.02	0.09	0.03	0.11	0.04
840	1.281	0.003	3.611	0.009	0.00	0.00	0.03	0.01	0.06	0.02	0.09	0.03	0.11	0.04
850	1.287	0.003	3.486	0.008	0.00	0.00	0.03	0.01	0.06	0.02	0.08	0.03	0.11	0.04
860	1.248	0.003	3.412	0.008	0.00	0.00	0.03	0.01	0.06	0.02	0.08	0.03	0.11	0.04
870	1.211	0.003	3.339	0.008	0.00	0.00	0.03	0.01	0.06	0.02	0.08	0.03	0.10	0.04
880	1.168	0.003	3.273	0.008	0.00	0.00	0.03	0.01	0.06	0.02	0.08	0.03	0.10	0.04
890	1.128	0.003	3.208	0.008	0.00	0.00	0.03	0.01	0.06	0.02	0.08	0.03	0.10	0.03
900	1.084	0.003	3.144	0.007	0.00	0.00	0.03	0.01	0.06	0.02	0.08	0.03	0.10	0.03
910	1.048	0.002	3.107	0.007	0.00	0.00	0.03	0.01	0.05	0.02	0.07	0.02	0.10	0.03
920	1.033	0.002	2.903	0.007	0.00	0.00	0.03	0.01	0.05	0.02	0.07	0.02	0.09	0.03
930	1.033	0.002	2.815	0.007	0.00	0.00	0.03	0.01	0.05	0.02	0.07	0.02	0.09	0.03
940	1.046	0.002	2.789	0.007	0.00	0.00	0.03	0.01	0.05	0.02	0.07	0.02	0.09	0.03
950	1.093	0.003	2.674	0.006	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.08	0.03
960	1.178	0.003	2.603	0.006	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.08	0.04
970	1.292	0.003	2.608	0.006	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.08	0.04
980	1.404	0.003	2.597	0.006	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.08	0.04
990	1.412	0.003	2.574	0.006	0.00	0.00	0.02	0.01	0.05	0.02	0.06	0.03	0.08	0.04
1000	1.477	0.003	2.560	0.006	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.08	0.05
1010	1.558	0.004	2.537	0.006	0.00	0.00	0.02	0.01	0.04	0.03	0.06	0.04	0.08	0.05
1020	1.559	0.004	2.462	0.006	0.00	0.00	0.02	0.01	0.04	0.03	0.06	0.04	0.08	0.05
1030	1.448	0.003	2.302	0.005	0.00	0.00	0.02	0.01	0.04	0.03	0.06	0.03	0.07	0.04
1040	1.424	0.003	2.190	0.005	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.07	0.04
1050	1.449	0.003	2.184	0.005	0.00	0.00	0.02	0.01	0.04	0.03	0.05	0.03	0.07	0.04
1060	1.450	0.003	2.161	0.005	0.00	0.00	0.02	0.01	0.04	0.03	0.05	0.03	0.07	0.04
1070	1.463	0.003	2.167	0.005	0.00	0.00	0.02	0.01	0.04	0.03	0.05	0.03	0.07	0.04
1080	1.390	0.003	2.095	0.005	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.04
1090	1.291	0.003	1.985	0.005	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.04
1100	1.208	0.003	1.894	0.004	0.00	0.00	0.02	0.01	0.03	0.02	0.05	0.03	0.06	0.04
1110	1.133	0.003	1.840	0.004	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.06	0.03
1120	1.048	0.002	1.816	0.004	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.06	0.03
1130	1.011	0.002	1.745	0.004	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.03
1140	1.005	0.002	1.633	0.004	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.03
1150	1.025	0.002	1.639	0.004	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.03
1160	0.979	0.002	1.460	0.003	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03
1170	0.898	0.002	1.279	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.04	0.03
1180	0.927	0.002	1.306	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.04	0.03
1190	0.885	0.002	1.223	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.04	0.03
1200	0.807	0.002	1.122	0.003	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02
1210	0.763	0.002	1.030	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1220	0.823	0.002	1.000	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1230	0.830	0.002	1.027	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1240	0.655	0.002	0.853	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1250	0.718	0.002	0.902	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1260	0.586	0.001	0.739	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1270	0.617	0.001	0.721	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1280	0.515	0.001	0.669	0.002	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.02
1290	0.573	0.001	0.672	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1300	0.610	0.001	0.657	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1310	0.773	0.002	0.839	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1320	0.725	0.002	0.750	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1330	0.682	0.002	0.745	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1340	0.633	0.001	0.725	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1350	0.626	0.001	0.742	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1360	0.713	0.002	0.817	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1370	0.594	0.001	0.682	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1380	0.551	0.001	0.623	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
1390	0.731	0.002	0.750	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1400	0.818	0.002	0.742	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
1410	0.680	0.002	0.647	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1420	0.690	0.002	0.657	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1430	0.861	0.002	0.834	0.002	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03
1440	0.974	0.002	0.971	0.002	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1450	0.896	0.002	0.863	0.002	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1460	0.724	0.002	0.651	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1470	0.723	0.002	0.597	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
1480	0.739	0.002	0.581	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
1490	0.644	0.002	0.538	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
1500	0.491	0.001	0.506	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02
1510	0.563	0.001	0.618	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
1520	0.546	0.001	0.627	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1530	0.611	0.001	0.644	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1540	0.669	0.002	0.659	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1550	0.758	0.002	0.738	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1560	0.770	0.002	0.736	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1570	0.824	0.002	0.802	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
1580	0.805	0.002	0.768	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1590	0.799	0.002	0.809	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1600	0.817	0.002	0.823	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1610	0.732	0.002	0.818	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1620	0.750	0.002	0.797	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1630	0.757	0.002	0.781	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1640	0.633	0.001	0.718	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1650	0.655	0.002	0.711	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1660	0.605	0.001	0.697	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1670	0.613	0.001	0.748	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1680	0.652	0.002	0.771	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1690	0.657	0.002	0.780	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1700	0.635	0.001	0.750	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1710	0.636	0.001	0.739	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1720	0.670	0.002	0.789	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1730	0.717	0.002	0.812	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1740	0.676	0.002	0.827	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1750	0.588	0.001	0.722	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1760	0.523	0.001	0.699	0.002	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.02
1770	0.519	0.001	0.645	0.002	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.02
1780	0.520	0.001	0.654	0.002	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.02
1790	0.499	0.001	0.642	0.002	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.02
1800	0.580	0.001	0.747	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1810	0.620	0.001	0.754	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1820	0.651	0.002	0.742	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1830	0.669	0.002	0.720	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1840	0.663	0.002	0.703	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1850	0.630	0.001	0.663	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1860	0.621	0.001	0.677	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1870	0.569	0.001	0.648	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1880	0.571	0.001	0.667	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1890	0.531	0.001	0.595	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
1900	0.553	0.001	0.610	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02

DM-590	Del Mar	0	0	Avg. Net SL	0.78	1.64	1.81	1.95	2.09					
DM-0590	283.419	0	200.363	1900	Sand Depth (ft)							*a/s=*	*119.19*	*ft^2/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.12	0.000	0.130	0.001	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
10	0.476	0.002	0.470	0.002	0.02	0.02	0.05	0.03	0.05	0.04	0.05	0.04	0.06	0.04
20	0.768	0.003	0.983	0.005	0.05	0.03	0.10	0.05	0.11	0.06	0.11	0.06	0.12	0.07
30	1.862	0.007	2.304	0.011	0.11	0.06	0.23	0.13	0.25	0.14	0.27	0.15	0.29	0.16
40	2.153	0.008	2.543	0.013	0.12	0.07	0.25	0.15	0.27	0.16	0.29	0.18	0.32	0.19
50	2.416	0.009	2.754	0.014	0.13	0.08	0.27	0.17	0.30	0.18	0.32	0.20	0.34	0.21
60	2.301	0.008	2.567	0.013	0.12	0.08	0.25	0.16	0.28	0.17	0.30	0.19	0.32	0.20
70	2.211	0.008	2.410	0.012	0.11	0.07	0.24	0.15	0.26	0.17	0.28	0.18	0.30	0.19
80	2.144	0.008	2.312	0.012	0.11	0.07	0.23	0.15	0.25	0.16	0.27	0.18	0.29	0.19
90	2.145	0.008	2.257	0.011	0.10	0.07	0.22	0.15	0.24	0.16	0.26	0.18	0.28	0.19
100	2.173	0.008	2.214	0.011	0.10	0.07	0.22	0.15	0.24	0.17	0.26	0.18	0.28	0.19
110	2.216	0.008	2.233	0.011	0.10	0.07	0.22	0.15	0.24	0.17	0.26	0.18	0.28	0.20
120	2.333	0.008	2.286	0.011	0.11	0.08	0.22	0.16	0.25	0.18	0.26	0.19	0.28	0.21
130	2.348	0.008	2.247	0.011	0.10	0.08	0.22	0.16	0.24	0.18	0.26	0.19	0.28	0.21
140	2.406	0.008	2.217	0.011	0.10	0.08	0.22	0.17	0.24	0.18	0.26	0.20	0.28	0.21
150	2.469	0.009	2.208	0.011	0.10	0.08	0.22	0.17	0.24	0.19	0.26	0.20	0.28	0.22
160	2.322	0.008	1.976	0.010	0.09	0.08	0.19	0.16	0.21	0.18	0.23	0.19	0.25	0.20
170	2.071	0.007	1.627	0.008	0.08	0.07	0.16	0.14	0.17	0.16	0.19	0.17	0.20	0.18
180	1.829	0.006	1.301	0.006	0.06	0.06	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.16
190	1.64	0.006	1.026	0.005	0.05	0.05	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14
200	1.819	0.006	1.108	0.006	0.05	0.06	0.11	0.13	0.12	0.14	0.13	0.15	0.14	0.16
210	1.997	0.007	1.189	0.006	0.05	0.07	0.12	0.14	0.13	0.15	0.14	0.16	0.15	0.18
220	1.949	0.007	1.084	0.005	0.05	0.06	0.11	0.13	0.12	0.15	0.13	0.16	0.14	0.17
230	1.823	0.006	0.926	0.005	0.04	0.06	0.09	0.13	0.10	0.14	0.11	0.15	0.12	0.16
240	1.692	0.006	0.770	0.004	0.04	0.06	0.08	0.12	0.08	0.13	0.09	0.14	0.10	0.15
250	1.877	0.007	0.936	0.005	0.04	0.06	0.09	0.13	0.10	0.14	0.11	0.15	0.12	0.17
260	2.079	0.007	1.105	0.006	0.05	0.07	0.11	0.14	0.12	0.16	0.13	0.17	0.14	0.18
270	2.282	0.008	1.262	0.006	0.06	0.07	0.12	0.16	0.14	0.17	0.15	0.19	0.16	0.20
280	2.482	0.009	1.382	0.007	0.06	0.08	0.14	0.17	0.15	0.19	0.16	0.20	0.17	0.22
290	2.745	0.010	1.569	0.008	0.07	0.09	0.15	0.19	0.17	0.21	0.18	0.22	0.20	0.24
300	3.088	0.011	1.848	0.009	0.09	0.10	0.18	0.21	0.20	0.23	0.21	0.25	0.23	0.27
310	3.424	0.012	2.133	0.011	0.10	0.11	0.21	0.24	0.23	0.26	0.25	0.28	0.27	0.30
320	3.754	0.013	2.424	0.012	0.11	0.12	0.24	0.26	0.26	0.29	0.28	0.31	0.30	0.33
330	4.093	0.014	2.702	0.013	0.12	0.13	0.26	0.28	0.29	0.31	0.31	0.34	0.34	0.36
340	4.441	0.016	2.975	0.015	0.14	0.15	0.29	0.31	0.32	0.34	0.34	0.36	0.37	0.39
350	4.797	0.017	3.245	0.016	0.15	0.16	0.32	0.33	0.35	0.36	0.38	0.39	0.40	0.42
360	5.009	0.018	3.358	0.017	0.16	0.16	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.44
370	4.816	0.017	3.063	0.015	0.14	0.16	0.30	0.33	0.33	0.37	0.36	0.39	0.38	0.42
380	4.621	0.016	2.746	0.014	0.13	0.15	0.27	0.32	0.30	0.35	0.32	0.38	0.34	0.41
390	4.412	0.016	2.411	0.012	0.11	0.14	0.24	0.30	0.26	0.34	0.28	0.36	0.30	0.39
400	4.199	0.015	2.094	0.010	0.10	0.14	0.20	0.29	0.23	0.32	0.24	0.34	0.26	0.37
410	4.066	0.014	1.866	0.009	0.09	0.13	0.18	0.28	0.20	0.31	0.22	0.33	0.23	0.36
420	4.038	0.014	1.771	0.009	0.08	0.13	0.17	0.28	0.19	0.31	0.21	0.33	0.22	0.36
430	4.076	0.014	1.750	0.009	0.08	0.13	0.17	0.28	0.19	0.31	0.20	0.33	0.22	0.36
440	4.116	0.015	1.727	0.009	0.08	0.13	0.17	0.28	0.19	0.31	0.20	0.34	0.22	0.36
450	4.108	0.014	1.704	0.009	0.08	0.13	0.17	0.28	0.18	0.31	0.20	0.34	0.21	0.36
460	4.091	0.014	1.687	0.008	0.08	0.13	0.16	0.28	0.18	0.31	0.20	0.34	0.21	0.36
470	4.067	0.014	1.682	0.008	0.08	0.13	0.16	0.28	0.18	0.31	0.19	0.33	0.21	0.36
480	4.012	0.014	1.677	0.008	0.08	0.13	0.16	0.28	0.18	0.30	0.19	0.33	0.21	0.35
490	4.055	0.014	1.761	0.009	0.08	0.13	0.17	0.28	0.19	0.31	0.20	0.33	0.22	0.36
500	4.286	0.015	2.035	0.010	0.09	0.14	0.20	0.30	0.22	0.33	0.24	0.35	0.25	0.38
510	4.513	0.016	2.287	0.011	0.11	0.15	0.22	0.31	0.25	0.34	0.27	0.37	0.28	0.40
520	4.727	0.017	2.517	0.013	0.12	0.15	0.25	0.33	0.27	0.36	0.29	0.39	0.31	0.42
530	4.892	0.017	2.738	0.014	0.13	0.16	0.27	0.34	0.29	0.37	0.32	0.40	0.34	0.43
540	5.045	0.018	2.958	0.015	0.14	0.16	0.29	0.35	0.32	0.38	0.34	0.41	0.37	0.44
550	5.197	0.018	3.163	0.016	0.15	0.17	0.31	0.36	0.34	0.39	0.37	0.43	0.39	0.46
560	5.034	0.018	3.017	0.015	0.14	0.16	0.29	0.35	0.32	0.38	0.35	0.41	0.38	0.44
570	4.764	0.017	2.752	0.014	0.13	0.16	0.27	0.33	0.30	0.36	0.32	0.39	0.34	0.42
580	4.45	0.016	2.460	0.012	0.11	0.15	0.24	0.31	0.26	0.34	0.29	0.36	0.31	0.39
590	4.109	0.014	2.157	0.011	0.10	0.13	0.21	0.28	0.23	0.31	0.25	0.34	0.27	0.36
600	3.752	0.013	1.865	0.009	0.09	0.12	0.18	0.26	0.20	0.29	0.22	0.31	0.23	0.33
610	3.581	0.013	1.743	0.009	0.08	0.12	0.17	0.25	0.19	0.27	0.20	0.29	0.22	0.32
620	3.392	0.012	1.614	0.008	0.07	0.11	0.16	0.23	0.17	0.26	0.19	0.28	0.20	0.30
630	3.186	0.011	1.482	0.007	0.07	0.10	0.14	0.22	0.16	0.24	0.17	0.26	0.18	0.28
640	2.963	0.010	1.357	0.007	0.06	0.10	0.13	0.20	0.15	0.23	0.16	0.24	0.17	0.26
650	2.734	0.010	1.220	0.006	0.06	0.09	0.12	0.19	0.13	0.21	0.14	0.22	0.15	0.24
660	2.466	0.009	1.094	0.005	0.05	0.08	0.11	0.17	0.12	0.19	0.13	0.20	0.14	0.22
670	2.233	0.008	1.000	0.005	0.05	0.07	0.10	0.15	0.11	0.17	0.12	0.18	0.12	0.20
680	2.126	0.008	1.000	0.005	0.05	0.07	0.10	0.15	0.11	0.16	0.12	0.17	0.12	0.19
690	2.249	0.008	1.359	0.007	0.06	0.07	0.13	0.16	0.15	0.17	0.16	0.18	0.17	0.20
700	2.454	0.009	1.832	0.009	0.08	0.08	0.18	0.17	0.20	0.19	0.21	0.20	0.23	0.22
710	1.972	0.007	1.659	0.008	0.08	0.06	0.16	0.14	0.18	0.15	0.19	0.16	0.21	0.17
720	1.677	0.006	1.662	0.008	0.08	0.05	0.16	0.12	0.18	0.13	0.19	0.14	0.21	0.15
730	1.698	0.006	1.878	0.009	0.09	0.06	0.18	0.12	0.20	0.13	0.22	0.14	0.23	0.15
740	1.742	0.006	2.088	0.010	0.10	0.06	0.20	0.12	0.22	0.13	0.24	0.14	0.26	0.15
750	1.684	0.006	2.108	0.011	0.10	0.06	0.21	0.12	0.23	0.13	0.24	0.14	0.26	0.15
760	1.457	0.005	1.940	0.010	0.09	0.05	0.19	0.10	0.21	0.11	0.22	0.12	0.24	0.13
770	1.272	0.004	1.791	0.009	0.08	0.04	0.18	0.09	0.19	0.10	0.21	0.10	0.22	0.11
780	1.229	0.004	1.659	0.008	0.08	0.04	0.16	0.08	0.18	0.09	0.19	0.10	0.21	0.11
790	1.1	0.004	1.334	0.007	0.06	0.04	0.13	0.08	0.14	0.08	0.15	0.09	0.17	0.10
800	1.013	0.004	1.168	0.006	0.05	0.03	0.11	0.07	0.13	0.08	0.14	0.08	0.15	0.09
810	1.057	0.004	1.289	0.006	0.06	0.03	0.13	0.07	0.14	0.08	0.15	0.09	0.16	0.09
820	1.298	0.005	1.609	0.008	0.07	0.04	0.16	0.09	0.17	0.10	0.19	0.11	0.20	0.11
830	1.433	0.005	1.860	0.009	0.09	0.05	0.18	0.10	0.20	0.11	0.22	0.12	0.23	0.13
840	1.335	0.005	1.775	0.009	0.08	0.04	0.17	0.09	0.19	0.10	0.21	0.11	0.22	0.12
850	1.577	0.006	2.071	0.010	0.10	0.05	0.20	0.11	0.22	0.12	0.24	0.13	0.26	0.14
860	1.236	0.004	1.766	0.009	0.08	0.04	0.17	0.09	0.19	0.09	0.20	0.10	0.22	0.11
870	0.998	0.004	1.654	0.008	0.08	0.03	0.16	0.07	0.18	0.08	0.19	0.08	0.21	0.09
880	0.88	0.003	1.555	0.008	0.07	0.03	0.15	0.06	0.17	0.07	0.18	0.07	0.19	0.08
890	1.422	0.005	1.955	0.010	0.09	0.05	0.19	0.10	0.21	0.11	0.23	0.12	0.24	0.13
900	1.249	0.004	1.593	0.008	0.07	0.04	0.16	0.09	0.17	0.09	0.18	0.10	0.20	0.11
910	0.863	0.003	0.971	0.005	0.04	0.03	0.09	0.06	0.10	0.07	0.11	0.07	0.12	0.08
920	0.932	0.003	0.889	0.004	0.04	0.03	0.09	0.06	0.10	0.07	0.10	0.08	0.11	0.08
930	0.764	0.003	0.668	0.003	0.03	0.02	0.07	0.05	0.07	0.06	0.08	0.06	0.08	0.07
940	0.938	0.003	0.861	0.004	0.04	0.03	0.08	0.06	0.09	0.07	0.10	0.08	0.11	0.08
950	0.659	0.002	0.537	0.003	0.02	0.02	0.05	0.05	0.06	0.05	0.06	0.05	0.07	0.06
960	0.659	0.002	0.550	0.003	0.03	0.02	0.05	0.05	0.06	0.05	0.06	0.05	0.07	0.06
970	0.652	0.002	0.544	0.003	0.03	0.02	0.05	0.05	0.06	0.05	0.06	0.05	0.07	0.06
980	0.645	0.002	0.538	0.003	0.02	0.02	0.05	0.04	0.06	0.05	0.06	0.05	0.07	0.06
990	0.638	0.002	0.533	0.003	0.02	0.02	0.05	0.04	0.06	0.05	0.06	0.05	0.07	0.06
1000	0.631	0.002	0.527	0.003	0.02	0.02	0.05	0.04	0.06	0.05	0.06	0.05	0.07	0.06
1010	0.624	0.002	0.521	0.003	0.02	0.02	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1020	0.617	0.002	0.515	0.003	0.02	0.02	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1030	0.61	0.002	0.509	0.003	0.02	0.02	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05
1040	0.603	0.002	0.504	0.003	0.02	0.02	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05
1050	0.596	0.002	0.498	0.002	0.02	0.02	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05
1060	0.589	0.002	0.492	0.002	0.02	0.02	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05
1070	0.582	0.002	0.486	0.002	0.02	0.02	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05
1080	0.575	0.002	0.480	0.002	0.02	0.02	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05
1090	0.568	0.002	0.475	0.002	0.02	0.02	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05
1100	0.561	0.002	0.469	0.002	0.02	0.02	0.05	0.04	0.05	0.04	0.05	0.05	0.06	0.05
1110	0.554	0.002	0.463	0.002	0.02	0.02	0.05	0.04	0.05	0.04	0.05	0.05	0.06	0.05
1120	0.547	0.002	0.457	0.002	0.02	0.02	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05
1130	0.54	0.002	0.451	0.002	0.02	0.02	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05
1140	0.533	0.002	0.446	0.002	0.02	0.02	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05
1150	0.526	0.002	0.440	0.002	0.02	0.02	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.05
1160	0.519	0.002	0.434	0.002	0.02	0.02	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.05
1170	0.512	0.002	0.428	0.002	0.02	0.02	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.05
1180	0.505	0.002	0.422	0.002	0.02	0.02	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.04
1190	0.498	0.002	0.417	0.002	0.02	0.02	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04
1200	0.491	0.002	0.411	0.002	0.02	0.02	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04
1210	0.484	0.002	0.405	0.002	0.02	0.02	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04
1220	0.477	0.002	0.399	0.002	0.02	0.02	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04
1230	0.47	0.002	0.393	0.002	0.02	0.02	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04
1240	0.463	0.002	0.388	0.002	0.02	0.02	0.04	0.03	0.04	0.04	0.04	0.04	0.05	0.04
1250	0.456	0.002	0.382	0.002	0.02	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04
1260	0.449	0.002	0.376	0.002	0.02	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04
1270	0.442	0.002	0.370	0.002	0.02	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04
1280	0.435	0.002	0.364	0.002	0.02	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04
1290	0.428	0.002	0.359	0.002	0.02	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.04
1300	0.421	0.001	0.353	0.002	0.02	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04
1310	0.414	0.001	0.347	0.002	0.02	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04
1320	0.407	0.001	0.341	0.002	0.02	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04
1330	0.4	0.001	0.335	0.002	0.02	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04
1340	0.393	0.001	0.330	0.002	0.02	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1350	0.386	0.001	0.324	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03
1360	0.379	0.001	0.318	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03
1370	0.372	0.001	0.312	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03
1380	0.365	0.001	0.306	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03
1390	0.358	0.001	0.301	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03
1400	0.351	0.001	0.295	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03
1410	0.344	0.001	0.289	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03
1420	0.337	0.001	0.283	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03
1430	0.33	0.001	0.277	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
1440	0.323	0.001	0.272	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03
1450	0.316	0.001	0.266	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03
1460	0.309	0.001	0.260	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03
1470	0.302	0.001	0.254	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03
1480	0.295	0.001	0.248	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03
1490	0.288	0.001	0.243	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03
1500	0.281	0.001	0.237	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1510	0.274	0.001	0.231	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02
1520	0.267	0.001	0.225	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02
1530	0.26	0.001	0.219	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02
1540	0.253	0.001	0.214	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02
1550	0.246	0.001	0.208	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02
1560	0.239	0.001	0.202	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02
1570	0.232	0.001	0.196	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1580	0.225	0.001	0.190	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1590	0.218	0.001	0.185	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1600	0.211	0.001	0.179	0.001	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1610	0.204	0.001	0.173	0.001	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1620	0.197	0.001	0.167	0.001	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02
1630	0.19	0.001	0.161	0.001	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02
1640	0.183	0.001	0.156	0.001	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.02
1650	0.176	0.001	0.150	0.001	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02
1660	0.169	0.001	0.144	0.001	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1670	0.162	0.001	0.138	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1680	0.155	0.001	0.132	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1690	0.148	0.001	0.127	0.001	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1700	0.141	0.000	0.121	0.001	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1710	0.134	0.000	0.115	0.001	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1720	0.127	0.000	0.109	0.001	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1730	0.12	0.000	0.103	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1740	0.113	0.000	0.098	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1750	0.106	0.000	0.092	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1760	0.099	0.000	0.086	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1770	0.092	0.000	0.080	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1780	0.085	0.000	0.074	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1790	0.078	0.000	0.069	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1800	0.071	0.000	0.063	0.000	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1810	0.064	0.000	0.057	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01
1820	0.057	0.000	0.051	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01
1830	0.05	0.000	0.045	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
1840	0.043	0.000	0.040	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1850	0.036	0.000	0.034	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1860	0.029	0.000	0.028	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1870	0.022	0.000	0.022	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1880	0.015	0.000	0.016	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1890	0.008	0.000	0.011	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1900	0.001	0.000	0.005	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-595	Seascape Surf	0	0	Avg. Net SL	4.52	3.56	3.47	3.41	3.04					
SD-0595	245.066	0	270.779	1900		Sand Depth (ft)						a/s=	119.19	ft^2/m
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.067	0.000	0.087	0.000	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10	0.388	0.002	0.192	0.001	0.04	0.09	0.03	0.07	0.03	0.07	0.03	0.06	0.03	0.06
20	0.709	0.003	0.298	0.001	0.06	0.16	0.05	0.12	0.05	0.12	0.04	0.12	0.04	0.10
30	1.030	0.004	0.403	0.001	0.08	0.23	0.06	0.18	0.06	0.17	0.06	0.17	0.05	0.15
40	1.350	0.006	0.508	0.002	0.10	0.30	0.08	0.23	0.08	0.23	0.08	0.22	0.07	0.20
50	1.672	0.007	0.614	0.002	0.12	0.37	0.10	0.29	0.09	0.28	0.09	0.28	0.08	0.25
60	1.356	0.006	0.595	0.002	0.12	0.30	0.09	0.23	0.09	0.23	0.09	0.22	0.08	0.20
70	1.463	0.006	0.657	0.002	0.13	0.32	0.10	0.25	0.10	0.25	0.10	0.24	0.09	0.22
80	1.813	0.007	0.727	0.003	0.14	0.40	0.11	0.31	0.11	0.31	0.11	0.30	0.10	0.27
90	1.804	0.007	0.788	0.003	0.16	0.40	0.12	0.31	0.12	0.30	0.12	0.30	0.11	0.27
100	1.799	0.007	0.770	0.003	0.15	0.40	0.12	0.31	0.12	0.30	0.12	0.30	0.10	0.27
110	1.801	0.007	0.790	0.003	0.16	0.40	0.12	0.31	0.12	0.30	0.12	0.30	0.11	0.27
120	1.909	0.008	0.883	0.003	0.18	0.42	0.14	0.33	0.14	0.32	0.13	0.32	0.12	0.28
130	1.994	0.008	0.952	0.004	0.19	0.44	0.15	0.35	0.15	0.34	0.14	0.33	0.13	0.29
140	1.932	0.008	0.920	0.003	0.18	0.42	0.14	0.33	0.14	0.33	0.14	0.32	0.12	0.29
150	1.889	0.008	0.908	0.003	0.18	0.42	0.14	0.33	0.14	0.32	0.14	0.31	0.12	0.28
160	1.877	0.008	0.930	0.003	0.19	0.41	0.15	0.32	0.14	0.32	0.14	0.31	0.12	0.28
170	1.951	0.008	0.999	0.004	0.20	0.43	0.16	0.34	0.15	0.33	0.15	0.32	0.13	0.29
180	2.041	0.008	1.108	0.004	0.22	0.45	0.17	0.35	0.17	0.34	0.17	0.34	0.15	0.30
190	1.998	0.008	1.114	0.004	0.22	0.44	0.17	0.35	0.17	0.34	0.17	0.33	0.15	0.30
200	1.943	0.008	1.123	0.004	0.22	0.43	0.18	0.34	0.17	0.33	0.17	0.32	0.15	0.29
210	1.919	0.008	1.139	0.004	0.23	0.42	0.18	0.33	0.17	0.32	0.17	0.32	0.15	0.28
220	1.910	0.008	1.180	0.004	0.23	0.42	0.18	0.33	0.18	0.32	0.18	0.32	0.16	0.28
230	1.906	0.008	1.221	0.005	0.24	0.42	0.19	0.33	0.19	0.32	0.18	0.32	0.16	0.28
240	1.857	0.008	1.231	0.005	0.24	0.41	0.19	0.32	0.19	0.31	0.18	0.31	0.16	0.27
250	1.820	0.007	1.246	0.005	0.25	0.40	0.20	0.31	0.19	0.31	0.19	0.30	0.17	0.27
260	1.803	0.007	1.226	0.005	0.24	0.40	0.19	0.31	0.19	0.30	0.18	0.30	0.16	0.27
270	1.734	0.007	1.177	0.004	0.23	0.38	0.18	0.30	0.18	0.29	0.18	0.29	0.16	0.26
280	1.657	0.007	1.108	0.004	0.22	0.36	0.17	0.29	0.17	0.28	0.17	0.27	0.15	0.25
290	1.581	0.006	1.046	0.004	0.21	0.35	0.16	0.27	0.16	0.27	0.16	0.26	0.14	0.23
300	1.510	0.006	0.960	0.004	0.19	0.33	0.15	0.26	0.15	0.26	0.14	0.25	0.13	0.22
310	1.555	0.006	0.963	0.004	0.19	0.34	0.15	0.27	0.15	0.26	0.14	0.26	0.13	0.23
320	1.605	0.007	0.952	0.004	0.19	0.35	0.15	0.28	0.15	0.27	0.14	0.27	0.13	0.24
330	1.668	0.007	0.917	0.003	0.18	0.37	0.14	0.29	0.14	0.28	0.14	0.28	0.12	0.25
340	1.673	0.007	0.835	0.003	0.17	0.37	0.13	0.29	0.13	0.28	0.13	0.28	0.11	0.25
350	1.564	0.006	0.667	0.002	0.13	0.34	0.10	0.27	0.10	0.26	0.10	0.26	0.09	0.23
360	1.604	0.007	0.662	0.002	0.13	0.35	0.10	0.28	0.10	0.27	0.10	0.27	0.09	0.24
370	1.870	0.008	0.886	0.003	0.18	0.41	0.14	0.32	0.14	0.32	0.13	0.31	0.12	0.28
380	2.119	0.009	1.021	0.004	0.20	0.47	0.16	0.37	0.16	0.36	0.15	0.35	0.14	0.31
390	2.359	0.010	1.128	0.004	0.22	0.52	0.18	0.41	0.17	0.40	0.17	0.39	0.15	0.35
400	2.530	0.010	1.195	0.004	0.24	0.56	0.19	0.44	0.18	0.43	0.18	0.42	0.16	0.37
410	2.681	0.011	1.226	0.005	0.24	0.59	0.19	0.46	0.19	0.45	0.18	0.44	0.16	0.40
420	2.846	0.012	1.182	0.004	0.24	0.63	0.19	0.49	0.18	0.48	0.18	0.47	0.16	0.42
430	3.134	0.013	1.230	0.005	0.24	0.69	0.19	0.54	0.19	0.53	0.18	0.52	0.16	0.46
440	3.397	0.014	1.372	0.005	0.27	0.75	0.21	0.59	0.21	0.57	0.21	0.56	0.18	0.50
450	3.106	0.013	1.086	0.004	0.22	0.68	0.17	0.54	0.17	0.52	0.16	0.52	0.15	0.46
460	3.900	0.016	1.754	0.006	0.35	0.86	0.27	0.67	0.27	0.66	0.26	0.65	0.23	0.58
470	4.450	0.018	2.205	0.008	0.44	0.98	0.35	0.77	0.34	0.75	0.33	0.74	0.30	0.66
480	3.928	0.016	1.745	0.006	0.35	0.86	0.27	0.68	0.27	0.66	0.26	0.65	0.23	0.58
490	3.196	0.013	1.124	0.004	0.22	0.70	0.18	0.55	0.17	0.54	0.17	0.53	0.15	0.47
500	2.924	0.012	0.965	0.004	0.19	0.64	0.15	0.51	0.15	0.49	0.14	0.48	0.13	0.43
510	2.809	0.011	1.013	0.004	0.20	0.62	0.16	0.49	0.15	0.47	0.15	0.47	0.14	0.42
520	2.729	0.011	1.139	0.004	0.23	0.60	0.18	0.47	0.17	0.46	0.17	0.45	0.15	0.40
530	2.860	0.012	1.435	0.005	0.29	0.63	0.22	0.49	0.22	0.48	0.22	0.47	0.19	0.42
540	2.253	0.009	1.162	0.004	0.23	0.50	0.18	0.39	0.18	0.38	0.17	0.37	0.16	0.33
550	1.988	0.008	1.237	0.005	0.25	0.44	0.19	0.34	0.19	0.34	0.19	0.33	0.17	0.29
560	1.854	0.008	1.396	0.005	0.28	0.41	0.22	0.32	0.21	0.31	0.21	0.31	0.19	0.27
570	1.788	0.007	1.605	0.006	0.32	0.39	0.25	0.31	0.25	0.30	0.24	0.30	0.21	0.26
580	1.704	0.007	1.810	0.007	0.36	0.37	0.28	0.29	0.28	0.29	0.27	0.28	0.24	0.25
590	1.547	0.006	1.856	0.007	0.37	0.34	0.29	0.27	0.28	0.26	0.28	0.26	0.25	0.23
600	1.304	0.005	1.898	0.007	0.38	0.29	0.30	0.23	0.29	0.22	0.28	0.22	0.25	0.19
610	1.105	0.005	1.957	0.007	0.39	0.24	0.31	0.19	0.30	0.19	0.29	0.18	0.26	0.16
620	1.123	0.005	2.237	0.008	0.45	0.25	0.35	0.19	0.34	0.19	0.34	0.19	0.30	0.17
630	1.134	0.005	2.523	0.009	0.50	0.25	0.40	0.20	0.39	0.19	0.38	0.19	0.34	0.17
640	1.073	0.004	2.671	0.010	0.53	0.24	0.42	0.19	0.41	0.18	0.40	0.18	0.36	0.16
650	0.922	0.004	2.712	0.010	0.54	0.20	0.42	0.16	0.41	0.16	0.41	0.15	0.36	0.14
660	0.912	0.004	2.888	0.011	0.57	0.20	0.45	0.16	0.44	0.15	0.43	0.15	0.39	0.13
670	0.878	0.004	3.031	0.011	0.60	0.19	0.47	0.15	0.46	0.15	0.45	0.15	0.41	0.13
680	0.973	0.004	3.205	0.012	0.64	0.21	0.50	0.17	0.49	0.16	0.48	0.16	0.43	0.14
690	1.042	0.004	3.340	0.012	0.66	0.23	0.52	0.18	0.51	0.18	0.50	0.17	0.45	0.15
700	1.003	0.004	3.428	0.013	0.68	0.22	0.54	0.17	0.52	0.17	0.51	0.17	0.46	0.15
710	0.940	0.004	3.345	0.012	0.67	0.21	0.52	0.16	0.51	0.16	0.50	0.16	0.45	0.14
720	0.813	0.003	3.311	0.012	0.66	0.18	0.52	0.14	0.51	0.14	0.50	0.13	0.44	0.12
730	0.845	0.003	3.346	0.012	0.67	0.19	0.52	0.15	0.51	0.14	0.50	0.14	0.45	0.12
740	0.849	0.003	3.278	0.012	0.65	0.19	0.51	0.15	0.50	0.14	0.49	0.14	0.44	0.13
750	0.790	0.003	3.229	0.012	0.64	0.17	0.51	0.14	0.49	0.13	0.48	0.13	0.43	0.12
760	0.658	0.003	3.047	0.011	0.61	0.14	0.48	0.11	0.47	0.11	0.46	0.11	0.41	0.10
770	0.738	0.003	3.103	0.011	0.62	0.16	0.49	0.13	0.47	0.12	0.47	0.12	0.42	0.11
780	0.740	0.003	3.036	0.011	0.60	0.16	0.48	0.13	0.46	0.13	0.46	0.12	0.41	0.11
790	0.655	0.003	2.868	0.011	0.57	0.14	0.45	0.11	0.44	0.11	0.43	0.11	0.38	0.10
800	0.678	0.003	2.905	0.011	0.58	0.15	0.45	0.12	0.44	0.11	0.44	0.11	0.39	0.10
810	0.885	0.004	3.167	0.012	0.63	0.19	0.50	0.15	0.48	0.15	0.48	0.15	0.42	0.13
820	0.822	0.003	3.155	0.012	0.63	0.18	0.49	0.14	0.48	0.14	0.47	0.14	0.42	0.12
830	1.745	0.007	3.946	0.015	0.79	0.38	0.62	0.30	0.60	0.29	0.59	0.29	0.53	0.26
840	1.120	0.005	2.988	0.011	0.59	0.25	0.47	0.19	0.46	0.19	0.45	0.19	0.40	0.17
850	0.956	0.004	2.663	0.010	0.53	0.21	0.42	0.17	0.41	0.16	0.40	0.16	0.36	0.14
860	0.747	0.003	2.428	0.009	0.48	0.16	0.38	0.13	0.37	0.13	0.36	0.12	0.33	0.11
870	0.727	0.003	2.376	0.009	0.47	0.16	0.37	0.13	0.36	0.12	0.36	0.12	0.32	0.11
880	0.596	0.002	2.224	0.008	0.44	0.13	0.35	0.10	0.34	0.10	0.33	0.10	0.30	0.09
890	0.512	0.002	2.143	0.008	0.43	0.11	0.34	0.09	0.33	0.09	0.32	0.08	0.29	0.08
900	0.421	0.002	2.022	0.007	0.40	0.09	0.32	0.07	0.31	0.07	0.30	0.07	0.27	0.06
910	0.346	0.001	1.943	0.007	0.39	0.08	0.30	0.06	0.30	0.06	0.29	0.06	0.26	0.05
920	0.764	0.003	2.483	0.009	0.49	0.17	0.39	0.13	0.38	0.13	0.37	0.13	0.33	0.11
930	0.675	0.003	2.312	0.009	0.46	0.15	0.36	0.12	0.35	0.11	0.35	0.11	0.31	0.10
940	0.660	0.003	2.322	0.009	0.46	0.15	0.36	0.11	0.36	0.11	0.35	0.11	0.31	0.10
950	0.741	0.003	2.358	0.009	0.47	0.16	0.37	0.13	0.36	0.13	0.35	0.12	0.32	0.11
960	0.532	0.002	1.997	0.007	0.40	0.12	0.31	0.09	0.31	0.09	0.30	0.09	0.27	0.08
970	0.735	0.003	2.154	0.008	0.43	0.16	0.34	0.13	0.33	0.12	0.32	0.12	0.29	0.11
980	0.785	0.003	2.103	0.008	0.42	0.17	0.33	0.14	0.32	0.13	0.32	0.13	0.28	0.12
990	0.922	0.004	2.154	0.008	0.43	0.20	0.34	0.16	0.33	0.16	0.32	0.15	0.29	0.14
1000	0.807	0.003	1.912	0.007	0.38	0.18	0.30	0.14	0.29	0.14	0.29	0.13	0.26	0.12
1010	1.080	0.004	2.208	0.008	0.44	0.24	0.35	0.19	0.34	0.18	0.33	0.18	0.30	0.16
1020	1.074	0.004	2.020	0.007	0.40	0.24	0.32	0.19	0.31	0.18	0.30	0.18	0.27	0.16
1030	1.500	0.006	2.678	0.010	0.53	0.33	0.42	0.26	0.41	0.25	0.40	0.25	0.36	0.22
1040	1.337	0.005	2.109	0.008	0.42	0.29	0.33	0.23	0.32	0.23	0.32	0.22	0.28	0.20
1050	1.027	0.004	1.420	0.005	0.28	0.23	0.22	0.18	0.22	0.17	0.21	0.17	0.19	0.15
1060	0.607	0.002	1.013	0.004	0.20	0.13	0.16	0.11	0.15	0.10	0.15	0.10	0.14	0.09
1070	0.443	0.002	0.953	0.004	0.19	0.10	0.15	0.08	0.15	0.07	0.14	0.07	0.13	0.07
1080	0.462	0.002	0.983	0.004	0.20	0.10	0.15	0.08	0.15	0.08	0.15	0.08	0.13	0.07
1090	0.498	0.002	1.083	0.004	0.22	0.11	0.17	0.09	0.17	0.08	0.16	0.08	0.14	0.07
1100	0.525	0.002	1.198	0.004	0.24	0.12	0.19	0.09	0.18	0.09	0.18	0.09	0.16	0.08
1110	0.798	0.003	1.241	0.005	0.25	0.18	0.19	0.14	0.19	0.13	0.19	0.13	0.17	0.12
1120	0.746	0.003	0.860	0.003	0.17	0.16	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.11
1130	0.603	0.002	0.605	0.002	0.12	0.13	0.09	0.10	0.09	0.10	0.09	0.10	0.08	0.09
1140	0.797	0.003	0.705	0.003	0.14	0.18	0.11	0.14	0.11	0.13	0.11	0.13	0.09	0.12
1150	1.351	0.006	1.207	0.004	0.24	0.30	0.19	0.23	0.18	0.23	0.18	0.22	0.16	0.20
1160	1.935	0.008	1.796	0.007	0.36	0.43	0.28	0.33	0.27	0.33	0.27	0.32	0.24	0.29
1170	2.269	0.009	1.916	0.007	0.38	0.50	0.30	0.39	0.29	0.38	0.29	0.38	0.26	0.34
1180	1.185	0.005	1.116	0.004	0.22	0.26	0.17	0.21	0.17	0.20	0.17	0.20	0.15	0.18
1190	1.354	0.006	1.373	0.005	0.27	0.30	0.22	0.23	0.21	0.23	0.21	0.22	0.18	0.20
1200	1.384	0.006	1.358	0.005	0.27	0.30	0.21	0.24	0.21	0.23	0.20	0.23	0.18	0.20
1210	1.734	0.007	1.973	0.007	0.39	0.38	0.31	0.30	0.30	0.29	0.30	0.29	0.26	0.26
1220	1.219	0.005	1.571	0.006	0.31	0.27	0.25	0.21	0.24	0.21	0.24	0.20	0.21	0.18
1230	1.587	0.006	1.677	0.006	0.33	0.35	0.26	0.27	0.26	0.27	0.25	0.26	0.22	0.23
1240	1.818	0.007	1.881	0.007	0.37	0.40	0.29	0.31	0.29	0.31	0.28	0.30	0.25	0.27
1250	1.865	0.008	1.926	0.007	0.38	0.41	0.30	0.32	0.29	0.32	0.29	0.31	0.26	0.28
1260	2.165	0.009	2.215	0.008	0.44	0.48	0.35	0.37	0.34	0.37	0.33	0.36	0.30	0.32
1270	1.655	0.007	1.770	0.007	0.35	0.36	0.28	0.29	0.27	0.28	0.27	0.27	0.24	0.24
1280	1.608	0.007	1.740	0.006	0.35	0.35	0.27	0.28	0.27	0.27	0.26	0.27	0.23	0.24
1290	1.841	0.008	1.814	0.007	0.36	0.40	0.28	0.32	0.28	0.31	0.27	0.31	0.24	0.27
1300	0.926	0.004	0.946	0.003	0.19	0.20	0.15	0.16	0.14	0.16	0.14	0.15	0.13	0.14
1310	0.877	0.004	0.976	0.004	0.19	0.19	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.13
1320	1.071	0.004	1.209	0.004	0.24	0.24	0.19	0.19	0.18	0.18	0.18	0.18	0.16	0.16
1330	1.147	0.005	1.336	0.005	0.27	0.25	0.21	0.20	0.20	0.19	0.20	0.19	0.18	0.17
1340	1.095	0.004	1.403	0.005	0.28	0.24	0.22	0.19	0.21	0.19	0.21	0.18	0.19	0.16
1350	1.119	0.005	1.485	0.005	0.30	0.25	0.23	0.19	0.23	0.19	0.22	0.19	0.20	0.17
1360	1.087	0.004	1.506	0.006	0.30	0.24	0.24	0.19	0.23	0.18	0.23	0.18	0.20	0.16
1370	1.149	0.005	1.520	0.006	0.30	0.25	0.24	0.20	0.23	0.19	0.23	0.19	0.20	0.17
1380	0.917	0.004	1.456	0.005	0.29	0.20	0.23	0.16	0.22	0.15	0.22	0.15	0.19	0.14
1390	0.837	0.003	1.265	0.005	0.25	0.18	0.20	0.14	0.19	0.14	0.19	0.14	0.17	0.12
1400	0.633	0.003	0.926	0.003	0.18	0.14	0.15	0.11	0.14	0.11	0.14	0.10	0.12	0.09
1410	0.632	0.003	0.900	0.003	0.18	0.14	0.14	0.11	0.14	0.11	0.14	0.10	0.12	0.09
1420	0.598	0.002	0.827	0.003	0.16	0.13	0.13	0.10	0.13	0.10	0.12	0.10	0.11	0.09
1430	0.415	0.002	0.672	0.002	0.13	0.09	0.11	0.07	0.10	0.07	0.10	0.07	0.09	0.06
1440	0.527	0.002	0.688	0.003	0.14	0.12	0.11	0.09	0.11	0.09	0.10	0.09	0.09	0.08
1450	0.399	0.002	0.583	0.002	0.12	0.09	0.09	0.07	0.09	0.07	0.09	0.07	0.08	0.06
1460	0.464	0.002	0.497	0.002	0.10	0.10	0.08	0.08	0.08	0.08	0.07	0.08	0.07	0.07
1470	0.387	0.002	0.364	0.001	0.07	0.09	0.06	0.07	0.06	0.07	0.05	0.06	0.05	0.06
1480	0.602	0.002	0.439	0.002	0.09	0.13	0.07	0.10	0.07	0.10	0.07	0.10	0.06	0.09
1490	0.779	0.003	0.517	0.002	0.10	0.17	0.08	0.13	0.08	0.13	0.08	0.13	0.07	0.12
1500	1.068	0.004	0.830	0.003	0.17	0.23	0.13	0.18	0.13	0.18	0.12	0.18	0.11	0.16
1510	1.164	0.005	0.728	0.003	0.14	0.26	0.11	0.20	0.11	0.20	0.11	0.19	0.10	0.17
1520	0.893	0.004	0.550	0.002	0.11	0.20	0.09	0.15	0.08	0.15	0.08	0.15	0.07	0.13
1530	0.555	0.002	0.378	0.001	0.08	0.12	0.06	0.10	0.06	0.09	0.06	0.09	0.05	0.08
1540	0.705	0.003	0.614	0.002	0.12	0.16	0.10	0.12	0.09	0.12	0.09	0.12	0.08	0.10
1550	1.002	0.004	0.772	0.003	0.15	0.22	0.12	0.17	0.12	0.17	0.12	0.17	0.10	0.15
1560	1.079	0.004	0.782	0.003	0.16	0.24	0.12	0.19	0.12	0.18	0.12	0.18	0.10	0.16
1570	0.726	0.003	0.605	0.002	0.12	0.16	0.09	0.13	0.09	0.12	0.09	0.12	0.08	0.11
1580	0.887	0.004	0.842	0.003	0.17	0.20	0.13	0.15	0.13	0.15	0.13	0.15	0.11	0.13
1590	1.401	0.006	1.216	0.004	0.24	0.31	0.19	0.24	0.19	0.24	0.18	0.23	0.16	0.21
1600	1.360	0.006	0.979	0.004	0.19	0.30	0.15	0.24	0.15	0.23	0.15	0.23	0.13	0.20
1610	1.133	0.005	0.608	0.002	0.12	0.25	0.10	0.20	0.09	0.19	0.09	0.19	0.08	0.17
1620	0.948	0.004	0.449	0.002	0.09	0.21	0.07	0.16	0.07	0.16	0.07	0.16	0.06	0.14
1630	1.006	0.004	0.517	0.002	0.10	0.22	0.08	0.17	0.08	0.17	0.08	0.17	0.07	0.15
1640	0.979	0.004	0.481	0.002	0.10	0.22	0.08	0.17	0.07	0.17	0.07	0.16	0.06	0.14
1650	0.981	0.004	0.580	0.002	0.12	0.22	0.09	0.17	0.09	0.17	0.09	0.16	0.08	0.15
1660	0.990	0.004	0.649	0.002	0.13	0.22	0.10	0.17	0.10	0.17	0.10	0.16	0.09	0.15
1670	0.868	0.004	0.698	0.003	0.14	0.19	0.11	0.15	0.11	0.15	0.10	0.14	0.09	0.13
1680	0.844	0.003	0.954	0.004	0.19	0.19	0.15	0.15	0.15	0.14	0.14	0.14	0.13	0.12
1690	0.952	0.004	1.154	0.004	0.23	0.21	0.18	0.16	0.18	0.16	0.17	0.16	0.15	0.14
1700	0.883	0.004	0.975	0.004	0.19	0.19	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.13
1710	1.093	0.004	1.267	0.005	0.25	0.24	0.20	0.19	0.19	0.18	0.19	0.18	0.17	0.16
1720	1.055	0.004	1.272	0.005	0.25	0.23	0.20	0.18	0.19	0.18	0.19	0.17	0.17	0.16
1730	1.084	0.004	1.207	0.004	0.24	0.24	0.19	0.19	0.18	0.18	0.18	0.18	0.16	0.16
1740	0.932	0.004	1.107	0.004	0.22	0.20	0.17	0.16	0.17	0.16	0.17	0.15	0.15	0.14
1750	0.907	0.004	1.072	0.004	0.21	0.20	0.17	0.16	0.16	0.15	0.16	0.15	0.14	0.13
1760	0.881	0.004	1.024	0.004	0.20	0.19	0.16	0.15	0.16	0.15	0.15	0.15	0.14	0.13
1770	0.867	0.004	0.987	0.004	0.20	0.19	0.15	0.15	0.15	0.15	0.15	0.14	0.13	0.13
1780	0.946	0.004	1.025	0.004	0.20	0.21	0.16	0.16	0.16	0.16	0.15	0.16	0.14	0.14
1790	0.945	0.004	1.016	0.004	0.20	0.21	0.16	0.16	0.16	0.16	0.15	0.16	0.14	0.14
1800	0.846	0.003	0.877	0.003	0.17	0.19	0.14	0.15	0.13	0.14	0.13	0.14	0.12	0.13
1810	0.801	0.003	0.869	0.003	0.17	0.18	0.14	0.14	0.13	0.14	0.13	0.13	0.12	0.12
1820	0.722	0.003	0.848	0.003	0.17	0.16	0.13	0.12	0.13	0.12	0.13	0.12	0.11	0.11
1830	0.618	0.003	0.816	0.003	0.16	0.14	0.13	0.11	0.12	0.10	0.12	0.10	0.11	0.09
1840	0.592	0.002	0.776	0.003	0.15	0.13	0.12	0.10	0.12	0.10	0.12	0.10	0.10	0.09
1850	0.514	0.002	0.727	0.003	0.14	0.11	0.11	0.09	0.11	0.09	0.11	0.09	0.10	0.08
1860	0.514	0.002	0.678	0.003	0.13	0.11	0.11	0.09	0.10	0.09	0.10	0.09	0.09	0.08
1870	0.478	0.002	0.626	0.002	0.12	0.11	0.10	0.08	0.10	0.08	0.09	0.08	0.08	0.07
1880	0.573	0.002	0.751	0.003	0.15	0.13	0.12	0.10	0.11	0.10	0.11	0.10	0.10	0.08
1890	0.427	0.002	0.564	0.002	0.11	0.09	0.09	0.07	0.09	0.07	0.08	0.07	0.08	0.06
1900	0.922	0.004	1.109	0.004	0.22	0.20	0.17	0.16	0.17	0.16	0.17	0.15	0.15	0.14

SD-600	Fletcher Cove	0	0	Avg. Net SL	5.38	4.82	4.55	3.91	2.65					
SD-600	208.436	0	231.37	1900	**Sand Depth (ft)**							*a/s=*	*119.19*	*ft^2/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.194	0.001	0.000	0.000	0.00	0.06	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.03
20	0.751	0.004	0.000	0.000	0.00	0.23	0.00	0.21	0.00	0.20	0.00	0.17	0.00	0.11
30	1.386	0.007	0.002	0.000	0.00	0.43	0.00	0.38	0.00	0.36	0.00	0.31	0.00	0.21
40	1.877	0.009	0.601	0.003	0.17	0.58	0.15	0.52	0.14	0.49	0.12	0.42	0.08	0.28
50	1.99	0.010	0.907	0.004	0.25	0.61	0.23	0.55	0.21	0.52	0.18	0.45	0.12	0.30
60	2.116	0.010	1.176	0.005	0.33	0.65	0.29	0.58	0.28	0.55	0.24	0.47	0.16	0.32
70	2.228	0.011	1.339	0.006	0.37	0.69	0.33	0.61	0.31	0.58	0.27	0.50	0.18	0.34
80	2.353	0.011	1.449	0.006	0.40	0.72	0.36	0.65	0.34	0.61	0.29	0.53	0.20	0.36
90	2.403	0.012	1.483	0.006	0.41	0.74	0.37	0.66	0.35	0.63	0.30	0.54	0.20	0.36
100	2.38	0.011	1.446	0.006	0.40	0.73	0.36	0.66	0.34	0.62	0.29	0.53	0.20	0.36
110	2.343	0.011	1.439	0.006	0.40	0.72	0.36	0.65	0.34	0.61	0.29	0.52	0.20	0.35
120	2.361	0.011	1.497	0.006	0.41	0.73	0.37	0.65	0.35	0.61	0.30	0.53	0.20	0.36
130	2.449	0.012	1.591	0.007	0.44	0.75	0.39	0.67	0.37	0.64	0.32	0.55	0.22	0.37
140	2.542	0.012	1.681	0.007	0.47	0.78	0.42	0.70	0.39	0.66	0.34	0.57	0.23	0.38
150	2.573	0.012	1.685	0.007	0.47	0.79	0.42	0.71	0.39	0.67	0.34	0.58	0.23	0.39
160	2.588	0.012	1.656	0.007	0.46	0.80	0.41	0.71	0.39	0.67	0.33	0.58	0.23	0.39
170	2.617	0.013	1.683	0.007	0.47	0.80	0.42	0.72	0.39	0.68	0.34	0.59	0.23	0.40
180	2.648	0.013	1.702	0.007	0.47	0.81	0.42	0.73	0.40	0.69	0.34	0.59	0.23	0.40
190	2.564	0.012	1.571	0.007	0.44	0.79	0.39	0.71	0.37	0.67	0.32	0.57	0.21	0.39
200	2.394	0.011	1.350	0.006	0.37	0.74	0.33	0.66	0.32	0.62	0.27	0.54	0.18	0.36
210	2.223	0.011	1.128	0.005	0.31	0.68	0.28	0.61	0.26	0.58	0.23	0.50	0.15	0.34
220	2.059	0.010	0.926	0.004	0.26	0.63	0.23	0.57	0.22	0.54	0.19	0.46	0.13	0.31
230	2.146	0.010	0.973	0.004	0.27	0.66	0.24	0.59	0.23	0.56	0.20	0.48	0.13	0.33
240	2.414	0.012	1.212	0.005	0.34	0.74	0.30	0.66	0.28	0.63	0.24	0.54	0.17	0.37
250	2.696	0.013	1.470	0.006	0.41	0.83	0.36	0.74	0.34	0.70	0.30	0.60	0.20	0.41
260	2.925	0.014	1.700	0.007	0.47	0.90	0.42	0.81	0.40	0.76	0.34	0.65	0.23	0.44
270	3.119	0.015	1.920	0.008	0.53	0.96	0.48	0.86	0.45	0.81	0.39	0.70	0.26	0.47
280	3.212	0.015	2.061	0.009	0.57	0.99	0.51	0.88	0.48	0.84	0.42	0.72	0.28	0.49
290	3.23	0.015	2.150	0.009	0.60	0.99	0.53	0.89	0.50	0.84	0.43	0.72	0.29	0.49
300	3.254	0.016	2.229	0.010	0.62	1.00	0.55	0.90	0.52	0.85	0.45	0.73	0.30	0.49
310	3.171	0.015	2.226	0.010	0.62	0.98	0.55	0.87	0.52	0.82	0.45	0.71	0.30	0.48
320	3.057	0.015	2.200	0.010	0.61	0.94	0.55	0.84	0.52	0.80	0.44	0.68	0.30	0.46
330	3.071	0.015	2.308	0.010	0.64	0.94	0.57	0.85	0.54	0.80	0.47	0.69	0.31	0.47
340	2.98	0.014	2.333	0.010	0.65	0.92	0.58	0.82	0.55	0.78	0.47	0.67	0.32	0.45
350	2.713	0.013	2.143	0.009	0.59	0.83	0.53	0.75	0.50	0.71	0.43	0.61	0.29	0.41
360	2.5	0.012	1.975	0.009	0.55	0.77	0.49	0.69	0.46	0.65	0.40	0.56	0.27	0.38
370	2.43	0.012	1.921	0.008	0.53	0.75	0.48	0.67	0.45	0.63	0.39	0.54	0.26	0.37
380	2.44	0.012	1.942	0.008	0.54	0.75	0.48	0.67	0.46	0.63	0.39	0.55	0.26	0.37
390	2.452	0.012	1.938	0.008	0.54	0.75	0.48	0.68	0.45	0.64	0.39	0.55	0.26	0.37
400	2.466	0.012	1.930	0.008	0.53	0.76	0.48	0.68	0.45	0.64	0.39	0.55	0.26	0.37
410	2.446	0.012	1.943	0.008	0.54	0.75	0.48	0.67	0.46	0.64	0.39	0.55	0.27	0.37
420	2.449	0.012	2.027	0.009	0.56	0.75	0.50	0.67	0.47	0.64	0.41	0.55	0.28	0.37
430	2.438	0.012	2.096	0.009	0.58	0.75	0.52	0.67	0.49	0.63	0.42	0.55	0.29	0.37
440	2.414	0.012	2.142	0.009	0.59	0.74	0.53	0.66	0.50	0.63	0.43	0.54	0.29	0.37
450	2.319	0.011	2.152	0.009	0.60	0.71	0.53	0.64	0.50	0.60	0.43	0.52	0.29	0.35
460	2.236	0.011	2.211	0.010	0.61	0.69	0.55	0.62	0.52	0.58	0.45	0.50	0.30	0.34
470	2.204	0.011	2.324	0.010	0.64	0.68	0.58	0.61	0.54	0.57	0.47	0.49	0.32	0.33
480	2.166	0.010	2.438	0.011	0.68	0.67	0.60	0.60	0.57	0.56	0.49	0.48	0.33	0.33
490	2.114	0.010	2.563	0.011	0.71	0.65	0.64	0.58	0.60	0.55	0.52	0.47	0.35	0.32
500	2.066	0.010	2.654	0.011	0.74	0.64	0.66	0.57	0.62	0.54	0.54	0.46	0.36	0.31
510	1.949	0.009	2.716	0.012	0.75	0.60	0.67	0.54	0.64	0.51	0.55	0.44	0.37	0.30
520	1.841	0.009	2.765	0.012	0.77	0.57	0.69	0.51	0.65	0.48	0.56	0.41	0.38	0.28
530	1.722	0.008	2.792	0.012	0.77	0.53	0.69	0.47	0.65	0.45	0.56	0.39	0.38	0.26
540	1.633	0.008	2.802	0.012	0.78	0.50	0.70	0.45	0.66	0.42	0.56	0.37	0.38	0.25
550	1.59	0.008	2.849	0.012	0.79	0.49	0.71	0.44	0.67	0.41	0.57	0.36	0.39	0.24
560	1.542	0.007	2.860	0.012	0.79	0.47	0.71	0.42	0.67	0.40	0.58	0.35	0.39	0.23
570	1.411	0.007	2.837	0.012	0.79	0.43	0.70	0.39	0.66	0.37	0.57	0.32	0.39	0.21
580	1.315	0.006	2.767	0.012	0.77	0.40	0.69	0.36	0.65	0.34	0.56	0.29	0.38	0.20
590	1.198	0.006	2.689	0.012	0.75	0.37	0.67	0.33	0.63	0.31	0.54	0.27	0.37	0.18
600	1.105	0.005	2.576	0.011	0.71	0.34	0.64	0.30	0.60	0.29	0.52	0.25	0.35	0.17
610	0.981	0.005	2.435	0.011	0.67	0.30	0.60	0.27	0.57	0.26	0.49	0.22	0.33	0.15
620	0.852	0.004	2.285	0.010	0.63	0.26	0.57	0.23	0.54	0.22	0.46	0.19	0.31	0.13
630	0.738	0.004	2.175	0.009	0.60	0.23	0.54	0.20	0.51	0.19	0.44	0.17	0.30	0.11
640	0.754	0.004	2.182	0.009	0.60	0.23	0.54	0.21	0.51	0.20	0.44	0.17	0.30	0.11
650	0.704	0.003	2.133	0.009	0.59	0.22	0.53	0.19	0.50	0.18	0.43	0.16	0.29	0.11
660	0.63	0.003	2.018	0.009	0.56	0.19	0.50	0.17	0.47	0.16	0.41	0.14	0.28	0.10
670	0.558	0.003	1.960	0.008	0.54	0.17	0.49	0.15	0.46	0.15	0.40	0.12	0.27	0.08
680	0.517	0.002	1.858	0.008	0.51	0.16	0.46	0.14	0.44	0.13	0.37	0.12	0.25	0.08
690	0.495	0.002	1.747	0.008	0.48	0.15	0.43	0.14	0.41	0.13	0.35	0.11	0.24	0.07
700	0.441	0.002	1.683	0.007	0.47	0.14	0.42	0.12	0.39	0.11	0.34	0.10	0.23	0.07
710	0.386	0.002	1.615	0.007	0.45	0.12	0.40	0.11	0.38	0.10	0.33	0.09	0.22	0.06
720	0.417	0.002	1.607	0.007	0.45	0.13	0.40	0.11	0.38	0.11	0.32	0.09	0.22	0.06
730	0.437	0.002	1.604	0.007	0.44	0.13	0.40	0.12	0.38	0.11	0.32	0.10	0.22	0.07
740	0.355	0.002	1.528	0.007	0.42	0.11	0.38	0.10	0.36	0.09	0.31	0.08	0.21	0.05
750	0.294	0.001	1.469	0.006	0.41	0.09	0.36	0.08	0.34	0.08	0.30	0.07	0.20	0.04
760	0.375	0.002	1.544	0.007	0.43	0.12	0.38	0.10	0.36	0.10	0.31	0.08	0.21	0.06
770	0.492	0.002	1.612	0.007	0.45	0.15	0.40	0.14	0.38	0.13	0.33	0.11	0.22	0.07
780	0.499	0.002	1.591	0.007	0.44	0.15	0.39	0.14	0.37	0.13	0.32	0.11	0.22	0.08
790	0.459	0.002	1.560	0.007	0.43	0.14	0.39	0.13	0.37	0.12	0.31	0.10	0.21	0.07
800	0.459	0.002	1.532	0.007	0.42	0.14	0.38	0.13	0.36	0.12	0.31	0.10	0.21	0.07
810	0.437	0.002	1.483	0.006	0.41	0.13	0.37	0.12	0.35	0.11	0.30	0.10	0.20	0.07
820	0.411	0.002	1.441	0.006	0.40	0.13	0.36	0.11	0.34	0.11	0.29	0.09	0.20	0.06
830	0.456	0.002	1.422	0.006	0.39	0.14	0.35	0.13	0.33	0.12	0.29	0.10	0.19	0.07
840	0.426	0.002	1.427	0.006	0.40	0.13	0.35	0.12	0.33	0.11	0.29	0.10	0.19	0.06
850	0.394	0.002	1.364	0.006	0.38	0.12	0.34	0.11	0.32	0.10	0.28	0.09	0.19	0.06
860	0.397	0.002	1.295	0.006	0.36	0.12	0.32	0.11	0.30	0.10	0.26	0.09	0.18	0.06
870	0.418	0.002	1.254	0.005	0.35	0.13	0.31	0.12	0.29	0.11	0.25	0.09	0.17	0.06
880	0.426	0.002	1.232	0.005	0.34	0.13	0.31	0.12	0.29	0.11	0.25	0.10	0.17	0.06
890	0.443	0.002	1.264	0.005	0.35	0.14	0.31	0.12	0.30	0.12	0.25	0.10	0.17	0.07
900	0.432	0.002	1.239	0.005	0.34	0.13	0.31	0.12	0.29	0.11	0.25	0.10	0.17	0.07
910	0.424	0.002	1.140	0.005	0.32	0.13	0.28	0.12	0.27	0.11	0.23	0.09	0.16	0.06
920	0.418	0.002	1.057	0.005	0.29	0.13	0.26	0.12	0.25	0.11	0.21	0.09	0.14	0.06
930	0.492	0.002	1.069	0.005	0.30	0.15	0.27	0.14	0.25	0.13	0.22	0.11	0.15	0.07
940	0.557	0.003	1.149	0.005	0.32	0.17	0.29	0.15	0.27	0.14	0.23	0.12	0.16	0.08
950	0.614	0.003	1.177	0.005	0.33	0.19	0.29	0.17	0.28	0.16	0.24	0.14	0.16	0.09
960	0.537	0.003	1.131	0.005	0.31	0.17	0.28	0.15	0.27	0.14	0.23	0.12	0.15	0.08
970	0.582	0.003	1.225	0.005	0.34	0.18	0.30	0.16	0.29	0.15	0.25	0.13	0.17	0.09
980	0.593	0.003	1.193	0.005	0.33	0.18	0.30	0.16	0.28	0.15	0.24	0.13	0.16	0.09
990	0.545	0.003	1.152	0.005	0.32	0.17	0.29	0.15	0.27	0.14	0.23	0.12	0.16	0.08
1000	0.449	0.002	1.025	0.004	0.28	0.14	0.25	0.12	0.24	0.12	0.21	0.10	0.14	0.07
1010	0.468	0.002	1.033	0.004	0.29	0.14	0.26	0.13	0.24	0.12	0.21	0.10	0.14	0.07
1020	0.56	0.003	1.111	0.005	0.31	0.17	0.28	0.15	0.26	0.15	0.22	0.13	0.15	0.08
1030	0.665	0.003	1.168	0.005	0.32	0.20	0.29	0.18	0.27	0.17	0.24	0.15	0.16	0.10
1040	0.789	0.004	1.212	0.005	0.34	0.24	0.30	0.22	0.28	0.21	0.24	0.18	0.17	0.12
1050	0.828	0.004	1.208	0.005	0.33	0.25	0.30	0.23	0.28	0.22	0.24	0.19	0.16	0.13
1060	0.926	0.004	1.245	0.005	0.34	0.28	0.31	0.26	0.29	0.24	0.25	0.21	0.17	0.14
1070	0.893	0.004	1.154	0.005	0.32	0.27	0.29	0.25	0.27	0.23	0.23	0.20	0.16	0.14
1080	0.906	0.004	1.147	0.005	0.32	0.28	0.28	0.25	0.27	0.24	0.23	0.20	0.16	0.14
1090	0.893	0.004	1.067	0.005	0.30	0.27	0.26	0.25	0.25	0.23	0.22	0.20	0.15	0.14
1100	0.829	0.004	1.025	0.004	0.28	0.25	0.25	0.23	0.24	0.22	0.21	0.19	0.14	0.13
1110	0.747	0.004	0.970	0.004	0.27	0.23	0.24	0.21	0.23	0.19	0.20	0.17	0.13	0.11
1120	0.666	0.003	0.928	0.004	0.26	0.20	0.23	0.18	0.22	0.17	0.19	0.15	0.13	0.10
1130	0.603	0.003	0.853	0.004	0.24	0.19	0.21	0.17	0.20	0.16	0.17	0.13	0.12	0.09
1140	0.655	0.003	0.898	0.004	0.25	0.20	0.22	0.18	0.21	0.17	0.18	0.15	0.12	0.10
1150	0.7	0.003	0.950	0.004	0.26	0.22	0.24	0.19	0.22	0.18	0.19	0.16	0.13	0.11
1160	0.691	0.003	0.940	0.004	0.26	0.21	0.23	0.19	0.22	0.18	0.19	0.15	0.13	0.10
1170	0.695	0.003	0.901	0.004	0.25	0.21	0.22	0.19	0.21	0.18	0.18	0.16	0.12	0.11
1180	0.706	0.003	0.961	0.004	0.27	0.22	0.24	0.19	0.23	0.18	0.19	0.16	0.13	0.11
1190	0.7	0.003	1.016	0.004	0.28	0.22	0.25	0.19	0.24	0.18	0.20	0.16	0.14	0.11
1200	0.709	0.003	0.953	0.004	0.26	0.22	0.24	0.20	0.22	0.18	0.19	0.16	0.13	0.11
1210	0.753	0.004	1.004	0.004	0.28	0.23	0.25	0.21	0.24	0.20	0.20	0.17	0.14	0.11
1220	0.73	0.004	0.932	0.004	0.26	0.22	0.23	0.20	0.22	0.19	0.19	0.16	0.13	0.11
1230	0.69	0.003	0.887	0.004	0.25	0.21	0.22	0.19	0.21	0.18	0.18	0.15	0.12	0.10
1240	0.691	0.003	0.843	0.004	0.23	0.21	0.21	0.19	0.20	0.18	0.17	0.15	0.12	0.10
1250	0.638	0.003	0.810	0.004	0.22	0.20	0.20	0.18	0.19	0.17	0.16	0.14	0.11	0.10
1260	0.606	0.003	0.751	0.003	0.21	0.19	0.19	0.17	0.18	0.16	0.15	0.14	0.10	0.09
1270	0.583	0.003	0.742	0.003	0.21	0.18	0.18	0.16	0.17	0.15	0.15	0.13	0.10	0.09
1280	0.597	0.003	0.753	0.003	0.21	0.18	0.19	0.16	0.18	0.16	0.15	0.13	0.10	0.09
1290	0.604	0.003	0.725	0.003	0.20	0.19	0.18	0.17	0.17	0.16	0.15	0.14	0.10	0.09
1300	0.575	0.003	0.740	0.003	0.21	0.18	0.18	0.16	0.17	0.15	0.15	0.13	0.10	0.09
1310	0.504	0.002	0.647	0.003	0.18	0.16	0.16	0.14	0.15	0.13	0.13	0.11	0.09	0.08
1320	0.501	0.002	0.647	0.003	0.18	0.15	0.16	0.14	0.15	0.13	0.13	0.11	0.09	0.08
1330	0.492	0.002	0.657	0.003	0.18	0.15	0.16	0.14	0.15	0.13	0.13	0.11	0.09	0.07
1340	0.459	0.002	0.579	0.003	0.16	0.14	0.14	0.13	0.14	0.12	0.12	0.10	0.08	0.07
1350	0.474	0.002	0.586	0.003	0.16	0.15	0.15	0.13	0.14	0.12	0.12	0.11	0.08	0.07
1360	0.466	0.002	0.582	0.003	0.16	0.14	0.14	0.13	0.14	0.12	0.12	0.10	0.08	0.07
1370	0.483	0.002	0.574	0.002	0.16	0.15	0.14	0.13	0.13	0.13	0.12	0.11	0.08	0.07
1380	0.506	0.002	0.579	0.003	0.16	0.16	0.14	0.14	0.14	0.13	0.12	0.11	0.08	0.08
1390	0.515	0.002	0.587	0.003	0.16	0.16	0.15	0.14	0.14	0.13	0.12	0.12	0.08	0.08
1400	0.413	0.002	0.527	0.002	0.15	0.13	0.13	0.11	0.12	0.11	0.11	0.09	0.07	0.06
1410	0.409	0.002	0.499	0.002	0.14	0.13	0.12	0.11	0.12	0.11	0.10	0.09	0.07	0.06
1420	0.37	0.002	0.421	0.002	0.12	0.11	0.10	0.10	0.10	0.10	0.08	0.08	0.06	0.06
1430	0.349	0.002	0.447	0.002	0.12	0.11	0.11	0.10	0.10	0.09	0.09	0.08	0.06	0.05
1440	0.604	0.003	0.841	0.004	0.23	0.19	0.21	0.17	0.20	0.16	0.17	0.14	0.11	0.09
1450	0.699	0.003	0.853	0.004	0.24	0.21	0.21	0.19	0.20	0.18	0.17	0.16	0.12	0.11
1460	0.584	0.003	0.665	0.003	0.18	0.18	0.16	0.16	0.16	0.15	0.13	0.13	0.09	0.09
1470	0.517	0.002	0.616	0.003	0.17	0.16	0.15	0.14	0.14	0.13	0.12	0.12	0.08	0.08
1480	0.448	0.002	0.569	0.002	0.16	0.14	0.14	0.12	0.13	0.12	0.11	0.10	0.08	0.07
1490	0.453	0.002	0.591	0.003	0.16	0.14	0.15	0.12	0.14	0.12	0.12	0.10	0.08	0.07
1500	0.368	0.002	0.483	0.002	0.13	0.11	0.12	0.10	0.11	0.10	0.10	0.08	0.07	0.06
1510	0.314	0.002	0.451	0.002	0.12	0.10	0.11	0.09	0.11	0.08	0.09	0.07	0.06	0.05
1520	0.324	0.002	0.475	0.002	0.13	0.10	0.12	0.09	0.11	0.08	0.10	0.07	0.06	0.05
1530	0.366	0.002	0.509	0.002	0.14	0.11	0.13	0.10	0.12	0.10	0.10	0.08	0.07	0.06
1540	0.428	0.002	0.567	0.002	0.16	0.13	0.14	0.12	0.13	0.11	0.11	0.10	0.08	0.06
1550	0.454	0.002	0.584	0.003	0.16	0.14	0.14	0.13	0.14	0.12	0.12	0.10	0.08	0.07
1560	0.452	0.002	0.522	0.002	0.14	0.14	0.13	0.12	0.12	0.12	0.11	0.10	0.07	0.07
1570	0.456	0.002	0.521	0.002	0.14	0.14	0.13	0.13	0.12	0.12	0.11	0.10	0.07	0.07
1580	0.446	0.002	0.527	0.002	0.15	0.14	0.13	0.12	0.12	0.12	0.11	0.10	0.07	0.07
1590	0.343	0.002	0.393	0.002	0.11	0.11	0.10	0.09	0.09	0.09	0.08	0.08	0.05	0.05
1600	0.351	0.002	0.432	0.002	0.12	0.11	0.11	0.10	0.10	0.09	0.09	0.08	0.06	0.05
1610	0.451	0.002	0.466	0.002	0.13	0.14	0.12	0.12	0.11	0.12	0.09	0.10	0.06	0.07
1620	0.454	0.002	0.496	0.002	0.14	0.14	0.12	0.13	0.12	0.12	0.10	0.10	0.07	0.07
1630	0.467	0.002	0.529	0.002	0.15	0.14	0.13	0.13	0.12	0.12	0.11	0.10	0.07	0.07
1640	0.479	0.002	0.535	0.002	0.15	0.15	0.13	0.13	0.13	0.12	0.11	0.11	0.07	0.07
1650	0.504	0.002	0.543	0.002	0.15	0.16	0.13	0.14	0.13	0.13	0.11	0.11	0.07	0.08
1660	0.477	0.002	0.521	0.002	0.14	0.15	0.13	0.13	0.12	0.12	0.11	0.11	0.07	0.07
1670	0.484	0.002	0.494	0.002	0.14	0.15	0.12	0.13	0.12	0.13	0.10	0.11	0.07	0.07
1680	0.455	0.002	0.452	0.002	0.13	0.14	0.11	0.13	0.11	0.12	0.09	0.10	0.06	0.07
1690	0.465	0.002	0.444	0.002	0.12	0.14	0.11	0.13	0.10	0.12	0.09	0.10	0.06	0.07
1700	0.531	0.003	0.481	0.002	0.13	0.16	0.12	0.15	0.11	0.14	0.10	0.12	0.07	0.08
1710	0.487	0.002	0.414	0.002	0.11	0.15	0.10	0.13	0.10	0.13	0.08	0.11	0.06	0.07
1720	0.382	0.002	0.351	0.002	0.10	0.12	0.09	0.11	0.08	0.10	0.07	0.09	0.05	0.06
1730	0.41	0.002	0.319	0.001	0.09	0.13	0.08	0.11	0.07	0.11	0.06	0.09	0.04	0.06
1740	0.534	0.003	0.367	0.002	0.10	0.16	0.09	0.15	0.09	0.14	0.07	0.12	0.05	0.08
1750	0.555	0.003	0.293	0.001	0.08	0.17	0.07	0.15	0.07	0.14	0.06	0.12	0.04	0.08
1760	0.555	0.003	0.257	0.001	0.07	0.17	0.06	0.15	0.06	0.14	0.05	0.12	0.04	0.08
1770	0.55	0.003	0.232	0.001	0.06	0.17	0.06	0.15	0.05	0.14	0.05	0.12	0.03	0.08
1780	0.602	0.003	0.288	0.001	0.08	0.19	0.07	0.17	0.07	0.16	0.06	0.13	0.04	0.09
1790	0.661	0.003	0.299	0.001	0.08	0.20	0.07	0.18	0.07	0.17	0.06	0.15	0.04	0.10
1800	0.672	0.003	0.264	0.001	0.07	0.21	0.07	0.19	0.06	0.17	0.05	0.15	0.04	0.10
1810	0.731	0.004	0.336	0.001	0.09	0.22	0.08	0.20	0.08	0.19	0.07	0.16	0.05	0.11
1820	0.85	0.004	0.484	0.002	0.13	0.26	0.12	0.23	0.11	0.22	0.10	0.19	0.07	0.13
1830	0.844	0.004	0.560	0.002	0.16	0.26	0.14	0.23	0.13	0.22	0.11	0.19	0.08	0.13
1840	0.769	0.004	0.532	0.002	0.15	0.24	0.13	0.21	0.12	0.20	0.11	0.17	0.07	0.12
1850	0.791	0.004	0.566	0.002	0.16	0.24	0.14	0.22	0.13	0.21	0.11	0.18	0.08	0.12
1860	0.755	0.004	0.575	0.002	0.16	0.23	0.14	0.21	0.13	0.20	0.12	0.17	0.08	0.11
1870	0.718	0.003	0.573	0.002	0.16	0.22	0.14	0.20	0.13	0.19	0.12	0.16	0.08	0.11
1880	0.752	0.004	0.563	0.002	0.16	0.23	0.14	0.21	0.13	0.20	0.11	0.17	0.08	0.11
1890	0.809	0.004	0.611	0.003	0.17	0.25	0.15	0.22	0.14	0.21	0.12	0.18	0.08	0.12
1900	0.831	0.004	0.644	0.003	0.18	0.26	0.16	0.23	0.15	0.22	0.13	0.19	0.09	0.13

SD-610	Tide Park	0	0	Avg. Net SL Change	3.52	5.21	4.32	2.78	1.98					
SD-610	314.556	0	229.886	1900		**Sand Depth (ft)**						*a/s=*	*119.19*	*ft^2/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
-50	3.421	0.011	0.737	0.003	0.13	0.46	0.20	0.68	0.16	0.56	0.11	0.36	0.08	0.26
-40	4.195	0.013	0.898	0.004	0.16	0.56	0.24	0.83	0.20	0.69	0.13	0.44	0.09	0.32
-30	4.407	0.014	0.862	0.004	0.16	0.59	0.23	0.87	0.19	0.72	0.12	0.46	0.09	0.33
-20	4.396	0.014	0.867	0.004	0.16	0.59	0.23	0.87	0.19	0.72	0.12	0.46	0.09	0.33
-10	4.367	0.014	0.877	0.004	0.16	0.58	0.24	0.86	0.20	0.71	0.13	0.46	0.09	0.33
0	4.338	0.014	0.885	0.004	0.16	0.58	0.24	0.86	0.20	0.71	0.13	0.46	0.09	0.33
10	4.309	0.014	0.894	0.004	0.16	0.57	0.24	0.85	0.20	0.70	0.13	0.45	0.09	0.32
20	4.217	0.013	0.904	0.004	0.16	0.56	0.24	0.83	0.20	0.69	0.13	0.44	0.09	0.32
30	4.099	0.013	0.943	0.004	0.17	0.55	0.25	0.81	0.21	0.67	0.14	0.43	0.10	0.31
40	3.936	0.013	0.991	0.004	0.18	0.52	0.27	0.78	0.22	0.64	0.14	0.41	0.10	0.30
50	3.616	0.011	0.948	0.004	0.17	0.48	0.26	0.71	0.21	0.59	0.14	0.38	0.10	0.27
60	3.316	0.011	0.920	0.004	0.17	0.44	0.25	0.66	0.21	0.54	0.13	0.35	0.09	0.25
70	3.109	0.010	0.907	0.004	0.17	0.41	0.25	0.61	0.20	0.51	0.13	0.33	0.09	0.23
80	2.953	0.009	0.877	0.004	0.16	0.39	0.24	0.58	0.20	0.48	0.13	0.31	0.09	0.22
90	2.784	0.009	0.827	0.004	0.15	0.37	0.22	0.55	0.19	0.46	0.12	0.29	0.09	0.21
100	2.621	0.008	0.784	0.003	0.14	0.35	0.21	0.52	0.18	0.43	0.11	0.28	0.08	0.20
110	2.469	0.008	0.734	0.003	0.13	0.33	0.20	0.49	0.16	0.40	0.11	0.26	0.08	0.19
120	2.396	0.008	0.675	0.003	0.12	0.32	0.18	0.47	0.15	0.39	0.10	0.25	0.07	0.18
130	2.346	0.007	0.644	0.003	0.12	0.31	0.17	0.46	0.14	0.38	0.09	0.25	0.07	0.18
140	2.29	0.007	0.618	0.003	0.11	0.31	0.17	0.45	0.14	0.37	0.09	0.24	0.06	0.17
150	2.348	0.007	0.645	0.003	0.12	0.31	0.17	0.46	0.14	0.38	0.09	0.25	0.07	0.18
160	2.247	0.007	0.594	0.003	0.11	0.30	0.16	0.44	0.13	0.37	0.09	0.24	0.06	0.17
170	2.203	0.007	0.652	0.003	0.12	0.29	0.18	0.44	0.15	0.36	0.09	0.23	0.07	0.17
180	2.102	0.007	0.599	0.003	0.11	0.28	0.16	0.42	0.13	0.34	0.09	0.22	0.06	0.16
190	1.984	0.006	0.537	0.002	0.10	0.26	0.15	0.39	0.12	0.32	0.08	0.21	0.06	0.15
200	1.868	0.006	0.483	0.002	0.09	0.25	0.13	0.37	0.11	0.31	0.07	0.20	0.05	0.14
210	1.777	0.006	0.460	0.002	0.08	0.24	0.12	0.35	0.10	0.29	0.07	0.19	0.05	0.13
220	1.744	0.006	0.479	0.002	0.09	0.23	0.13	0.34	0.11	0.29	0.07	0.18	0.05	0.13
230	1.801	0.006	0.566	0.002	0.10	0.24	0.15	0.36	0.13	0.29	0.08	0.19	0.06	0.14
240	1.876	0.006	0.664	0.003	0.12	0.25	0.18	0.37	0.15	0.31	0.10	0.20	0.07	0.14
250	1.945	0.006	0.745	0.003	0.14	0.26	0.20	0.38	0.17	0.32	0.11	0.20	0.08	0.15
260	2.002	0.006	0.811	0.004	0.15	0.27	0.22	0.40	0.18	0.33	0.12	0.21	0.08	0.15
270	2.177	0.007	0.988	0.004	0.18	0.29	0.27	0.43	0.22	0.36	0.14	0.23	0.10	0.16
280	2.352	0.007	1.169	0.005	0.21	0.31	0.32	0.46	0.26	0.38	0.17	0.25	0.12	0.18
290	2.489	0.008	1.344	0.006	0.24	0.33	0.36	0.49	0.30	0.41	0.19	0.26	0.14	0.19
300	2.573	0.008	1.471	0.006	0.27	0.34	0.40	0.51	0.33	0.42	0.21	0.27	0.15	0.19
310	2.556	0.008	1.470	0.006	0.27	0.34	0.40	0.50	0.33	0.42	0.21	0.27	0.15	0.19
320	2.499	0.008	1.444	0.006	0.26	0.33	0.39	0.49	0.32	0.41	0.21	0.26	0.15	0.19
330	2.523	0.008	1.539	0.007	0.28	0.34	0.42	0.50	0.34	0.41	0.22	0.27	0.16	0.19
340	2.276	0.007	1.414	0.006	0.26	0.30	0.38	0.45	0.32	0.37	0.20	0.24	0.15	0.17
350	2.118	0.007	1.374	0.006	0.25	0.28	0.37	0.42	0.31	0.35	0.20	0.22	0.14	0.16
360	2.01	0.006	1.295	0.006	0.24	0.27	0.35	0.40	0.29	0.33	0.19	0.21	0.13	0.15
370	2.181	0.007	1.460	0.006	0.27	0.29	0.39	0.43	0.33	0.36	0.21	0.23	0.15	0.16
380	2.282	0.007	1.529	0.007	0.28	0.30	0.41	0.45	0.34	0.37	0.22	0.24	0.16	0.17
390	2.576	0.008	1.885	0.008	0.34	0.34	0.51	0.51	0.42	0.42	0.27	0.27	0.19	0.19
400	2.778	0.009	2.073	0.009	0.38	0.37	0.56	0.55	0.46	0.45	0.30	0.29	0.21	0.21
410	2.168	0.007	1.602	0.007	0.29	0.29	0.43	0.43	0.36	0.35	0.23	0.23	0.16	0.16
420	1.395	0.004	1.055	0.005	0.19	0.19	0.29	0.28	0.24	0.23	0.15	0.15	0.11	0.10
430	1.892	0.006	1.556	0.007	0.28	0.25	0.42	0.37	0.35	0.31	0.22	0.20	0.16	0.14
440	1.562	0.005	1.113	0.005	0.20	0.21	0.30	0.31	0.25	0.26	0.16	0.16	0.11	0.12
450	2.061	0.007	1.524	0.007	0.28	0.27	0.41	0.41	0.34	0.34	0.22	0.22	0.16	0.15
460	2.514	0.008	1.886	0.008	0.34	0.33	0.51	0.50	0.42	0.41	0.27	0.26	0.19	0.19
470	2.322	0.007	1.717	0.007	0.31	0.31	0.46	0.46	0.38	0.38	0.25	0.24	0.18	0.17
480	2.092	0.007	1.496	0.007	0.27	0.28	0.40	0.41	0.33	0.34	0.22	0.22	0.15	0.16
490	1.656	0.005	1.154	0.005	0.21	0.22	0.31	0.33	0.26	0.27	0.17	0.17	0.12	0.12
500	1.848	0.006	1.531	0.007	0.28	0.25	0.41	0.37	0.34	0.30	0.22	0.19	0.16	0.14
510	1.485	0.005	1.397	0.006	0.25	0.20	0.38	0.29	0.31	0.24	0.20	0.16	0.14	0.11
520	0.971	0.003	1.077	0.005	0.20	0.13	0.29	0.19	0.24	0.16	0.16	0.10	0.11	0.07
530	1.324	0.004	1.389	0.006	0.25	0.18	0.38	0.26	0.31	0.22	0.20	0.14	0.14	0.10
540	1.008	0.003	1.020	0.004	0.19	0.13	0.28	0.20	0.23	0.16	0.15	0.11	0.10	0.08
550	1.047	0.003	1.002	0.004	0.18	0.14	0.27	0.21	0.22	0.17	0.14	0.11	0.10	0.08
560	0.746	0.002	0.722	0.003	0.13	0.10	0.20	0.15	0.16	0.12	0.10	0.08	0.07	0.06
570	1.18	0.004	1.290	0.006	0.24	0.16	0.35	0.23	0.29	0.19	0.19	0.12	0.13	0.09
580	0.911	0.003	1.072	0.005	0.20	0.12	0.29	0.18	0.24	0.15	0.15	0.10	0.11	0.07
590	0.859	0.003	0.966	0.004	0.18	0.11	0.26	0.17	0.22	0.14	0.14	0.09	0.10	0.06
600	0.733	0.002	0.933	0.004	0.17	0.10	0.25	0.14	0.21	0.12	0.13	0.08	0.10	0.06
610	0.981	0.003	1.248	0.005	0.23	0.13	0.34	0.19	0.28	0.16	0.18	0.10	0.13	0.07
620	1.392	0.004	1.575	0.007	0.29	0.19	0.43	0.28	0.35	0.23	0.23	0.15	0.16	0.10
630	1.265	0.004	1.115	0.005	0.20	0.17	0.30	0.25	0.25	0.21	0.16	0.13	0.11	0.10
640	1.099	0.003	0.786	0.003	0.14	0.15	0.21	0.22	0.18	0.18	0.11	0.12	0.08	0.08
650	2.601	0.008	2.434	0.011	0.44	0.35	0.66	0.51	0.54	0.43	0.35	0.27	0.25	0.20
660	2.111	0.007	1.977	0.009	0.36	0.28	0.53	0.42	0.44	0.35	0.28	0.22	0.20	0.16
670	1.962	0.006	1.784	0.008	0.33	0.26	0.48	0.39	0.40	0.32	0.26	0.21	0.18	0.15
680	1.628	0.005	1.691	0.007	0.31	0.22	0.46	0.32	0.38	0.27	0.24	0.17	0.17	0.12
690	1.843	0.006	1.763	0.008	0.32	0.25	0.48	0.36	0.39	0.30	0.25	0.19	0.18	0.14
700	1.465	0.005	1.539	0.007	0.28	0.20	0.42	0.29	0.34	0.24	0.22	0.15	0.16	0.11
710	1.327	0.004	1.402	0.006	0.26	0.18	0.38	0.26	0.31	0.22	0.20	0.14	0.14	0.10
720	1.477	0.005	1.497	0.007	0.27	0.20	0.40	0.29	0.33	0.24	0.22	0.16	0.15	0.11
730	1.534	0.005	1.515	0.007	0.28	0.20	0.41	0.30	0.34	0.25	0.22	0.16	0.16	0.12
740	1.396	0.004	1.368	0.006	0.25	0.19	0.37	0.28	0.31	0.23	0.20	0.15	0.14	0.10
750	1.095	0.003	1.174	0.005	0.21	0.15	0.32	0.22	0.26	0.18	0.17	0.12	0.12	0.08
760	0.92	0.003	1.080	0.005	0.20	0.12	0.29	0.18	0.24	0.15	0.16	0.10	0.11	0.07
770	1.148	0.004	1.022	0.004	0.19	0.15	0.28	0.23	0.23	0.19	0.15	0.12	0.11	0.09
780	0.852	0.003	0.862	0.004	0.16	0.11	0.23	0.17	0.19	0.14	0.12	0.09	0.09	0.06
790	0.992	0.003	0.943	0.004	0.17	0.13	0.25	0.20	0.21	0.16	0.14	0.10	0.10	0.07
800	1.06	0.003	0.950	0.004	0.17	0.14	0.26	0.21	0.21	0.17	0.14	0.11	0.10	0.08
810	0.985	0.003	0.835	0.004	0.15	0.13	0.23	0.19	0.19	0.16	0.12	0.10	0.09	0.07
820	1.046	0.003	0.874	0.004	0.16	0.14	0.24	0.21	0.20	0.17	0.13	0.11	0.09	0.08
830	1.109	0.004	0.907	0.004	0.17	0.15	0.25	0.22	0.20	0.18	0.13	0.12	0.09	0.08
840	1.194	0.004	0.989	0.004	0.18	0.16	0.27	0.24	0.22	0.20	0.14	0.13	0.10	0.09
850	1.178	0.004	0.992	0.004	0.18	0.16	0.27	0.23	0.22	0.19	0.14	0.12	0.10	0.09
860	1.377	0.004	1.230	0.005	0.22	0.18	0.33	0.27	0.28	0.23	0.18	0.14	0.13	0.10
870	1.819	0.006	1.669	0.007	0.30	0.24	0.45	0.36	0.37	0.30	0.24	0.19	0.17	0.14
880	2.025	0.006	1.841	0.008	0.34	0.27	0.50	0.40	0.41	0.33	0.27	0.21	0.19	0.15
890	1.811	0.006	1.696	0.007	0.31	0.24	0.46	0.36	0.38	0.30	0.24	0.19	0.17	0.14
900	1.422	0.005	1.485	0.006	0.27	0.19	0.40	0.28	0.33	0.23	0.21	0.15	0.15	0.11
910	1.583	0.005	1.676	0.007	0.31	0.21	0.45	0.31	0.37	0.26	0.24	0.17	0.17	0.12
920	1.37	0.004	1.536	0.007	0.28	0.18	0.42	0.27	0.34	0.22	0.22	0.14	0.16	0.10
930	1.474	0.005	1.587	0.007	0.29	0.20	0.43	0.29	0.36	0.24	0.23	0.16	0.16	0.11
940	1.539	0.005	1.569	0.007	0.29	0.20	0.42	0.30	0.35	0.25	0.23	0.16	0.16	0.12
950	1.641	0.005	1.579	0.007	0.29	0.22	0.43	0.32	0.35	0.27	0.23	0.17	0.16	0.12
960	1.549	0.005	1.458	0.006	0.27	0.21	0.39	0.31	0.33	0.25	0.21	0.16	0.15	0.12
970	1.349	0.004	1.220	0.005	0.22	0.18	0.33	0.27	0.27	0.22	0.18	0.14	0.13	0.10
980	1.196	0.004	1.009	0.004	0.18	0.16	0.27	0.24	0.23	0.20	0.15	0.13	0.10	0.09
990	1.234	0.004	1.064	0.005	0.19	0.16	0.29	0.24	0.24	0.20	0.15	0.13	0.11	0.09
1000	1.195	0.004	1.032	0.004	0.19	0.16	0.28	0.24	0.23	0.20	0.15	0.13	0.11	0.09
1010	1.181	0.004	1.015	0.004	0.18	0.16	0.27	0.23	0.23	0.19	0.15	0.12	0.10	0.09
1020	1.314	0.004	1.133	0.005	0.21	0.18	0.31	0.26	0.25	0.21	0.16	0.14	0.12	0.10
1030	1.435	0.005	1.221	0.005	0.22	0.19	0.33	0.28	0.27	0.23	0.18	0.15	0.13	0.11
1040	1.559	0.005	1.453	0.006	0.26	0.21	0.39	0.31	0.33	0.25	0.21	0.16	0.15	0.12
1050	1.205	0.004	1.184	0.005	0.22	0.16	0.32	0.24	0.26	0.20	0.17	0.13	0.12	0.09
1060	1.147	0.004	1.186	0.005	0.22	0.15	0.32	0.23	0.27	0.19	0.17	0.12	0.12	0.09
1070	1.169	0.004	1.173	0.005	0.21	0.16	0.32	0.23	0.26	0.19	0.17	0.12	0.12	0.09
1080	1.139	0.004	1.089	0.005	0.20	0.15	0.29	0.23	0.24	0.19	0.16	0.12	0.11	0.09
1090	1.081	0.003	0.942	0.004	0.17	0.14	0.25	0.21	0.21	0.18	0.14	0.11	0.10	0.08
1100	1.04	0.003	1.042	0.005	0.19	0.14	0.28	0.21	0.23	0.17	0.15	0.11	0.11	0.08
1110	0.677	0.002	0.852	0.004	0.16	0.09	0.23	0.13	0.19	0.11	0.12	0.07	0.09	0.05
1120	0.469	0.001	0.700	0.003	0.13	0.06	0.19	0.09	0.16	0.08	0.10	0.05	0.07	0.04
1130	0.557	0.002	0.854	0.004	0.16	0.07	0.23	0.11	0.19	0.09	0.12	0.06	0.09	0.04
1140	0.723	0.002	1.068	0.005	0.19	0.10	0.29	0.14	0.24	0.12	0.15	0.08	0.11	0.05
1150	0.656	0.002	0.918	0.004	0.17	0.09	0.25	0.13	0.21	0.11	0.13	0.07	0.09	0.05
1160	1.106	0.004	1.389	0.006	0.25	0.15	0.38	0.22	0.31	0.18	0.20	0.12	0.14	0.08
1170	1.104	0.004	1.435	0.006	0.26	0.15	0.39	0.22	0.32	0.18	0.21	0.12	0.15	0.08
1180	1.101	0.004	1.512	0.007	0.28	0.15	0.41	0.22	0.34	0.18	0.22	0.12	0.16	0.08
1190	0.96	0.003	1.373	0.006	0.25	0.13	0.37	0.19	0.31	0.16	0.20	0.10	0.14	0.07
1200	0.905	0.003	1.216	0.005	0.22	0.12	0.33	0.18	0.27	0.15	0.18	0.10	0.13	0.07
1210	0.726	0.002	0.924	0.004	0.17	0.10	0.25	0.14	0.21	0.12	0.13	0.08	0.10	0.05
1220	0.834	0.003	0.846	0.004	0.15	0.11	0.23	0.16	0.19	0.14	0.12	0.09	0.09	0.06
1230	0.946	0.003	0.903	0.004	0.16	0.13	0.24	0.19	0.20	0.15	0.13	0.10	0.09	0.07
1240	0.897	0.003	0.757	0.003	0.14	0.12	0.20	0.18	0.17	0.15	0.11	0.09	0.08	0.07
1250	0.875	0.003	0.662	0.003	0.12	0.12	0.18	0.17	0.15	0.14	0.10	0.09	0.07	0.07
1260	1.015	0.003	0.844	0.004	0.15	0.14	0.23	0.20	0.19	0.17	0.12	0.11	0.09	0.08
1270	0.727	0.002	0.651	0.003	0.12	0.10	0.18	0.14	0.15	0.12	0.09	0.08	0.07	0.05
1280	0.896	0.003	0.892	0.004	0.16	0.12	0.24	0.18	0.20	0.15	0.13	0.09	0.09	0.07
1290	0.821	0.003	0.822	0.004	0.15	0.11	0.22	0.16	0.18	0.13	0.12	0.09	0.08	0.06
1300	0.603	0.002	0.585	0.003	0.11	0.08	0.16	0.12	0.13	0.10	0.08	0.06	0.06	0.05
1310	0.548	0.002	0.452	0.002	0.08	0.07	0.12	0.11	0.10	0.09	0.07	0.06	0.05	0.04
1320	0.675	0.002	0.481	0.002	0.09	0.09	0.13	0.13	0.11	0.11	0.07	0.07	0.05	0.05
1330	0.926	0.003	0.770	0.003	0.14	0.12	0.21	0.18	0.17	0.15	0.11	0.10	0.08	0.07
1340	0.918	0.003	0.624	0.003	0.11	0.12	0.17	0.18	0.14	0.15	0.09	0.10	0.06	0.07
1350	0.947	0.003	0.635	0.003	0.12	0.13	0.17	0.19	0.14	0.15	0.09	0.10	0.07	0.07
1360	1.047	0.003	0.666	0.003	0.12	0.14	0.18	0.21	0.15	0.17	0.10	0.11	0.07	0.08
1370	0.831	0.003	0.510	0.002	0.09	0.11	0.14	0.16	0.11	0.14	0.07	0.09	0.05	0.06
1380	0.731	0.002	0.441	0.002	0.08	0.10	0.12	0.14	0.10	0.12	0.06	0.08	0.05	0.05
1390	0.615	0.002	0.380	0.002	0.07	0.08	0.10	0.12	0.09	0.10	0.05	0.06	0.04	0.05
1400	0.85	0.003	0.598	0.003	0.11	0.11	0.16	0.17	0.13	0.14	0.09	0.09	0.06	0.06
1410	1.051	0.003	0.833	0.004	0.15	0.14	0.23	0.21	0.19	0.17	0.12	0.11	0.09	0.08
1420	1.09	0.003	1.003	0.004	0.18	0.15	0.27	0.22	0.22	0.18	0.14	0.11	0.10	0.08
1430	0.917	0.003	0.941	0.004	0.17	0.12	0.25	0.18	0.21	0.15	0.14	0.10	0.10	0.07
1440	1.94	0.006	2.130	0.009	0.39	0.26	0.58	0.38	0.48	0.32	0.31	0.20	0.22	0.15
1450	2.469	0.008	2.775	0.012	0.51	0.33	0.75	0.49	0.62	0.40	0.40	0.26	0.29	0.19
1460	2.753	0.009	3.088	0.013	0.56	0.37	0.83	0.54	0.69	0.45	0.44	0.29	0.32	0.21
1470	2.98	0.009	3.254	0.014	0.59	0.40	0.88	0.59	0.73	0.49	0.47	0.31	0.33	0.22
1480	2.246	0.007	2.784	0.012	0.51	0.30	0.75	0.44	0.62	0.37	0.40	0.24	0.29	0.17
1490	1.104	0.004	1.759	0.008	0.32	0.15	0.48	0.22	0.39	0.18	0.25	0.12	0.18	0.08
1500	0.616	0.002	1.045	0.005	0.19	0.08	0.28	0.12	0.23	0.10	0.15	0.06	0.11	0.05
1510	0.809	0.003	1.042	0.005	0.19	0.11	0.28	0.16	0.23	0.13	0.15	0.09	0.11	0.06
1520	0.736	0.002	0.911	0.004	0.17	0.10	0.25	0.15	0.20	0.12	0.13	0.08	0.09	0.06
1530	0.517	0.002	0.563	0.002	0.10	0.07	0.15	0.10	0.13	0.08	0.08	0.05	0.06	0.04
1540	0.428	0.001	0.361	0.002	0.07	0.06	0.10	0.08	0.08	0.07	0.05	0.05	0.04	0.03
1550	0.748	0.002	0.478	0.002	0.09	0.10	0.13	0.15	0.11	0.12	0.07	0.08	0.05	0.06
1560	0.851	0.003	0.432	0.002	0.08	0.11	0.12	0.17	0.10	0.14	0.06	0.09	0.04	0.06
1570	1.082	0.003	0.635	0.003	0.12	0.14	0.17	0.21	0.14	0.18	0.09	0.11	0.07	0.08
1580	1.411	0.004	0.907	0.004	0.17	0.19	0.25	0.28	0.20	0.23	0.13	0.15	0.09	0.11
1590	1.791	0.006	1.840	0.008	0.34	0.24	0.50	0.35	0.41	0.29	0.26	0.19	0.19	0.13
1600	2.34	0.007	2.864	0.012	0.52	0.31	0.77	0.46	0.64	0.38	0.41	0.25	0.29	0.18
1610	2.256	0.007	2.943	0.013	0.54	0.30	0.80	0.45	0.66	0.37	0.42	0.24	0.30	0.17
1620	1.221	0.004	2.446	0.011	0.45	0.16	0.66	0.24	0.55	0.20	0.35	0.13	0.25	0.09
1630	0.977	0.003	1.995	0.009	0.36	0.13	0.54	0.19	0.45	0.16	0.29	0.10	0.21	0.07
1640	1.147	0.004	1.841	0.008	0.34	0.15	0.50	0.23	0.41	0.19	0.27	0.12	0.19	0.09
1650	1.037	0.003	1.755	0.008	0.32	0.14	0.47	0.20	0.39	0.17	0.25	0.11	0.18	0.08
1660	0.943	0.003	1.686	0.007	0.31	0.13	0.46	0.19	0.38	0.15	0.24	0.10	0.17	0.07
1670	1.049	0.003	1.464	0.006	0.27	0.14	0.40	0.21	0.33	0.17	0.21	0.11	0.15	0.08
1680	1.148	0.004	1.245	0.005	0.23	0.15	0.34	0.23	0.28	0.19	0.18	0.12	0.13	0.09
1690	0.832	0.003	0.779	0.003	0.14	0.11	0.21	0.16	0.17	0.14	0.11	0.09	0.08	0.06
1700	1.219	0.004	1.079	0.005	0.20	0.16	0.29	0.24	0.24	0.20	0.16	0.13	0.11	0.09
1710	2.045	0.007	1.975	0.009	0.36	0.27	0.53	0.40	0.44	0.33	0.28	0.22	0.20	0.15
1720	1.542	0.005	1.564	0.007	0.29	0.21	0.42	0.30	0.35	0.25	0.23	0.16	0.16	0.12
1730	1.368	0.004	1.221	0.005	0.22	0.18	0.33	0.27	0.27	0.22	0.18	0.14	0.13	0.10
1740	2.265	0.007	1.904	0.008	0.35	0.30	0.51	0.45	0.43	0.37	0.27	0.24	0.20	0.17
1750	1.12	0.004	0.804	0.003	0.15	0.15	0.22	0.22	0.18	0.18	0.12	0.12	0.08	0.08
1760	1.237	0.004	0.963	0.004	0.18	0.16	0.26	0.24	0.22	0.20	0.14	0.13	0.10	0.09
1770	1.754	0.006	1.557	0.007	0.28	0.23	0.42	0.35	0.35	0.29	0.22	0.18	0.16	0.13
1780	1.847	0.006	1.381	0.006	0.25	0.25	0.37	0.36	0.31	0.30	0.20	0.19	0.14	0.14
1790	1.946	0.006	1.743	0.008	0.32	0.26	0.47	0.38	0.39	0.32	0.25	0.20	0.18	0.15
1800	2.111	0.007	2.135	0.009	0.39	0.28	0.58	0.42	0.48	0.35	0.31	0.22	0.22	0.16
1810	1.619	0.005	1.594	0.007	0.29	0.22	0.43	0.32	0.36	0.26	0.23	0.17	0.16	0.12
1820	0.9	0.003	0.963	0.004	0.18	0.12	0.26	0.18	0.22	0.15	0.14	0.09	0.10	0.07
1830	0.668	0.002	0.686	0.003	0.13	0.09	0.19	0.13	0.15	0.11	0.10	0.07	0.07	0.05
1840	0.391	0.001	0.471	0.002	0.09	0.05	0.13	0.08	0.11	0.06	0.07	0.04	0.05	0.03
1850	0.514	0.002	0.523	0.002	0.10	0.07	0.14	0.10	0.12	0.08	0.08	0.05	0.05	0.04
1860	0.327	0.001	0.376	0.002	0.07	0.04	0.10	0.06	0.08	0.05	0.05	0.03	0.04	0.02
1870	0.261	0.001	0.330	0.001	0.06	0.03	0.09	0.05	0.07	0.04	0.05	0.03	0.03	0.02
1880	0.729	0.002	0.645	0.003	0.12	0.10	0.17	0.14	0.14	0.12	0.09	0.08	0.07	0.05
1890	1.148	0.004	0.948	0.004	0.17	0.15	0.26	0.23	0.21	0.19	0.14	0.12	0.10	0.09
1900	1.21	0.004	1.070	0.005	0.20	0.16	0.29	0.24	0.24	0.20	0.15	0.13	0.11	0.09

SD-620	Seaside Park	0	0	Avg. Net SL Change	4.93	5.01	3.05	0.59	2.87					
SD-620	189.094	0	325.048	1935			Sand Depth (ft)					a/s=	119.19	ft^2/m
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.089	0.000	0.028	0.000	0.01	0.03	0.01	0.03	0.00	0.02	0.00	0.00	0.00	0.02
10	1.827	0.010	2.419	0.007	0.44	0.57	0.44	0.58	0.27	0.35	0.05	0.07	0.25	0.33
20	2.564	0.014	3.709	0.011	0.67	0.80	0.68	0.81	0.41	0.49	0.08	0.10	0.39	0.46
30	2.032	0.011	2.911	0.009	0.53	0.63	0.53	0.64	0.33	0.39	0.06	0.08	0.31	0.37
40	1.262	0.007	1.482	0.005	0.27	0.39	0.27	0.40	0.17	0.24	0.03	0.05	0.16	0.23
50	1.173	0.006	0.884	0.003	0.16	0.36	0.16	0.37	0.10	0.23	0.02	0.04	0.09	0.21
60	1.447	0.008	1.371	0.004	0.25	0.45	0.25	0.46	0.15	0.28	0.03	0.05	0.14	0.26
70	2.315	0.012	2.136	0.007	0.39	0.72	0.39	0.73	0.24	0.45	0.05	0.09	0.22	0.42
80	2.205	0.012	1.785	0.005	0.32	0.69	0.33	0.70	0.20	0.42	0.04	0.08	0.19	0.40
90	2.725	0.014	2.384	0.007	0.43	0.85	0.44	0.86	0.27	0.52	0.05	0.10	0.25	0.49
100	3.193	0.017	2.978	0.009	0.54	0.99	0.55	1.01	0.33	0.61	0.06	0.12	0.31	0.58
110	2.709	0.014	2.635	0.008	0.48	0.84	0.48	0.85	0.29	0.52	0.06	0.10	0.28	0.49
120	2.446	0.013	2.297	0.007	0.42	0.76	0.42	0.77	0.26	0.47	0.05	0.09	0.24	0.44
130	2.217	0.012	2.051	0.006	0.37	0.69	0.38	0.70	0.23	0.43	0.04	0.08	0.22	0.40
140	2.079	0.011	1.828	0.006	0.33	0.65	0.34	0.66	0.20	0.40	0.04	0.08	0.19	0.38
150	1.997	0.011	1.633	0.005	0.30	0.62	0.30	0.63	0.18	0.38	0.04	0.07	0.17	0.36
160	1.931	0.010	1.478	0.005	0.27	0.60	0.27	0.61	0.17	0.37	0.03	0.07	0.16	0.35
170	1.869	0.010	1.394	0.004	0.25	0.58	0.26	0.59	0.16	0.36	0.03	0.07	0.15	0.34
180	1.810	0.010	1.324	0.004	0.24	0.56	0.24	0.57	0.15	0.35	0.03	0.07	0.14	0.33
190	1.785	0.009	1.303	0.004	0.24	0.56	0.24	0.56	0.15	0.34	0.03	0.07	0.14	0.32
200	1.766	0.009	1.280	0.004	0.23	0.55	0.24	0.56	0.14	0.34	0.03	0.07	0.13	0.32
210	1.751	0.009	1.270	0.004	0.23	0.54	0.23	0.55	0.14	0.34	0.03	0.07	0.13	0.32
220	1.741	0.009	1.289	0.004	0.23	0.54	0.24	0.55	0.14	0.33	0.03	0.07	0.14	0.31
230	1.734	0.009	1.309	0.004	0.24	0.54	0.24	0.55	0.15	0.33	0.03	0.06	0.14	0.31
240	1.747	0.009	1.349	0.004	0.24	0.54	0.25	0.55	0.15	0.34	0.03	0.07	0.14	0.32
250	1.772	0.009	1.426	0.004	0.26	0.55	0.26	0.56	0.16	0.34	0.03	0.07	0.15	0.32
260	1.827	0.010	1.497	0.005	0.27	0.57	0.27	0.58	0.17	0.35	0.03	0.07	0.16	0.33
270	1.896	0.010	1.562	0.005	0.28	0.59	0.29	0.60	0.17	0.36	0.03	0.07	0.16	0.34
280	1.953	0.010	1.636	0.005	0.30	0.61	0.30	0.62	0.18	0.38	0.04	0.07	0.17	0.35
290	2.005	0.011	1.716	0.005	0.31	0.62	0.32	0.63	0.19	0.39	0.04	0.07	0.18	0.36
300	2.055	0.011	1.796	0.006	0.32	0.64	0.33	0.65	0.20	0.40	0.04	0.08	0.19	0.37
310	2.098	0.011	1.858	0.006	0.34	0.65	0.34	0.66	0.21	0.40	0.04	0.08	0.20	0.38
320	2.144	0.011	1.899	0.006	0.34	0.67	0.35	0.68	0.21	0.41	0.04	0.08	0.20	0.39
330	2.188	0.012	1.920	0.006	0.35	0.68	0.35	0.69	0.21	0.42	0.04	0.08	0.20	0.40
340	2.227	0.012	1.933	0.006	0.35	0.69	0.35	0.70	0.22	0.43	0.04	0.08	0.20	0.40
350	2.273	0.012	1.904	0.006	0.34	0.71	0.35	0.72	0.21	0.44	0.04	0.08	0.20	0.41
360	2.322	0.012	1.867	0.006	0.34	0.72	0.34	0.73	0.21	0.45	0.04	0.09	0.20	0.42
370	2.369	0.013	1.837	0.006	0.33	0.74	0.34	0.75	0.21	0.46	0.04	0.09	0.19	0.43
380	2.427	0.013	1.805	0.006	0.33	0.75	0.33	0.77	0.20	0.47	0.04	0.09	0.19	0.44
390	2.483	0.013	1.773	0.005	0.32	0.77	0.33	0.78	0.20	0.48	0.04	0.09	0.19	0.45
400	2.533	0.013	1.904	0.006	0.34	0.79	0.35	0.80	0.21	0.49	0.04	0.09	0.20	0.46
410	2.581	0.014	2.035	0.006	0.37	0.80	0.37	0.81	0.23	0.50	0.04	0.10	0.21	0.47
420	2.624	0.014	2.167	0.007	0.39	0.82	0.40	0.83	0.24	0.50	0.05	0.10	0.23	0.47
430	2.648	0.014	2.268	0.007	0.41	0.82	0.42	0.84	0.25	0.51	0.05	0.10	0.24	0.48
440	2.605	0.014	2.307	0.007	0.42	0.81	0.42	0.82	0.26	0.50	0.05	0.10	0.24	0.47
450	2.547	0.013	2.322	0.007	0.42	0.79	0.43	0.80	0.26	0.49	0.05	0.10	0.24	0.46
460	2.492	0.013	2.315	0.007	0.42	0.77	0.43	0.79	0.26	0.48	0.05	0.09	0.24	0.45
470	2.439	0.013	2.305	0.007	0.42	0.76	0.42	0.77	0.26	0.47	0.05	0.09	0.24	0.44
480	2.369	0.013	2.295	0.007	0.42	0.74	0.42	0.75	0.26	0.46	0.05	0.09	0.24	0.43
490	2.287	0.012	2.292	0.007	0.41	0.71	0.42	0.72	0.26	0.44	0.05	0.09	0.24	0.41
500	2.204	0.012	2.302	0.007	0.42	0.69	0.42	0.70	0.26	0.42	0.05	0.08	0.24	0.40
510	2.125	0.011	2.314	0.007	0.42	0.66	0.42	0.67	0.26	0.41	0.05	0.08	0.24	0.38
520	2.046	0.011	2.333	0.007	0.42	0.64	0.43	0.65	0.26	0.39	0.05	0.08	0.25	0.37
530	1.991	0.011	2.368	0.007	0.43	0.62	0.43	0.63	0.26	0.38	0.05	0.07	0.25	0.36
540	1.935	0.010	2.405	0.007	0.44	0.60	0.44	0.61	0.27	0.37	0.05	0.07	0.25	0.35
550	1.867	0.010	2.444	0.008	0.44	0.58	0.45	0.59	0.27	0.36	0.05	0.07	0.26	0.34
560	1.775	0.009	2.468	0.008	0.45	0.55	0.45	0.56	0.28	0.34	0.05	0.07	0.26	0.32
570	1.672	0.009	2.487	0.008	0.45	0.52	0.46	0.53	0.28	0.32	0.05	0.06	0.26	0.30
580	1.573	0.008	2.496	0.008	0.45	0.49	0.46	0.50	0.28	0.30	0.05	0.06	0.26	0.28
590	1.476	0.008	2.513	0.008	0.45	0.46	0.46	0.47	0.28	0.28	0.05	0.06	0.26	0.27
600	1.350	0.007	2.498	0.008	0.45	0.42	0.46	0.43	0.28	0.26	0.05	0.05	0.26	0.24
610	1.205	0.006	2.468	0.008	0.45	0.37	0.45	0.38	0.28	0.23	0.05	0.05	0.26	0.22
620	1.079	0.006	2.439	0.008	0.44	0.34	0.45	0.34	0.27	0.21	0.05	0.04	0.26	0.20
630	0.998	0.005	2.415	0.007	0.44	0.31	0.44	0.31	0.27	0.19	0.05	0.04	0.25	0.18
640	1.032	0.005	2.551	0.008	0.46	0.32	0.47	0.33	0.29	0.20	0.06	0.04	0.27	0.19
650	1.058	0.006	2.686	0.008	0.49	0.33	0.49	0.33	0.30	0.20	0.06	0.04	0.28	0.19
660	1.039	0.005	2.764	0.009	0.50	0.32	0.51	0.33	0.31	0.20	0.06	0.04	0.29	0.19
670	1.007	0.005	2.816	0.009	0.51	0.31	0.52	0.32	0.31	0.19	0.06	0.04	0.30	0.18
680	1.009	0.005	2.868	0.009	0.52	0.31	0.53	0.32	0.32	0.19	0.06	0.04	0.30	0.18
690	1.076	0.006	3.006	0.009	0.54	0.33	0.55	0.34	0.34	0.21	0.07	0.04	0.32	0.19
700	1.204	0.006	3.245	0.010	0.59	0.37	0.60	0.38	0.36	0.23	0.07	0.04	0.34	0.22
710	1.429	0.008	3.562	0.011	0.64	0.44	0.65	0.45	0.40	0.27	0.08	0.05	0.37	0.26
720	1.614	0.009	3.746	0.012	0.68	0.50	0.69	0.51	0.42	0.31	0.08	0.06	0.39	0.29
730	1.635	0.009	3.792	0.012	0.69	0.51	0.70	0.52	0.42	0.31	0.08	0.06	0.40	0.30
740	1.595	0.008	3.795	0.012	0.69	0.50	0.70	0.50	0.42	0.31	0.08	0.06	0.40	0.29
750	1.388	0.007	3.643	0.011	0.66	0.43	0.67	0.44	0.41	0.27	0.08	0.05	0.38	0.25
760	1.249	0.007	3.606	0.011	0.65	0.39	0.66	0.39	0.40	0.24	0.08	0.05	0.38	0.23
770	1.142	0.006	3.567	0.011	0.65	0.36	0.65	0.36	0.40	0.22	0.08	0.04	0.38	0.21
780	1.113	0.006	3.500	0.011	0.63	0.35	0.64	0.35	0.39	0.21	0.08	0.04	0.37	0.20
790	1.069	0.006	3.424	0.011	0.62	0.33	0.63	0.34	0.38	0.21	0.07	0.04	0.36	0.19
800	0.982	0.005	3.317	0.010	0.60	0.31	0.61	0.31	0.37	0.19	0.07	0.04	0.35	0.18
810	1.024	0.005	3.377	0.010	0.61	0.32	0.62	0.32	0.38	0.20	0.07	0.04	0.36	0.19
820	1.091	0.006	3.483	0.011	0.63	0.34	0.64	0.34	0.39	0.21	0.08	0.04	0.37	0.20
830	1.142	0.006	3.526	0.011	0.64	0.36	0.65	0.36	0.39	0.22	0.08	0.04	0.37	0.21
840	1.120	0.006	3.362	0.010	0.61	0.35	0.62	0.35	0.38	0.22	0.07	0.04	0.35	0.20
850	1.089	0.006	3.217	0.010	0.58	0.34	0.59	0.34	0.36	0.21	0.07	0.04	0.34	0.20
860	1.033	0.005	3.117	0.010	0.56	0.32	0.57	0.33	0.35	0.20	0.07	0.04	0.33	0.19
870	0.943	0.005	2.979	0.009	0.54	0.29	0.55	0.30	0.33	0.18	0.06	0.04	0.31	0.17
880	0.875	0.005	2.958	0.009	0.54	0.27	0.54	0.28	0.33	0.17	0.06	0.03	0.31	0.16
890	0.727	0.004	2.943	0.009	0.53	0.23	0.54	0.23	0.33	0.14	0.06	0.03	0.31	0.13
900	0.613	0.003	2.927	0.009	0.53	0.19	0.54	0.19	0.33	0.12	0.06	0.02	0.31	0.11
910	0.673	0.004	3.005	0.009	0.54	0.21	0.55	0.21	0.34	0.13	0.07	0.03	0.32	0.12
920	0.676	0.004	3.019	0.009	0.55	0.21	0.55	0.21	0.34	0.13	0.07	0.03	0.32	0.12
930	0.694	0.004	3.091	0.010	0.56	0.22	0.57	0.22	0.35	0.13	0.07	0.03	0.33	0.13
940	0.638	0.003	3.116	0.010	0.56	0.20	0.57	0.20	0.35	0.12	0.07	0.02	0.33	0.12
950	0.558	0.003	3.076	0.009	0.56	0.17	0.56	0.18	0.34	0.11	0.07	0.02	0.32	0.10
960	0.513	0.003	2.824	0.009	0.51	0.16	0.52	0.16	0.32	0.10	0.06	0.02	0.30	0.09
970	0.465	0.002	2.540	0.008	0.46	0.14	0.47	0.15	0.28	0.09	0.06	0.02	0.27	0.08
980	0.433	0.002	2.284	0.007	0.41	0.13	0.42	0.14	0.26	0.08	0.05	0.02	0.24	0.08
990	0.430	0.002	2.202	0.007	0.40	0.13	0.40	0.14	0.25	0.08	0.05	0.02	0.23	0.08
1000	0.426	0.002	1.888	0.006	0.34	0.13	0.35	0.13	0.21	0.08	0.04	0.02	0.20	0.08
1010	0.423	0.002	1.694	0.005	0.31	0.13	0.31	0.13	0.19	0.08	0.04	0.02	0.18	0.08
1020	0.419	0.002	1.744	0.005	0.32	0.13	0.32	0.13	0.20	0.08	0.04	0.02	0.18	0.08
1030	0.416	0.002	1.685	0.005	0.30	0.13	0.31	0.13	0.19	0.08	0.04	0.02	0.18	0.08
1040	0.412	0.002	1.667	0.005	0.30	0.13	0.31	0.13	0.19	0.08	0.04	0.02	0.18	0.07
1050	0.409	0.002	1.649	0.005	0.30	0.13	0.30	0.13	0.18	0.08	0.04	0.02	0.17	0.07
1060	0.405	0.002	1.631	0.005	0.30	0.13	0.30	0.13	0.18	0.08	0.04	0.02	0.17	0.07
1070	0.402	0.002	1.613	0.005	0.29	0.12	0.30	0.13	0.18	0.08	0.04	0.01	0.17	0.07
1080	0.398	0.002	1.595	0.005	0.29	0.12	0.29	0.13	0.18	0.08	0.03	0.01	0.17	0.07
1090	0.395	0.002	1.577	0.005	0.29	0.12	0.29	0.12	0.18	0.08	0.03	0.01	0.17	0.07
1100	0.391	0.002	1.559	0.005	0.28	0.12	0.29	0.12	0.17	0.08	0.03	0.01	0.16	0.07
1110	0.388	0.002	1.541	0.005	0.28	0.12	0.28	0.12	0.17	0.07	0.03	0.01	0.16	0.07
1120	0.384	0.002	1.523	0.005	0.28	0.12	0.28	0.12	0.17	0.07	0.03	0.01	0.16	0.07
1130	0.381	0.002	1.505	0.005	0.27	0.12	0.28	0.12	0.17	0.07	0.03	0.01	0.16	0.07
1140	0.377	0.002	1.487	0.005	0.27	0.12	0.27	0.12	0.17	0.07	0.03	0.01	0.16	0.07
1150	0.374	0.002	1.469	0.005	0.27	0.12	0.27	0.12	0.16	0.07	0.03	0.01	0.15	0.07
1160	0.370	0.002	1.451	0.004	0.26	0.12	0.27	0.12	0.16	0.07	0.03	0.01	0.15	0.07
1170	0.367	0.002	1.433	0.004	0.26	0.11	0.26	0.12	0.16	0.07	0.03	0.01	0.15	0.07
1180	0.363	0.002	1.415	0.004	0.26	0.11	0.26	0.11	0.16	0.07	0.03	0.01	0.15	0.07
1190	0.360	0.002	1.397	0.004	0.25	0.11	0.26	0.11	0.16	0.07	0.03	0.01	0.15	0.07
1200	0.356	0.002	1.379	0.004	0.25	0.11	0.25	0.11	0.15	0.07	0.03	0.01	0.15	0.06
1210	0.353	0.002	1.361	0.004	0.25	0.11	0.25	0.11	0.15	0.07	0.03	0.01	0.14	0.06
1220	0.349	0.002	1.343	0.004	0.24	0.11	0.25	0.11	0.15	0.07	0.03	0.01	0.14	0.06
1230	0.346	0.002	1.325	0.004	0.24	0.11	0.24	0.11	0.15	0.07	0.03	0.01	0.14	0.06
1240	0.342	0.002	1.307	0.004	0.24	0.11	0.24	0.11	0.15	0.07	0.03	0.01	0.14	0.06
1250	0.339	0.002	1.289	0.004	0.23	0.11	0.24	0.11	0.14	0.07	0.03	0.01	0.14	0.06
1260	0.335	0.002	1.271	0.004	0.23	0.10	0.23	0.11	0.14	0.06	0.03	0.01	0.13	0.06
1270	0.332	0.002	1.253	0.004	0.23	0.10	0.23	0.10	0.14	0.06	0.03	0.01	0.13	0.06
1280	0.328	0.002	1.235	0.004	0.22	0.10	0.23	0.10	0.14	0.06	0.03	0.01	0.13	0.06
1290	0.325	0.002	1.217	0.004	0.22	0.10	0.22	0.10	0.14	0.06	0.03	0.01	0.13	0.06
1300	0.321	0.002	1.199	0.004	0.22	0.10	0.22	0.10	0.13	0.06	0.03	0.01	0.13	0.06
1310	0.318	0.002	1.181	0.004	0.21	0.10	0.22	0.10	0.13	0.06	0.03	0.01	0.12	0.06
1320	0.314	0.002	1.163	0.004	0.21	0.10	0.21	0.10	0.13	0.06	0.03	0.01	0.12	0.06
1330	0.311	0.002	1.145	0.004	0.21	0.10	0.21	0.10	0.13	0.06	0.02	0.01	0.12	0.06
1340	0.307	0.002	1.127	0.003	0.20	0.10	0.21	0.10	0.13	0.06	0.02	0.01	0.12	0.06
1350	0.304	0.002	1.109	0.003	0.20	0.09	0.20	0.10	0.12	0.06	0.02	0.01	0.12	0.05
1360	0.300	0.002	1.091	0.003	0.20	0.09	0.20	0.09	0.12	0.06	0.02	0.01	0.11	0.05
1370	0.297	0.002	1.073	0.003	0.19	0.09	0.20	0.09	0.12	0.06	0.02	0.01	0.11	0.05
1380	0.293	0.002	1.055	0.003	0.19	0.09	0.19	0.09	0.12	0.06	0.02	0.01	0.11	0.05
1390	0.290	0.002	1.037	0.003	0.19	0.09	0.19	0.09	0.12	0.06	0.02	0.01	0.11	0.05
1400	0.286	0.002	1.019	0.003	0.18	0.09	0.19	0.09	0.11	0.05	0.02	0.01	0.11	0.05
1410	0.283	0.001	1.001	0.003	0.18	0.09	0.18	0.09	0.11	0.05	0.02	0.01	0.11	0.05
1420	0.279	0.001	0.983	0.003	0.18	0.09	0.18	0.09	0.11	0.05	0.02	0.01	0.10	0.05
1430	0.276	0.001	0.965	0.003	0.17	0.09	0.18	0.09	0.11	0.05	0.02	0.01	0.10	0.05
1440	0.272	0.001	0.947	0.003	0.17	0.08	0.17	0.09	0.11	0.05	0.02	0.01	0.10	0.05
1450	0.269	0.001	0.929	0.003	0.17	0.08	0.17	0.08	0.10	0.05	0.02	0.01	0.10	0.05
1460	0.265	0.001	0.911	0.003	0.16	0.08	0.17	0.08	0.10	0.05	0.02	0.01	0.10	0.05
1470	0.262	0.001	0.893	0.003	0.16	0.08	0.16	0.08	0.10	0.05	0.02	0.01	0.09	0.05
1480	0.258	0.001	0.875	0.003	0.16	0.08	0.16	0.08	0.10	0.05	0.02	0.01	0.09	0.05
1490	0.255	0.001	0.857	0.003	0.16	0.08	0.16	0.08	0.10	0.05	0.02	0.01	0.09	0.05
1500	0.251	0.001	0.839	0.003	0.15	0.08	0.15	0.08	0.09	0.05	0.02	0.01	0.09	0.05
1510	0.248	0.001	0.821	0.003	0.15	0.08	0.15	0.08	0.09	0.05	0.02	0.01	0.09	0.04
1520	0.244	0.001	0.803	0.002	0.15	0.08	0.15	0.08	0.09	0.05	0.02	0.01	0.08	0.04
1530	0.241	0.001	0.785	0.002	0.14	0.07	0.14	0.08	0.09	0.05	0.02	0.01	0.08	0.04
1540	0.237	0.001	0.767	0.002	0.14	0.07	0.14	0.07	0.09	0.05	0.02	0.01	0.08	0.04
1550	0.234	0.001	0.749	0.002	0.14	0.07	0.14	0.07	0.08	0.04	0.02	0.01	0.08	0.04
1560	0.230	0.001	0.731	0.002	0.13	0.07	0.13	0.07	0.08	0.04	0.02	0.01	0.08	0.04
1570	0.227	0.001	0.713	0.002	0.13	0.07	0.13	0.07	0.08	0.04	0.02	0.01	0.08	0.04
1580	0.223	0.001	0.695	0.002	0.13	0.07	0.13	0.07	0.08	0.04	0.02	0.01	0.07	0.04
1590	0.220	0.001	0.677	0.002	0.12	0.07	0.12	0.07	0.08	0.04	0.01	0.01	0.07	0.04
1600	0.216	0.001	0.659	0.002	0.12	0.07	0.12	0.07	0.07	0.04	0.01	0.01	0.07	0.04
1610	0.213	0.001	0.641	0.002	0.12	0.07	0.12	0.07	0.07	0.04	0.01	0.01	0.07	0.04
1620	0.209	0.001	0.623	0.002	0.11	0.06	0.11	0.07	0.07	0.04	0.01	0.01	0.07	0.04
1630	0.206	0.001	0.605	0.002	0.11	0.06	0.11	0.06	0.07	0.04	0.01	0.01	0.06	0.04
1640	0.202	0.001	0.587	0.002	0.11	0.06	0.11	0.06	0.07	0.04	0.01	0.01	0.06	0.04
1650	0.199	0.001	0.569	0.002	0.10	0.06	0.10	0.06	0.06	0.04	0.01	0.01	0.06	0.04
1660	0.195	0.001	0.551	0.002	0.10	0.06	0.10	0.06	0.06	0.04	0.01	0.01	0.06	0.04
1670	0.192	0.001	0.533	0.002	0.10	0.06	0.10	0.06	0.06	0.04	0.01	0.01	0.06	0.03
1680	0.188	0.001	0.515	0.002	0.09	0.06	0.09	0.06	0.06	0.04	0.01	0.01	0.05	0.03
1690	0.185	0.001	0.497	0.002	0.09	0.06	0.09	0.06	0.06	0.04	0.01	0.01	0.05	0.03
1700	0.181	0.001	0.479	0.001	0.09	0.06	0.09	0.06	0.05	0.03	0.01	0.01	0.05	0.03
1710	0.178	0.001	0.461	0.001	0.08	0.06	0.08	0.06	0.05	0.03	0.01	0.01	0.05	0.03
1720	0.174	0.001	0.443	0.001	0.08	0.05	0.08	0.05	0.05	0.03	0.01	0.01	0.05	0.03
1730	0.171	0.001	0.425	0.001	0.08	0.05	0.08	0.05	0.05	0.03	0.01	0.01	0.04	0.03
1740	0.167	0.001	0.407	0.001	0.07	0.05	0.07	0.05	0.05	0.03	0.01	0.01	0.04	0.03
1750	0.164	0.001	0.389	0.001	0.07	0.05	0.07	0.05	0.04	0.03	0.01	0.01	0.04	0.03
1760	0.160	0.001	0.371	0.001	0.07	0.05	0.07	0.05	0.04	0.03	0.01	0.01	0.04	0.03
1770	0.157	0.001	0.353	0.001	0.06	0.05	0.06	0.05	0.04	0.03	0.01	0.01	0.04	0.03
1780	0.153	0.001	0.335	0.001	0.06	0.05	0.06	0.05	0.04	0.03	0.01	0.01	0.04	0.03
1790	0.150	0.001	0.317	0.001	0.06	0.05	0.06	0.05	0.04	0.03	0.01	0.01	0.03	0.03
1800	0.146	0.001	0.299	0.001	0.05	0.05	0.05	0.05	0.03	0.03	0.01	0.01	0.03	0.03
1810	0.143	0.001	0.281	0.001	0.05	0.04	0.05	0.04	0.03	0.03	0.01	0.01	0.03	0.03
1820	0.139	0.001	0.263	0.001	0.05	0.04	0.05	0.04	0.03	0.03	0.01	0.01	0.03	0.03
1830	0.136	0.001	0.245	0.001	0.04	0.04	0.04	0.04	0.03	0.03	0.01	0.01	0.03	0.02
1840	0.132	0.001	0.227	0.001	0.04	0.04	0.04	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1850	0.129	0.001	0.209	0.001	0.04	0.04	0.04	0.04	0.02	0.02	0.00	0.00	0.02	0.02
1860	0.125	0.001	0.191	0.001	0.03	0.04	0.04	0.04	0.02	0.02	0.00	0.00	0.02	0.02
1870	0.122	0.001	0.173	0.001	0.03	0.04	0.03	0.04	0.02	0.02	0.00	0.00	0.02	0.02
1880	0.118	0.001	0.155	0.000	0.03	0.04	0.03	0.04	0.02	0.02	0.00	0.00	0.02	0.02
1890	0.115	0.001	0.137	0.000	0.02	0.04	0.03	0.04	0.02	0.02	0.00	0.00	0.01	0.02
1900	0.111	0.001	0.119	0.000	0.02	0.03	0.02	0.04	0.01	0.02	0.00	0.00	0.01	0.02
1910	0.108	0.001	0.101	0.000	0.02	0.03	0.02	0.03	0.01	0.02	0.00	0.00	0.01	0.02
1920	0.104	0.001	0.083	0.000	0.02	0.03	0.02	0.03	0.01	0.02	0.00	0.00	0.01	0.02
1930	0.101	0.001	0.065	0.000	0.01	0.03	0.01	0.03	0.01	0.02	0.00	0.00	0.01	0.02
1940	0.097	0.001	0.047	0.000	0.01	0.03	0.01	0.03	0.01	0.02	0.00	0.00	0.00	0.02

SD-625	San Elijo	0	0	Avg. Net SL	8.51	4.17	1.08	-1.97	6.37					
SD-625	278.039	0	308.566	1800			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.221	0.001	0.316	0.001	0.10	0.08	0.05	0.04	0.01	0.01	0.00	0.00	0.08	0.06
10	1.978	0.007	2.904	0.009	0.95	0.72	0.47	0.35	0.12	0.09	0.00	0.00	0.71	0.54
20	2.906	0.010	2.985	0.010	0.98	1.06	0.48	0.52	0.12	0.13	0.00	0.00	0.73	0.79
30	1.755	0.006	1.517	0.005	0.50	0.64	0.24	0.31	0.06	0.08	0.00	0.00	0.37	0.48
40	2.335	0.008	1.527	0.005	0.50	0.85	0.25	0.42	0.06	0.11	0.00	0.00	0.38	0.64
50	2.300	0.008	1.113	0.004	0.37	0.84	0.18	0.41	0.05	0.11	0.00	0.00	0.27	0.63
60	2.676	0.010	0.825	0.003	0.27	0.98	0.13	0.48	0.03	0.12	0.00	0.00	0.20	0.73
70	4.186	0.015	2.188	0.007	0.72	1.53	0.35	0.75	0.09	0.19	0.00	0.00	0.54	1.14
80	4.817	0.017	2.734	0.009	0.90	1.76	0.44	0.86	0.11	0.22	0.00	0.00	0.67	1.32
90	5.257	0.019	3.058	0.010	1.00	1.92	0.49	0.94	0.13	0.24	0.00	0.00	0.75	1.44
100	5.526	0.020	3.406	0.011	1.12	2.02	0.55	0.99	0.14	0.26	0.00	0.00	0.84	1.51
110	5.121	0.018	3.220	0.010	1.06	1.87	0.52	0.92	0.13	0.24	0.00	0.00	0.79	1.40
120	4.646	0.017	2.872	0.009	0.94	1.69	0.46	0.83	0.12	0.21	0.00	0.00	0.71	1.27
130	4.190	0.015	2.558	0.008	0.84	1.53	0.41	0.75	0.11	0.19	0.00	0.00	0.63	1.14
140	3.802	0.014	2.384	0.008	0.78	1.39	0.38	0.68	0.10	0.18	0.00	0.00	0.59	1.04
150	3.521	0.013	2.245	0.007	0.74	1.28	0.36	0.63	0.09	0.16	0.00	0.00	0.55	0.96
160	3.269	0.012	2.132	0.007	0.70	1.19	0.34	0.58	0.09	0.15	0.00	0.00	0.52	0.89
170	3.061	0.011	2.058	0.007	0.68	1.12	0.33	0.55	0.09	0.14	0.00	0.00	0.51	0.84
180	2.898	0.010	2.030	0.007	0.67	1.06	0.33	0.52	0.08	0.13	0.00	0.00	0.50	0.79
190	2.778	0.010	2.018	0.007	0.66	1.01	0.33	0.50	0.08	0.13	0.00	0.00	0.50	0.76
200	2.667	0.010	2.006	0.007	0.66	0.97	0.32	0.48	0.08	0.12	0.00	0.00	0.49	0.73
210	2.578	0.009	1.991	0.006	0.65	0.94	0.32	0.46	0.08	0.12	0.00	0.00	0.49	0.70
220	2.530	0.009	1.954	0.006	0.64	0.92	0.31	0.45	0.08	0.12	0.00	0.00	0.48	0.69
230	2.496	0.009	1.917	0.006	0.63	0.91	0.31	0.45	0.08	0.12	0.00	0.00	0.47	0.68
240	2.483	0.009	1.874	0.006	0.62	0.91	0.30	0.44	0.08	0.11	0.00	0.00	0.46	0.68
250	2.476	0.009	1.797	0.006	0.59	0.90	0.29	0.44	0.07	0.11	0.00	0.00	0.44	0.68
260	2.480	0.009	1.678	0.005	0.55	0.90	0.27	0.44	0.07	0.11	0.00	0.00	0.41	0.68
270	2.418	0.009	1.483	0.005	0.49	0.88	0.24	0.43	0.06	0.11	0.00	0.00	0.36	0.66
280	2.346	0.008	1.276	0.004	0.42	0.86	0.21	0.42	0.05	0.11	0.00	0.00	0.31	0.64
290	2.272	0.008	1.129	0.004	0.37	0.83	0.18	0.41	0.05	0.10	0.00	0.00	0.28	0.62
300	2.186	0.008	1.117	0.004	0.37	0.80	0.18	0.39	0.05	0.10	0.00	0.00	0.27	0.60
310	2.098	0.008	1.078	0.003	0.35	0.77	0.17	0.38	0.04	0.10	0.00	0.00	0.27	0.57
320	2.034	0.007	1.061	0.003	0.35	0.74	0.17	0.36	0.04	0.09	0.00	0.00	0.26	0.56
330	2.172	0.008	1.247	0.004	0.41	0.79	0.20	0.39	0.05	0.10	0.00	0.00	0.31	0.59
340	2.438	0.009	1.554	0.005	0.51	0.89	0.25	0.44	0.06	0.11	0.00	0.00	0.38	0.67
350	2.702	0.010	1.764	0.006	0.58	0.99	0.28	0.48	0.07	0.12	0.00	0.00	0.43	0.74
360	2.956	0.011	1.867	0.006	0.61	1.08	0.30	0.53	0.08	0.14	0.00	0.00	0.46	0.81
370	3.107	0.011	1.854	0.006	0.61	1.13	0.30	0.56	0.08	0.14	0.00	0.00	0.46	0.85
380	3.092	0.011	1.709	0.006	0.56	1.13	0.28	0.55	0.07	0.14	0.00	0.00	0.42	0.84
390	3.066	0.011	1.633	0.005	0.54	1.12	0.26	0.55	0.07	0.14	0.00	0.00	0.40	0.84
400	3.040	0.011	1.585	0.005	0.52	1.11	0.26	0.54	0.07	0.14	0.00	0.00	0.39	0.83
410	2.930	0.011	1.558	0.005	0.51	1.07	0.25	0.52	0.06	0.14	0.00	0.00	0.38	0.80
420	2.713	0.010	1.472	0.005	0.48	0.99	0.24	0.49	0.06	0.13	0.00	0.00	0.36	0.74
430	2.507	0.009	1.458	0.005	0.48	0.91	0.23	0.45	0.06	0.12	0.00	0.00	0.36	0.68
440	2.326	0.008	1.484	0.005	0.49	0.85	0.24	0.42	0.06	0.11	0.00	0.00	0.37	0.64
450	2.467	0.009	1.870	0.006	0.61	0.90	0.30	0.44	0.08	0.11	0.00	0.00	0.46	0.67
460	2.694	0.010	2.354	0.008	0.77	0.98	0.38	0.48	0.10	0.12	0.00	0.00	0.58	0.74
470	2.992	0.011	2.903	0.009	0.95	1.09	0.47	0.54	0.12	0.14	0.00	0.00	0.71	0.82
480	3.267	0.012	3.411	0.011	1.12	1.19	0.55	0.58	0.14	0.15	0.00	0.00	0.84	0.89
490	3.522	0.013	3.886	0.013	1.28	1.28	0.63	0.63	0.16	0.16	0.00	0.00	0.96	0.96
500	3.749	0.013	4.302	0.014	1.41	1.37	0.69	0.67	0.18	0.17	0.00	0.00	1.06	1.02
510	3.839	0.014	4.637	0.015	1.52	1.40	0.75	0.69	0.19	0.18	0.00	0.00	1.14	1.05
520	3.689	0.013	4.695	0.015	1.54	1.35	0.76	0.66	0.20	0.17	0.00	0.00	1.16	1.01
530	3.506	0.013	4.732	0.015	1.56	1.28	0.76	0.63	0.20	0.16	0.00	0.00	1.16	0.96
540	3.300	0.012	4.737	0.015	1.56	1.20	0.76	0.59	0.20	0.15	0.00	0.00	1.17	0.90
550	3.097	0.011	4.719	0.015	1.55	1.13	0.76	0.55	0.20	0.14	0.00	0.00	1.16	0.85
560	2.916	0.010	4.702	0.015	1.55	1.06	0.76	0.52	0.20	0.13	0.00	0.00	1.16	0.80
570	2.736	0.010	4.695	0.015	1.54	1.00	0.76	0.49	0.20	0.13	0.00	0.00	1.16	0.75
580	2.596	0.009	4.605	0.015	1.51	0.95	0.74	0.46	0.19	0.12	0.00	0.00	1.13	0.71
590	2.555	0.009	4.516	0.015	1.48	0.93	0.73	0.46	0.19	0.12	0.00	0.00	1.11	0.70
600	2.499	0.009	4.440	0.014	1.46	0.91	0.72	0.45	0.18	0.12	0.00	0.00	1.09	0.68
610	2.441	0.009	4.373	0.014	1.44	0.89	0.70	0.44	0.18	0.11	0.00	0.00	1.08	0.67
620	2.398	0.009	4.280	0.014	1.41	0.87	0.69	0.43	0.18	0.11	0.00	0.00	1.05	0.65
630	2.356	0.008	4.254	0.014	1.40	0.86	0.69	0.42	0.18	0.11	0.00	0.00	1.05	0.64
640	2.318	0.008	4.236	0.014	1.39	0.85	0.68	0.41	0.18	0.11	0.00	0.00	1.04	0.63
650	2.276	0.008	4.223	0.014	1.39	0.83	0.68	0.41	0.18	0.11	0.00	0.00	1.04	0.62
660	2.163	0.008	4.140	0.013	1.36	0.79	0.67	0.39	0.17	0.10	0.00	0.00	1.02	0.59
670	2.007	0.007	4.017	0.013	1.32	0.73	0.65	0.36	0.17	0.09	0.00	0.00	0.99	0.55
680	1.857	0.007	3.918	0.013	1.29	0.68	0.63	0.33	0.16	0.09	0.00	0.00	0.96	0.51
690	1.716	0.006	3.845	0.012	1.26	0.63	0.62	0.31	0.16	0.08	0.00	0.00	0.95	0.47
700	1.598	0.006	3.778	0.012	1.24	0.58	0.61	0.29	0.16	0.07	0.00	0.00	0.93	0.44
710	1.521	0.005	3.633	0.012	1.19	0.55	0.59	0.27	0.15	0.07	0.00	0.00	0.89	0.42
720	1.432	0.005	3.521	0.011	1.16	0.52	0.57	0.26	0.15	0.07	0.00	0.00	0.87	0.39
730	1.375	0.005	3.399	0.011	1.12	0.50	0.55	0.25	0.14	0.06	0.00	0.00	0.84	0.38
740	1.342	0.005	3.311	0.011	1.09	0.49	0.53	0.24	0.14	0.06	0.00	0.00	0.81	0.37
750	1.312	0.005	3.304	0.011	1.09	0.48	0.53	0.23	0.14	0.06	0.00	0.00	0.81	0.36
760	1.289	0.005	3.236	0.010	1.06	0.47	0.52	0.23	0.13	0.06	0.00	0.00	0.80	0.35
770	1.270	0.005	3.152	0.010	1.04	0.46	0.51	0.23	0.13	0.06	0.00	0.00	0.78	0.35
780	1.278	0.005	3.050	0.010	1.00	0.47	0.49	0.23	0.13	0.06	0.00	0.00	0.75	0.35
790	1.286	0.005	2.971	0.010	0.98	0.47	0.48	0.23	0.12	0.06	0.00	0.00	0.73	0.35
800	1.321	0.005	2.955	0.010	0.97	0.48	0.48	0.24	0.12	0.06	0.00	0.00	0.73	0.36
810	1.368	0.005	2.895	0.009	0.95	0.50	0.47	0.24	0.12	0.06	0.00	0.00	0.71	0.37
820	1.399	0.005	2.813	0.009	0.92	0.51	0.45	0.25	0.12	0.06	0.00	0.00	0.69	0.38
830	1.427	0.005	2.733	0.009	0.90	0.52	0.44	0.26	0.11	0.07	0.00	0.00	0.67	0.39
840	1.419	0.005	2.633	0.009	0.87	0.52	0.42	0.25	0.11	0.07	0.00	0.00	0.65	0.39
850	1.371	0.005	2.529	0.008	0.83	0.50	0.41	0.25	0.11	0.06	0.00	0.00	0.62	0.37
860	1.341	0.005	2.459	0.008	0.81	0.49	0.40	0.24	0.10	0.06	0.00	0.00	0.61	0.37
870	1.331	0.005	2.366	0.008	0.78	0.49	0.38	0.24	0.10	0.06	0.00	0.00	0.58	0.36
880	1.303	0.005	2.323	0.008	0.76	0.48	0.37	0.23	0.10	0.06	0.00	0.00	0.57	0.36
890	1.255	0.005	2.265	0.007	0.74	0.46	0.37	0.22	0.09	0.06	0.00	0.00	0.56	0.34
900	1.311	0.005	2.228	0.007	0.73	0.48	0.36	0.23	0.09	0.06	0.00	0.00	0.55	0.36
910	1.315	0.005	2.228	0.007	0.73	0.48	0.36	0.24	0.09	0.06	0.00	0.00	0.55	0.36
920	1.274	0.005	2.265	0.007	0.74	0.46	0.37	0.23	0.09	0.06	0.00	0.00	0.56	0.35
930	1.301	0.005	2.266	0.007	0.74	0.47	0.37	0.23	0.09	0.06	0.00	0.00	0.56	0.36
940	1.307	0.005	2.178	0.007	0.72	0.48	0.35	0.23	0.09	0.06	0.00	0.00	0.54	0.36
950	1.298	0.005	2.030	0.007	0.67	0.47	0.33	0.23	0.08	0.06	0.00	0.00	0.50	0.35
960	1.295	0.005	1.904	0.006	0.63	0.47	0.31	0.23	0.08	0.06	0.00	0.00	0.47	0.35
970	1.285	0.005	1.817	0.006	0.60	0.47	0.29	0.23	0.08	0.06	0.00	0.00	0.45	0.35
980	1.257	0.005	1.739	0.006	0.57	0.46	0.28	0.22	0.07	0.06	0.00	0.00	0.43	0.34
990	1.203	0.004	1.670	0.005	0.55	0.44	0.27	0.22	0.07	0.06	0.00	0.00	0.41	0.33
1000	1.164	0.004	1.622	0.005	0.53	0.42	0.26	0.21	0.07	0.05	0.00	0.00	0.40	0.32
1010	1.156	0.004	1.475	0.005	0.48	0.42	0.24	0.21	0.06	0.05	0.00	0.00	0.36	0.32
1020	1.122	0.004	1.318	0.004	0.43	0.41	0.21	0.20	0.05	0.05	0.00	0.00	0.32	0.31
1030	1.095	0.004	1.235	0.004	0.41	0.40	0.20	0.20	0.05	0.05	0.00	0.00	0.30	0.30
1040	1.091	0.004	1.156	0.004	0.38	0.40	0.19	0.20	0.05	0.05	0.00	0.00	0.28	0.30
1050	1.038	0.004	1.096	0.004	0.36	0.38	0.18	0.19	0.05	0.05	0.00	0.00	0.27	0.28
1060	0.968	0.003	1.034	0.003	0.34	0.35	0.17	0.17	0.04	0.04	0.00	0.00	0.25	0.26
1070	0.943	0.003	0.970	0.003	0.32	0.34	0.16	0.17	0.04	0.04	0.00	0.00	0.24	0.26
1080	0.931	0.003	0.940	0.003	0.31	0.34	0.15	0.17	0.04	0.04	0.00	0.00	0.23	0.25
1090	0.872	0.003	0.911	0.003	0.30	0.32	0.15	0.16	0.04	0.04	0.00	0.00	0.22	0.24
1100	0.827	0.003	0.893	0.003	0.29	0.30	0.14	0.15	0.04	0.04	0.00	0.00	0.22	0.23
1110	0.774	0.003	0.884	0.003	0.29	0.28	0.14	0.14	0.04	0.04	0.00	0.00	0.22	0.21
1120	0.772	0.003	0.908	0.003	0.30	0.28	0.15	0.14	0.04	0.04	0.00	0.00	0.22	0.21
1130	0.725	0.003	0.794	0.003	0.26	0.26	0.13	0.13	0.03	0.03	0.00	0.00	0.20	0.20
1140	0.669	0.002	0.724	0.002	0.24	0.24	0.12	0.12	0.03	0.03	0.00	0.00	0.18	0.18
1150	0.681	0.002	0.764	0.002	0.25	0.25	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.19
1160	0.671	0.002	0.753	0.002	0.25	0.24	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.18
1170	0.661	0.002	0.742	0.002	0.24	0.24	0.12	0.12	0.03	0.03	0.00	0.00	0.18	0.18
1180	0.651	0.002	0.731	0.002	0.24	0.24	0.12	0.12	0.03	0.03	0.00	0.00	0.18	0.18
1190	0.641	0.002	0.720	0.002	0.24	0.23	0.12	0.11	0.03	0.03	0.00	0.00	0.18	0.18
1200	0.631	0.002	0.709	0.002	0.23	0.23	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.17
1210	0.621	0.002	0.698	0.002	0.23	0.23	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.17
1220	0.611	0.002	0.687	0.002	0.23	0.22	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.17
1230	0.601	0.002	0.676	0.002	0.22	0.22	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.16
1240	0.591	0.002	0.665	0.002	0.22	0.22	0.11	0.11	0.03	0.03	0.00	0.00	0.16	0.16
1250	0.581	0.002	0.654	0.002	0.21	0.21	0.11	0.10	0.03	0.03	0.00	0.00	0.16	0.16
1260	0.571	0.002	0.643	0.002	0.21	0.21	0.10	0.10	0.03	0.03	0.00	0.00	0.16	0.16
1270	0.561	0.002	0.632	0.002	0.21	0.20	0.10	0.10	0.03	0.03	0.00	0.00	0.16	0.15
1280	0.551	0.002	0.621	0.002	0.20	0.20	0.10	0.10	0.03	0.03	0.00	0.00	0.15	0.15
1290	0.541	0.002	0.610	0.002	0.20	0.20	0.10	0.10	0.03	0.02	0.00	0.00	0.15	0.15
1300	0.531	0.002	0.599	0.002	0.20	0.19	0.10	0.09	0.02	0.02	0.00	0.00	0.15	0.15
1310	0.521	0.002	0.588	0.002	0.19	0.19	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14
1320	0.511	0.002	0.577	0.002	0.19	0.19	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14
1330	0.501	0.002	0.566	0.002	0.19	0.18	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14
1340	0.491	0.002	0.555	0.002	0.18	0.18	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.13
1350	0.481	0.002	0.544	0.002	0.18	0.18	0.09	0.09	0.02	0.02	0.00	0.00	0.13	0.13
1360	0.471	0.002	0.533	0.002	0.18	0.17	0.09	0.08	0.02	0.02	0.00	0.00	0.13	0.13
1370	0.461	0.002	0.522	0.002	0.17	0.17	0.08	0.08	0.02	0.02	0.00	0.00	0.13	0.13
1380	0.451	0.002	0.511	0.002	0.17	0.16	0.08	0.08	0.02	0.02	0.00	0.00	0.13	0.12
1390	0.441	0.002	0.500	0.002	0.16	0.16	0.08	0.08	0.02	0.02	0.00	0.00	0.12	0.12
1400	0.431	0.002	0.489	0.002	0.16	0.16	0.08	0.08	0.02	0.02	0.00	0.00	0.12	0.12
1410	0.421	0.002	0.478	0.002	0.16	0.15	0.08	0.08	0.02	0.02	0.00	0.00	0.12	0.11
1420	0.411	0.001	0.467	0.002	0.15	0.15	0.08	0.07	0.02	0.02	0.00	0.00	0.11	0.11
1430	0.401	0.001	0.456	0.001	0.15	0.15	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.11
1440	0.391	0.001	0.445	0.001	0.15	0.14	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.11
1450	0.381	0.001	0.434	0.001	0.14	0.14	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.10
1460	0.371	0.001	0.423	0.001	0.14	0.14	0.07	0.07	0.02	0.02	0.00	0.00	0.10	0.10
1470	0.361	0.001	0.412	0.001	0.14	0.13	0.07	0.06	0.02	0.02	0.00	0.00	0.10	0.10
1480	0.351	0.001	0.401	0.001	0.13	0.13	0.06	0.06	0.02	0.02	0.00	0.00	0.10	0.10
1490	0.341	0.001	0.390	0.001	0.13	0.12	0.06	0.06	0.02	0.02	0.00	0.00	0.10	0.09
1500	0.331	0.001	0.379	0.001	0.12	0.12	0.06	0.06	0.02	0.02	0.00	0.00	0.09	0.09
1510	0.321	0.001	0.368	0.001	0.12	0.12	0.06	0.06	0.02	0.01	0.00	0.00	0.09	0.09
1520	0.311	0.001	0.357	0.001	0.12	0.11	0.06	0.06	0.01	0.01	0.00	0.00	0.09	0.08
1530	0.301	0.001	0.346	0.001	0.11	0.11	0.06	0.05	0.01	0.01	0.00	0.00	0.09	0.08
1540	0.291	0.001	0.335	0.001	0.11	0.11	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08
1550	0.281	0.001	0.324	0.001	0.11	0.10	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08
1560	0.271	0.001	0.313	0.001	0.10	0.10	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.07
1570	0.261	0.001	0.302	0.001	0.10	0.10	0.05	0.05	0.01	0.01	0.00	0.00	0.07	0.07
1580	0.251	0.001	0.291	0.001	0.10	0.09	0.05	0.04	0.01	0.01	0.00	0.00	0.07	0.07
1590	0.241	0.001	0.280	0.001	0.09	0.09	0.05	0.04	0.01	0.01	0.00	0.00	0.07	0.07
1600	0.231	0.001	0.269	0.001	0.09	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.07	0.06
1610	0.221	0.001	0.258	0.001	0.08	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.06
1620	0.211	0.001	0.247	0.001	0.08	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.06
1630	0.201	0.001	0.236	0.001	0.08	0.07	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.05
1640	0.191	0.001	0.225	0.001	0.07	0.07	0.04	0.03	0.01	0.01	0.00	0.00	0.06	0.05
1650	0.181	0.001	0.214	0.001	0.07	0.07	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.05
1660	0.171	0.001	0.203	0.001	0.07	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.05
1670	0.161	0.001	0.192	0.001	0.06	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.04
1680	0.151	0.001	0.181	0.001	0.06	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.04	0.04
1690	0.141	0.001	0.170	0.001	0.06	0.05	0.03	0.03	0.01	0.01	0.00	0.00	0.04	0.04
1700	0.131	0.000	0.159	0.001	0.05	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.04	0.04
1710	0.121	0.000	0.148	0.000	0.05	0.04	0.02	0.02	0.01	0.01	0.00	0.00	0.04	0.03
1720	0.111	0.000	0.137	0.000	0.05	0.04	0.02	0.02	0.01	0.01	0.00	0.00	0.03	0.03
1730	0.101	0.000	0.126	0.000	0.04	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.03	0.03
1740	0.091	0.000	0.115	0.000	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.02
1750	0.081	0.000	0.104	0.000	0.03	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.03	0.02
1760	0.071	0.000	0.093	0.000	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02
1770	0.061	0.000	0.082	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02
1780	0.051	0.000	0.071	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01
1790	0.041	0.000	0.060	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
1800	0.031	0.000	0.049	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01

SD-630	Cardiff	0	0	Avg. Net SL	5.28	2.73	0.32	-2.10	6.23					
SD-630	513.913	0	488.544	1808			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft^2/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	1.123	0.002	1.209	0.002	0.16	0.14	0.08	0.07	0.01	0.01	0.00	0.00	0.18	0.16
10	1.475	0.003	1.577	0.003	0.20	0.18	0.11	0.09	0.01	0.01	0.00	0.00	0.24	0.21
20	3.577	0.007	3.748	0.008	0.48	0.44	0.25	0.23	0.03	0.03	0.00	0.00	0.57	0.52
30	5.485	0.011	5.785	0.012	0.75	0.67	0.39	0.35	0.05	0.04	0.00	0.00	0.88	0.79
40	6.164	0.012	6.451	0.013	0.83	0.75	0.43	0.39	0.05	0.05	0.00	0.00	0.98	0.89
50	6.742	0.013	6.470	0.013	0.83	0.83	0.43	0.43	0.05	0.05	0.00	0.00	0.98	0.97
60	7.154	0.014	5.793	0.012	0.75	0.88	0.39	0.45	0.05	0.05	0.00	0.00	0.88	1.03
70	7.416	0.014	5.270	0.011	0.68	0.91	0.35	0.47	0.04	0.06	0.00	0.00	0.80	1.07
80	7.705	0.015	5.198	0.011	0.67	0.94	0.35	0.49	0.04	0.06	0.00	0.00	0.79	1.11
90	7.892	0.015	5.150	0.011	0.66	0.97	0.34	0.50	0.04	0.06	0.00	0.00	0.78	1.14
100	8.461	0.016	5.535	0.011	0.71	1.04	0.37	0.54	0.04	0.06	0.00	0.00	0.84	1.22
110	9.379	0.018	6.359	0.013	0.82	1.15	0.42	0.59	0.05	0.07	0.00	0.00	0.97	1.36
120	9.517	0.019	6.490	0.013	0.84	1.17	0.43	0.60	0.05	0.07	0.00	0.00	0.99	1.38
130	9.208	0.018	6.186	0.013	0.80	1.13	0.41	0.58	0.05	0.07	0.00	0.00	0.94	1.33
140	8.831	0.017	5.932	0.012	0.76	1.08	0.40	0.56	0.05	0.07	0.00	0.00	0.90	1.28
150	8.367	0.016	5.742	0.012	0.74	1.02	0.38	0.53	0.05	0.06	0.00	0.00	0.87	1.21
160	7.888	0.015	5.569	0.011	0.72	0.97	0.37	0.50	0.04	0.06	0.00	0.00	0.85	1.14
170	7.344	0.014	5.232	0.011	0.67	0.90	0.35	0.47	0.04	0.06	0.00	0.00	0.80	1.06
180	6.820	0.013	4.804	0.010	0.62	0.83	0.32	0.43	0.04	0.05	0.00	0.00	0.73	0.99
190	6.470	0.013	4.479	0.009	0.58	0.79	0.30	0.41	0.04	0.05	0.00	0.00	0.68	0.94
200	6.488	0.013	4.555	0.009	0.59	0.79	0.30	0.41	0.04	0.05	0.00	0.00	0.69	0.94
210	6.673	0.013	4.851	0.010	0.62	0.82	0.32	0.42	0.04	0.05	0.00	0.00	0.74	0.96
220	6.690	0.013	4.944	0.010	0.64	0.82	0.33	0.42	0.04	0.05	0.00	0.00	0.75	0.97
230	6.557	0.013	4.896	0.010	0.63	0.80	0.33	0.42	0.04	0.05	0.00	0.00	0.74	0.95
240	6.399	0.012	4.831	0.010	0.62	0.78	0.32	0.41	0.04	0.05	0.00	0.00	0.73	0.92
250	6.244	0.012	4.760	0.010	0.61	0.76	0.32	0.40	0.04	0.05	0.00	0.00	0.72	0.90
260	5.990	0.012	4.599	0.009	0.59	0.73	0.31	0.38	0.04	0.04	0.00	0.00	0.70	0.87
270	5.685	0.011	4.385	0.009	0.56	0.70	0.29	0.36	0.03	0.04	0.00	0.00	0.67	0.82
280	5.389	0.010	4.132	0.008	0.53	0.66	0.28	0.34	0.03	0.04	0.00	0.00	0.63	0.78
290	5.105	0.010	3.844	0.008	0.50	0.63	0.26	0.32	0.03	0.04	0.00	0.00	0.58	0.74
300	4.841	0.009	3.547	0.007	0.46	0.59	0.24	0.31	0.03	0.04	0.00	0.00	0.54	0.70
310	4.759	0.009	3.417	0.007	0.44	0.58	0.23	0.30	0.03	0.04	0.00	0.00	0.52	0.69
320	4.795	0.009	3.403	0.007	0.44	0.59	0.23	0.30	0.03	0.04	0.00	0.00	0.52	0.69
330	4.892	0.010	3.454	0.007	0.44	0.60	0.23	0.31	0.03	0.04	0.00	0.00	0.53	0.71
340	5.029	0.010	3.538	0.007	0.46	0.62	0.24	0.32	0.03	0.04	0.00	0.00	0.54	0.73
350	5.179	0.010	3.676	0.008	0.47	0.63	0.25	0.33	0.03	0.04	0.00	0.00	0.56	0.75
360	5.312	0.010	3.840	0.008	0.49	0.65	0.26	0.34	0.03	0.04	0.00	0.00	0.58	0.77
370	5.414	0.011	3.975	0.008	0.51	0.66	0.27	0.34	0.03	0.04	0.00	0.00	0.60	0.78
380	5.510	0.011	4.087	0.008	0.53	0.67	0.27	0.35	0.03	0.04	0.00	0.00	0.62	0.80
390	5.606	0.011	4.198	0.009	0.54	0.69	0.28	0.36	0.03	0.04	0.00	0.00	0.64	0.81
400	5.679	0.011	4.327	0.009	0.56	0.70	0.29	0.36	0.03	0.04	0.00	0.00	0.66	0.82
410	5.744	0.011	4.433	0.009	0.57	0.70	0.30	0.36	0.03	0.04	0.00	0.00	0.67	0.83
420	5.829	0.011	4.521	0.009	0.58	0.71	0.30	0.37	0.04	0.04	0.00	0.00	0.69	0.84
430	5.971	0.012	4.647	0.010	0.60	0.73	0.31	0.38	0.04	0.04	0.00	0.00	0.71	0.86
440	6.134	0.012	4.784	0.010	0.62	0.75	0.32	0.39	0.04	0.05	0.00	0.00	0.73	0.89
450	6.276	0.012	4.918	0.010	0.63	0.77	0.33	0.40	0.04	0.05	0.00	0.00	0.75	0.91
460	6.410	0.012	5.044	0.010	0.65	0.78	0.34	0.41	0.04	0.05	0.00	0.00	0.77	0.93
470	6.544	0.013	5.128	0.010	0.66	0.80	0.34	0.42	0.04	0.05	0.00	0.00	0.78	0.95
480	6.668	0.013	5.213	0.011	0.67	0.82	0.35	0.42	0.04	0.05	0.00	0.00	0.79	0.96
490	6.699	0.013	5.297	0.011	0.68	0.82	0.35	0.42	0.04	0.05	0.00	0.00	0.81	0.97
500	6.640	0.013	5.338	0.011	0.69	0.81	0.36	0.42	0.04	0.05	0.00	0.00	0.81	0.96
510	6.565	0.013	5.364	0.011	0.69	0.80	0.36	0.42	0.04	0.05	0.00	0.00	0.82	0.95
520	6.480	0.013	5.387	0.011	0.69	0.79	0.36	0.41	0.04	0.05	0.00	0.00	0.82	0.94
530	5.845	0.011	4.897	0.010	0.63	0.72	0.33	0.37	0.04	0.04	0.00	0.00	0.74	0.84
540	5.470	0.011	4.677	0.010	0.60	0.67	0.31	0.35	0.04	0.04	0.00	0.00	0.71	0.79
550	5.378	0.010	4.746	0.010	0.61	0.66	0.32	0.34	0.04	0.04	0.00	0.00	0.72	0.78
560	5.247	0.010	4.806	0.010	0.62	0.64	0.32	0.33	0.04	0.04	0.00	0.00	0.73	0.76
570	5.101	0.010	4.866	0.010	0.63	0.62	0.32	0.32	0.04	0.04	0.00	0.00	0.74	0.74
580	4.948	0.010	4.921	0.010	0.63	0.61	0.33	0.31	0.04	0.04	0.00	0.00	0.75	0.72
590	4.777	0.009	4.953	0.010	0.64	0.58	0.33	0.30	0.04	0.04	0.00	0.00	0.75	0.69
600	4.626	0.009	4.967	0.010	0.64	0.57	0.33	0.29	0.04	0.03	0.00	0.00	0.76	0.67
610	4.481	0.009	4.956	0.010	0.64	0.55	0.33	0.28	0.04	0.03	0.00	0.00	0.75	0.65
620	4.357	0.008	4.924	0.010	0.63	0.53	0.33	0.28	0.04	0.03	0.00	0.00	0.75	0.63
630	4.260	0.008	4.854	0.010	0.63	0.52	0.32	0.27	0.04	0.03	0.00	0.00	0.74	0.62
640	4.129	0.008	4.755	0.010	0.61	0.51	0.32	0.26	0.04	0.03	0.00	0.00	0.72	0.60
650	3.956	0.008	4.656	0.010	0.60	0.48	0.31	0.25	0.04	0.03	0.00	0.00	0.71	0.57
660	3.752	0.007	4.561	0.009	0.59	0.46	0.30	0.24	0.04	0.03	0.00	0.00	0.69	0.54
670	3.520	0.007	4.452	0.009	0.57	0.43	0.30	0.22	0.04	0.03	0.00	0.00	0.68	0.51
680	3.289	0.006	4.327	0.009	0.56	0.40	0.29	0.21	0.03	0.02	0.00	0.00	0.66	0.48
690	3.098	0.006	4.219	0.009	0.54	0.38	0.28	0.20	0.03	0.02	0.00	0.00	0.64	0.45
700	2.865	0.006	4.039	0.008	0.52	0.35	0.27	0.18	0.03	0.02	0.00	0.00	0.61	0.41
710	2.734	0.005	3.924	0.008	0.51	0.33	0.26	0.17	0.03	0.02	0.00	0.00	0.60	0.40
720	2.659	0.005	3.866	0.008	0.50	0.33	0.26	0.17	0.03	0.02	0.00	0.00	0.59	0.38
730	2.546	0.005	3.815	0.008	0.49	0.31	0.25	0.16	0.03	0.02	0.00	0.00	0.58	0.37
740	2.443	0.005	3.801	0.008	0.49	0.30	0.25	0.15	0.03	0.02	0.00	0.00	0.58	0.35
750	2.358	0.005	3.785	0.008	0.49	0.29	0.25	0.15	0.03	0.02	0.00	0.00	0.58	0.34
760	2.247	0.004	3.753	0.008	0.48	0.28	0.25	0.14	0.03	0.02	0.00	0.00	0.57	0.32
770	2.216	0.004	3.717	0.008	0.48	0.27	0.25	0.14	0.03	0.02	0.00	0.00	0.57	0.32
780	2.267	0.004	3.686	0.008	0.47	0.28	0.25	0.14	0.03	0.02	0.00	0.00	0.56	0.33
790	2.315	0.005	3.689	0.008	0.48	0.28	0.25	0.15	0.03	0.02	0.00	0.00	0.56	0.33
800	2.307	0.004	3.645	0.007	0.47	0.28	0.24	0.15	0.03	0.02	0.00	0.00	0.55	0.33
810	2.202	0.004	3.530	0.007	0.45	0.27	0.24	0.14	0.03	0.02	0.00	0.00	0.54	0.32
820	2.133	0.004	3.384	0.007	0.44	0.26	0.23	0.14	0.03	0.02	0.00	0.00	0.51	0.31
830	2.113	0.004	3.268	0.007	0.42	0.26	0.22	0.13	0.03	0.02	0.00	0.00	0.50	0.31
840	2.072	0.004	3.173	0.006	0.41	0.25	0.21	0.13	0.03	0.02	0.00	0.00	0.48	0.30
850	2.009	0.004	3.063	0.006	0.39	0.25	0.20	0.13	0.02	0.02	0.00	0.00	0.47	0.29
860	1.994	0.004	3.045	0.006	0.39	0.24	0.20	0.13	0.02	0.01	0.00	0.00	0.46	0.29
870	2.048	0.004	3.125	0.006	0.40	0.25	0.21	0.13	0.02	0.02	0.00	0.00	0.48	0.30
880	2.113	0.004	3.197	0.007	0.41	0.26	0.21	0.13	0.03	0.02	0.00	0.00	0.49	0.31
890	2.171	0.004	3.252	0.007	0.42	0.27	0.22	0.14	0.03	0.02	0.00	0.00	0.49	0.31
900	2.191	0.004	3.246	0.007	0.42	0.27	0.22	0.14	0.03	0.02	0.00	0.00	0.49	0.32
910	2.163	0.004	3.170	0.006	0.41	0.26	0.21	0.14	0.02	0.02	0.00	0.00	0.48	0.31
920	2.119	0.004	3.071	0.006	0.40	0.26	0.20	0.13	0.02	0.02	0.00	0.00	0.47	0.31
930	2.084	0.004	2.977	0.006	0.38	0.26	0.20	0.13	0.02	0.02	0.00	0.00	0.45	0.30
940	2.042	0.004	2.865	0.006	0.37	0.25	0.19	0.13	0.02	0.02	0.00	0.00	0.44	0.30
950	1.962	0.004	2.742	0.006	0.35	0.24	0.18	0.12	0.02	0.01	0.00	0.00	0.42	0.28
960	1.890	0.004	2.634	0.005	0.34	0.23	0.18	0.12	0.02	0.01	0.00	0.00	0.40	0.27
970	1.826	0.004	2.570	0.005	0.33	0.22	0.17	0.12	0.02	0.01	0.00	0.00	0.39	0.26
980	1.740	0.003	2.524	0.005	0.33	0.21	0.17	0.11	0.02	0.01	0.00	0.00	0.38	0.25
990	1.651	0.003	2.470	0.005	0.32	0.20	0.16	0.10	0.02	0.01	0.00	0.00	0.38	0.24
1000	1.575	0.003	2.409	0.005	0.31	0.19	0.16	0.10	0.02	0.01	0.00	0.00	0.37	0.23
1010	1.512	0.003	2.346	0.005	0.30	0.19	0.16	0.10	0.02	0.01	0.00	0.00	0.36	0.22
1020	1.463	0.003	2.269	0.005	0.29	0.18	0.15	0.09	0.02	0.01	0.00	0.00	0.35	0.21
1030	1.413	0.003	2.190	0.004	0.28	0.17	0.15	0.09	0.02	0.01	0.00	0.00	0.33	0.20
1040	1.353	0.003	2.125	0.004	0.27	0.17	0.14	0.09	0.02	0.01	0.00	0.00	0.32	0.20
1050	1.331	0.003	2.078	0.004	0.27	0.16	0.14	0.08	0.02	0.01	0.00	0.00	0.32	0.19
1060	1.287	0.003	2.004	0.004	0.26	0.16	0.13	0.08	0.02	0.01	0.00	0.00	0.30	0.19
1070	1.170	0.002	1.893	0.004	0.24	0.14	0.13	0.07	0.01	0.01	0.00	0.00	0.29	0.17
1080	1.079	0.002	1.805	0.004	0.23	0.13	0.12	0.07	0.01	0.01	0.00	0.00	0.27	0.16
1090	1.053	0.002	1.701	0.003	0.22	0.13	0.11	0.07	0.01	0.01	0.00	0.00	0.26	0.15
1100	1.050	0.002	1.609	0.003	0.21	0.13	0.11	0.07	0.01	0.01	0.00	0.00	0.24	0.15
1110	1.033	0.002	1.551	0.003	0.20	0.13	0.10	0.07	0.01	0.01	0.00	0.00	0.24	0.15
1120	0.963	0.002	1.466	0.003	0.19	0.12	0.10	0.06	0.01	0.01	0.00	0.00	0.22	0.14
1130	0.912	0.002	1.385	0.003	0.18	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.21	0.13
1140	0.907	0.002	1.305	0.003	0.17	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.20	0.13
1150	0.856	0.002	1.255	0.003	0.16	0.10	0.08	0.05	0.01	0.01	0.00	0.00	0.19	0.12
1160	0.795	0.002	1.234	0.003	0.16	0.10	0.08	0.05	0.01	0.01	0.00	0.00	0.19	0.11
1170	0.734	0.001	1.189	0.002	0.15	0.09	0.08	0.05	0.01	0.01	0.00	0.00	0.18	0.11
1180	0.674	0.001	1.078	0.002	0.14	0.08	0.07	0.04	0.01	0.01	0.00	0.00	0.16	0.10
1190	0.638	0.001	0.965	0.002	0.12	0.08	0.06	0.04	0.01	0.00	0.00	0.00	0.15	0.09
1200	0.614	0.001	0.905	0.002	0.12	0.08	0.06	0.04	0.01	0.00	0.00	0.00	0.14	0.09
1210	0.595	0.001	0.858	0.002	0.11	0.07	0.06	0.04	0.01	0.00	0.00	0.00	0.13	0.09
1220	0.603	0.001	0.800	0.002	0.10	0.07	0.05	0.04	0.01	0.00	0.00	0.00	0.12	0.09
1230	0.695	0.001	0.825	0.002	0.11	0.09	0.06	0.04	0.01	0.01	0.00	0.00	0.13	0.10
1240	0.688	0.001	0.793	0.002	0.10	0.08	0.05	0.04	0.01	0.01	0.00	0.00	0.12	0.10
1250	0.648	0.001	0.709	0.001	0.09	0.08	0.05	0.04	0.01	0.00	0.00	0.00	0.11	0.09
1260	0.638	0.001	0.699	0.001	0.09	0.08	0.05	0.04	0.01	0.00	0.00	0.00	0.11	0.09
1270	0.692	0.001	0.751	0.002	0.10	0.08	0.05	0.04	0.01	0.01	0.00	0.00	0.11	0.10
1280	0.657	0.001	0.701	0.001	0.09	0.08	0.05	0.04	0.01	0.00	0.00	0.00	0.11	0.09
1290	0.640	0.001	0.695	0.001	0.09	0.08	0.05	0.04	0.01	0.00	0.00	0.00	0.11	0.09
1300	0.600	0.001	0.673	0.001	0.09	0.07	0.04	0.04	0.01	0.00	0.00	0.00	0.10	0.09
1310	0.549	0.001	0.640	0.001	0.08	0.07	0.04	0.03	0.01	0.00	0.00	0.00	0.10	0.08
1320	0.522	0.001	0.617	0.001	0.08	0.06	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.08
1330	0.576	0.001	0.658	0.001	0.08	0.07	0.04	0.04	0.01	0.00	0.00	0.00	0.10	0.08
1340	0.581	0.001	0.652	0.001	0.08	0.07	0.04	0.04	0.01	0.00	0.00	0.00	0.10	0.08
1350	0.517	0.001	0.624	0.001	0.08	0.06	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.07
1360	0.433	0.001	0.588	0.001	0.08	0.05	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.06
1370	0.376	0.001	0.578	0.001	0.07	0.05	0.04	0.02	0.00	0.00	0.00	0.00	0.09	0.05
1380	0.350	0.001	0.563	0.001	0.07	0.04	0.04	0.02	0.00	0.00	0.00	0.00	0.09	0.05
1390	0.338	0.001	0.500	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.08	0.05
1400	0.331	0.001	0.487	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05
1410	0.324	0.001	0.476	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05
1420	0.317	0.001	0.465	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05
1430	0.310	0.001	0.454	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04
1440	0.303	0.001	0.443	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04
1450	0.296	0.001	0.432	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04
1460	0.289	0.001	0.421	0.001	0.05	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04
1470	0.282	0.001	0.410	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04
1480	0.275	0.001	0.399	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04
1490	0.268	0.001	0.388	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04
1500	0.261	0.001	0.377	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04
1510	0.254	0.000	0.366	0.001	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.06	0.04
1520	0.247	0.000	0.355	0.001	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.04
1530	0.240	0.000	0.344	0.001	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.03
1540	0.233	0.000	0.333	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03
1550	0.226	0.000	0.322	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03
1560	0.219	0.000	0.311	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03
1570	0.212	0.000	0.300	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03
1580	0.205	0.000	0.289	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03
1590	0.198	0.000	0.278	0.001	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03
1600	0.191	0.000	0.267	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03
1610	0.184	0.000	0.256	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03
1620	0.177	0.000	0.245	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03
1630	0.170	0.000	0.234	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.02
1640	0.163	0.000	0.223	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02
1650	0.156	0.000	0.212	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02
1660	0.149	0.000	0.201	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02
1670	0.142	0.000	0.190	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02
1680	0.135	0.000	0.179	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02
1690	0.128	0.000	0.168	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02
1700	0.121	0.000	0.157	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02
1710	0.114	0.000	0.146	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02
1720	0.107	0.000	0.135	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02
1730	0.100	0.000	0.124	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01
1740	0.093	0.000	0.113	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01
1750	0.086	0.000	0.102	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01
1760	0.079	0.000	0.091	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
1770	0.072	0.000	0.080	0.000	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1780	0.065	0.000	0.069	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1790	0.058	0.000	0.058	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1800	0.051	0.000	0.047	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1810	0.044	0.000	0.036	0.000	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01

SD-650	San Elijo Park	0	0	Avg. Net SL Change	0.079	1.140	1.588	1.399	1.021					
SD-650	93.595	0	109.041	1590	**Sand Depth (ft)**								*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	pring-Hdpn	pring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	1.541	0.016	1.133	0.010	0.01	0.02	0.14	0.22	0.20	0.31	0.17	0.27	0.13	0.20
40	1.643	0.018	1.061	0.010	0.01	0.02	0.13	0.24	0.18	0.33	0.16	0.29	0.12	0.21
50	2.469	0.026	1.874	0.017	0.02	0.02	0.23	0.36	0.33	0.50	0.29	0.44	0.21	0.32
60	2.150	0.023	1.612	0.015	0.01	0.02	0.20	0.31	0.28	0.43	0.25	0.38	0.18	0.28
70	1.846	0.020	1.415	0.013	0.01	0.02	0.18	0.27	0.25	0.37	0.22	0.33	0.16	0.24
80	1.674	0.018	1.327	0.012	0.01	0.02	0.17	0.24	0.23	0.34	0.20	0.30	0.15	0.22
90	1.505	0.016	1.169	0.011	0.01	0.02	0.15	0.22	0.20	0.30	0.18	0.27	0.13	0.20
100	1.258	0.013	0.944	0.009	0.01	0.01	0.12	0.18	0.16	0.25	0.14	0.22	0.11	0.16
110	1.088	0.012	0.804	0.007	0.01	0.01	0.10	0.16	0.14	0.22	0.12	0.19	0.09	0.14
120	1.046	0.011	0.718	0.007	0.01	0.01	0.09	0.15	0.12	0.21	0.11	0.19	0.08	0.14
130	1.001	0.011	0.646	0.006	0.01	0.01	0.08	0.15	0.11	0.20	0.10	0.18	0.07	0.13
140	0.890	0.010	0.537	0.005	0.00	0.01	0.07	0.13	0.09	0.18	0.08	0.16	0.06	0.12
150	0.835	0.009	0.502	0.005	0.00	0.01	0.06	0.12	0.09	0.17	0.08	0.15	0.06	0.11
160	0.837	0.009	0.545	0.005	0.00	0.01	0.07	0.12	0.09	0.17	0.08	0.15	0.06	0.11
170	0.751	0.008	0.476	0.004	0.00	0.01	0.06	0.11	0.08	0.15	0.07	0.13	0.05	0.10
180	0.745	0.008	0.487	0.004	0.00	0.01	0.06	0.11	0.08	0.15	0.07	0.13	0.05	0.10
190	0.769	0.008	0.560	0.005	0.00	0.01	0.07	0.11	0.10	0.16	0.09	0.14	0.06	0.10
200	0.860	0.009	0.700	0.006	0.01	0.01	0.09	0.12	0.12	0.17	0.11	0.15	0.08	0.11
210	1.045	0.011	0.912	0.008	0.01	0.01	0.11	0.15	0.16	0.21	0.14	0.19	0.10	0.14
220	1.224	0.013	1.064	0.010	0.01	0.01	0.13	0.18	0.18	0.25	0.16	0.22	0.12	0.16
230	1.276	0.014	1.116	0.010	0.01	0.01	0.14	0.19	0.19	0.26	0.17	0.23	0.12	0.17
240	1.574	0.017	1.359	0.012	0.01	0.02	0.17	0.23	0.24	0.32	0.21	0.28	0.15	0.20
250	1.963	0.021	1.670	0.015	0.01	0.02	0.21	0.28	0.29	0.40	0.26	0.35	0.19	0.26
260	1.722	0.018	1.480	0.014	0.01	0.02	0.18	0.25	0.26	0.35	0.23	0.31	0.17	0.22
270	1.304	0.014	1.150	0.011	0.01	0.01	0.14	0.19	0.20	0.26	0.18	0.23	0.13	0.17
280	0.867	0.009	0.844	0.008	0.01	0.01	0.11	0.13	0.15	0.18	0.13	0.15	0.09	0.11
290	0.935	0.010	1.017	0.009	0.01	0.01	0.13	0.14	0.18	0.19	0.16	0.17	0.11	0.12
300	1.113	0.012	1.250	0.011	0.01	0.01	0.16	0.16	0.22	0.23	0.19	0.20	0.14	0.14
310	1.296	0.014	1.460	0.013	0.01	0.01	0.18	0.19	0.25	0.26	0.22	0.23	0.16	0.17
320	1.469	0.016	1.637	0.015	0.01	0.01	0.20	0.21	0.28	0.30	0.25	0.26	0.18	0.19
330	1.564	0.017	1.795	0.016	0.02	0.02	0.22	0.23	0.31	0.32	0.27	0.28	0.20	0.20
340	1.648	0.018	1.946	0.018	0.02	0.02	0.24	0.24	0.34	0.33	0.30	0.29	0.22	0.21
350	1.696	0.018	2.077	0.019	0.02	0.02	0.26	0.25	0.36	0.34	0.32	0.30	0.23	0.22
360	1.518	0.016	1.956	0.018	0.02	0.02	0.24	0.22	0.34	0.31	0.30	0.27	0.22	0.20
370	1.374	0.015	1.836	0.017	0.02	0.01	0.23	0.20	0.32	0.28	0.28	0.24	0.20	0.18
380	1.221	0.013	1.713	0.016	0.01	0.01	0.21	0.18	0.30	0.25	0.26	0.22	0.19	0.16
390	1.192	0.013	1.720	0.016	0.01	0.01	0.21	0.17	0.30	0.24	0.26	0.21	0.19	0.15
400	1.168	0.012	1.742	0.016	0.02	0.01	0.22	0.17	0.30	0.24	0.27	0.21	0.19	0.15
410	1.111	0.012	1.757	0.016	0.02	0.01	0.22	0.16	0.31	0.22	0.27	0.20	0.20	0.14
420	1.017	0.011	1.751	0.016	0.02	0.01	0.22	0.15	0.30	0.21	0.27	0.18	0.20	0.13
430	0.820	0.009	1.653	0.015	0.01	0.01	0.21	0.12	0.29	0.17	0.25	0.15	0.18	0.11
440	0.561	0.006	1.545	0.014	0.01	0.01	0.19	0.08	0.27	0.11	0.24	0.10	0.17	0.07
450	0.388	0.004	1.557	0.014	0.01	0.00	0.19	0.06	0.27	0.08	0.24	0.07	0.17	0.05
460	0.865	0.009	2.181	0.020	0.02	0.01	0.27	0.13	0.38	0.17	0.33	0.15	0.24	0.11
470	1.222	0.013	2.518	0.023	0.02	0.01	0.31	0.18	0.44	0.25	0.38	0.22	0.28	0.16
480	0.833	0.009	1.905	0.017	0.02	0.01	0.24	0.12	0.33	0.17	0.29	0.15	0.21	0.11
490	0.429	0.005	1.286	0.012	0.01	0.00	0.16	0.06	0.22	0.09	0.20	0.08	0.14	0.06
500	0.707	0.008	1.362	0.012	0.01	0.01	0.17	0.10	0.24	0.14	0.21	0.13	0.15	0.09
510	1.108	0.012	1.599	0.015	0.01	0.01	0.20	0.16	0.28	0.22	0.24	0.20	0.18	0.14
520	1.457	0.016	1.828	0.017	0.02	0.01	0.23	0.21	0.32	0.29	0.28	0.26	0.20	0.19
530	1.282	0.014	1.383	0.013	0.01	0.01	0.17	0.19	0.24	0.26	0.21	0.23	0.15	0.17
540	0.981	0.010	0.942	0.009	0.01	0.01	0.12	0.14	0.16	0.20	0.14	0.17	0.11	0.13
550	0.875	0.009	0.782	0.007	0.01	0.01	0.10	0.13	0.14	0.18	0.12	0.16	0.09	0.11
560	1.112	0.012	1.209	0.011	0.01	0.01	0.15	0.16	0.21	0.22	0.18	0.20	0.13	0.14
570	0.862	0.009	1.011	0.009	0.01	0.01	0.13	0.13	0.18	0.17	0.15	0.15	0.11	0.11
580	0.719	0.008	0.764	0.007	0.01	0.01	0.10	0.10	0.13	0.15	0.12	0.13	0.09	0.09
590	0.519	0.006	0.654	0.006	0.01	0.01	0.08	0.08	0.11	0.10	0.10	0.09	0.07	0.07
600	0.514	0.005	0.648	0.006	0.01	0.01	0.08	0.07	0.11	0.10	0.10	0.09	0.07	0.07
610	0.509	0.005	0.642	0.006	0.01	0.01	0.08	0.07	0.11	0.10	0.10	0.09	0.07	0.07
620	0.504	0.005	0.636	0.006	0.01	0.01	0.08	0.07	0.11	0.10	0.10	0.09	0.07	0.07
630	0.499	0.005	0.630	0.006	0.01	0.01	0.08	0.07	0.11	0.10	0.10	0.09	0.07	0.06
640	0.494	0.005	0.624	0.006	0.01	0.00	0.08	0.07	0.11	0.10	0.10	0.09	0.07	0.06
650	0.489	0.005	0.618	0.006	0.01	0.00	0.08	0.07	0.11	0.10	0.09	0.09	0.07	0.06
660	0.484	0.005	0.612	0.006	0.01	0.00	0.08	0.07	0.11	0.10	0.09	0.09	0.07	0.06
670	0.479	0.005	0.606	0.006	0.01	0.00	0.08	0.07	0.11	0.10	0.09	0.09	0.07	0.06
680	0.474	0.005	0.600	0.006	0.01	0.00	0.07	0.07	0.10	0.10	0.09	0.08	0.07	0.06
690	0.469	0.005	0.594	0.005	0.01	0.00	0.07	0.07	0.10	0.09	0.09	0.08	0.07	0.06
700	0.464	0.005	0.588	0.005	0.01	0.00	0.07	0.07	0.10	0.09	0.09	0.08	0.07	0.06
710	0.459	0.005	0.582	0.005	0.01	0.00	0.07	0.07	0.10	0.09	0.09	0.08	0.06	0.06
720	0.454	0.005	0.576	0.005	0.00	0.00	0.07	0.07	0.10	0.09	0.09	0.08	0.06	0.06
730	0.449	0.005	0.570	0.005	0.00	0.00	0.07	0.07	0.10	0.09	0.09	0.08	0.06	0.06
740	0.444	0.005	0.564	0.005	0.00	0.00	0.07	0.06	0.10	0.09	0.09	0.08	0.06	0.06
750	0.439	0.005	0.558	0.005	0.00	0.00	0.07	0.06	0.10	0.09	0.09	0.08	0.06	0.06
760	0.434	0.005	0.552	0.005	0.00	0.00	0.07	0.06	0.10	0.09	0.08	0.08	0.06	0.06
770	0.429	0.005	0.546	0.005	0.00	0.00	0.07	0.06	0.09	0.09	0.08	0.08	0.06	0.06
780	0.424	0.005	0.540	0.005	0.00	0.00	0.07	0.06	0.09	0.09	0.08	0.08	0.06	0.06
790	0.419	0.004	0.534	0.005	0.00	0.00	0.07	0.06	0.09	0.08	0.08	0.07	0.06	0.05
800	0.414	0.004	0.528	0.005	0.00	0.00	0.07	0.06	0.09	0.08	0.08	0.07	0.06	0.05
810	0.409	0.004	0.522	0.005	0.00	0.00	0.07	0.06	0.09	0.08	0.08	0.07	0.06	0.05
820	0.404	0.004	0.516	0.005	0.00	0.00	0.06	0.06	0.09	0.08	0.08	0.07	0.06	0.05
830	0.399	0.004	0.510	0.005	0.00	0.00	0.06	0.06	0.09	0.08	0.08	0.07	0.06	0.05
840	0.394	0.004	0.504	0.005	0.00	0.00	0.06	0.06	0.09	0.08	0.08	0.07	0.06	0.05
850	0.389	0.004	0.498	0.005	0.00	0.00	0.06	0.06	0.09	0.08	0.08	0.07	0.06	0.05
860	0.384	0.004	0.492	0.005	0.00	0.00	0.06	0.06	0.09	0.08	0.08	0.07	0.05	0.05
870	0.379	0.004	0.486	0.004	0.00	0.00	0.06	0.06	0.08	0.08	0.07	0.07	0.05	0.05
880	0.374	0.004	0.480	0.004	0.00	0.00	0.06	0.05	0.08	0.08	0.07	0.07	0.05	0.05
890	0.369	0.004	0.474	0.004	0.00	0.00	0.06	0.05	0.08	0.07	0.07	0.07	0.05	0.05
900	0.364	0.004	0.468	0.004	0.00	0.00	0.06	0.05	0.08	0.07	0.07	0.06	0.05	0.05
910	0.359	0.004	0.462	0.004	0.00	0.00	0.06	0.05	0.08	0.07	0.07	0.06	0.05	0.05
920	0.354	0.004	0.456	0.004	0.00	0.00	0.06	0.05	0.08	0.07	0.07	0.06	0.05	0.05
930	0.349	0.004	0.450	0.004	0.00	0.00	0.06	0.05	0.08	0.07	0.07	0.06	0.05	0.05
940	0.344	0.004	0.444	0.004	0.00	0.00	0.06	0.05	0.08	0.07	0.07	0.06	0.05	0.04
950	0.339	0.004	0.438	0.004	0.00	0.00	0.05	0.05	0.08	0.07	0.07	0.06	0.05	0.04
960	0.334	0.004	0.432	0.004	0.00	0.00	0.05	0.05	0.07	0.07	0.07	0.06	0.05	0.04
970	0.329	0.004	0.426	0.004	0.00	0.00	0.05	0.05	0.07	0.07	0.07	0.06	0.05	0.04
980	0.324	0.003	0.420	0.004	0.00	0.00	0.05	0.05	0.07	0.07	0.06	0.06	0.05	0.04
990	0.319	0.003	0.414	0.004	0.00	0.00	0.05	0.05	0.07	0.06	0.06	0.06	0.05	0.04
1000	0.314	0.003	0.408	0.004	0.00	0.00	0.05	0.05	0.07	0.06	0.06	0.06	0.05	0.04
1010	0.309	0.003	0.402	0.004	0.00	0.00	0.05	0.04	0.07	0.06	0.06	0.06	0.04	0.04
1020	0.304	0.003	0.396	0.004	0.00	0.00	0.05	0.04	0.07	0.06	0.06	0.05	0.04	0.04
1030	0.299	0.003	0.390	0.004	0.00	0.00	0.05	0.04	0.07	0.06	0.06	0.05	0.04	0.04
1040	0.294	0.003	0.384	0.004	0.00	0.00	0.05	0.04	0.07	0.06	0.06	0.05	0.04	0.04
1050	0.289	0.003	0.378	0.003	0.00	0.00	0.05	0.04	0.07	0.06	0.06	0.05	0.04	0.04
1060	0.284	0.003	0.372	0.003	0.00	0.00	0.05	0.04	0.06	0.06	0.06	0.05	0.04	0.04
1070	0.279	0.003	0.366	0.003	0.00	0.00	0.05	0.04	0.06	0.06	0.06	0.05	0.04	0.04
1080	0.274	0.003	0.360	0.003	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.05	0.04	0.04
1090	0.269	0.003	0.354	0.003	0.00	0.00	0.04	0.04	0.06	0.05	0.05	0.05	0.04	0.03
1100	0.264	0.003	0.348	0.003	0.00	0.00	0.04	0.04	0.06	0.05	0.05	0.05	0.04	0.03
1110	0.259	0.003	0.342	0.003	0.00	0.00	0.04	0.04	0.06	0.05	0.05	0.05	0.04	0.03
1120	0.254	0.003	0.336	0.003	0.00	0.00	0.04	0.04	0.06	0.05	0.05	0.05	0.04	0.03
1130	0.249	0.003	0.330	0.003	0.00	0.00	0.04	0.04	0.06	0.05	0.05	0.04	0.04	0.03
1140	0.244	0.003	0.324	0.003	0.00	0.00	0.04	0.04	0.06	0.05	0.05	0.04	0.04	0.03
1150	0.239	0.003	0.318	0.003	0.00	0.00	0.04	0.03	0.06	0.05	0.05	0.04	0.04	0.03
1160	0.234	0.003	0.312	0.003	0.00	0.00	0.04	0.03	0.05	0.05	0.05	0.04	0.03	0.03
1170	0.229	0.002	0.306	0.003	0.00	0.00	0.04	0.03	0.05	0.05	0.05	0.04	0.03	0.03
1180	0.224	0.002	0.300	0.003	0.00	0.00	0.04	0.03	0.05	0.05	0.05	0.04	0.03	0.03
1190	0.219	0.002	0.294	0.003	0.00	0.00	0.04	0.03	0.05	0.04	0.04	0.04	0.03	0.03
1200	0.214	0.002	0.288	0.003	0.00	0.00	0.04	0.03	0.05	0.04	0.04	0.04	0.03	0.03
1210	0.209	0.002	0.282	0.003	0.00	0.00	0.04	0.03	0.05	0.04	0.04	0.04	0.03	0.03
1220	0.204	0.002	0.276	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.04	0.03	0.03
1230	0.199	0.002	0.270	0.002	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.04	0.03	0.03
1240	0.194	0.002	0.264	0.002	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03
1250	0.189	0.002	0.258	0.002	0.00	0.00	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.02
1260	0.184	0.002	0.252	0.002	0.00	0.00	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.02
1270	0.179	0.002	0.246	0.002	0.00	0.00	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.02
1280	0.174	0.002	0.240	0.002	0.00	0.00	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.02
1290	0.169	0.002	0.234	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.04	0.03	0.03	0.02
1300	0.164	0.002	0.228	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.03	0.03	0.03	0.02
1310	0.159	0.002	0.222	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.03	0.03	0.02	0.02
1320	0.154	0.002	0.216	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.03	0.03	0.02	0.02
1330	0.149	0.002	0.210	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.03	0.03	0.02	0.02
1340	0.144	0.002	0.204	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.03	0.03	0.02	0.02
1350	0.139	0.001	0.198	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02
1360	0.134	0.001	0.192	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02
1370	0.129	0.001	0.186	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02
1380	0.124	0.001	0.180	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02
1390	0.119	0.001	0.174	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
1400	0.114	0.001	0.168	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.01
1410	0.109	0.001	0.162	0.001	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.01
1420	0.104	0.001	0.156	0.001	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.01
1430	0.099	0.001	0.150	0.001	0.00	0.00	0.02	0.01	0.03	0.02	0.02	0.02	0.02	0.01
1440	0.094	0.001	0.144	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01
1450	0.089	0.001	0.138	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01
1460	0.084	0.001	0.132	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.01
1470	0.079	0.001	0.126	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.01
1480	0.074	0.001	0.120	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1490	0.069	0.001	0.114	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1500	0.064	0.001	0.108	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1510	0.059	0.001	0.102	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1520	0.054	0.001	0.096	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
1530	0.049	0.001	0.090	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
1540	0.044	0.000	0.084	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1550	0.039	0.000	0.078	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1560	0.034	0.000	0.072	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00
1570	0.029	0.000	0.066	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00
1580	0.024	0.000	0.060	0.001	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1590	0.019	0.000	0.054	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00

SD-660	Swami's	0	0	Avg. Net Sl	1.06	2.37	2.77	3.00	2.91					
SD-660	123.382	0	130.419	1650	**Sand Depth (ft)**							a/s=	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	pring-Hdpn	pring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.020	0.000	0.018	0.000	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
10	1.817	0.015	1.191	0.009	0.12	0.19	0.26	0.42	0.30	0.49	0.33	0.53	0.32	0.51
20	1.657	0.013	0.985	0.008	0.10	0.17	0.21	0.38	0.25	0.44	0.27	0.48	0.26	0.47
30	1.733	0.014	0.955	0.007	0.09	0.18	0.21	0.40	0.24	0.46	0.26	0.50	0.25	0.49
40	2.067	0.017	1.046	0.008	0.10	0.21	0.23	0.47	0.26	0.55	0.29	0.60	0.28	0.58
50	2.331	0.019	1.025	0.008	0.10	0.24	0.22	0.53	0.26	0.62	0.28	0.67	0.27	0.65
60	2.459	0.020	0.958	0.007	0.09	0.25	0.21	0.56	0.24	0.66	0.26	0.71	0.25	0.69
70	2.523	0.020	0.954	0.007	0.09	0.26	0.21	0.58	0.24	0.67	0.26	0.73	0.25	0.71
80	2.615	0.021	1.005	0.008	0.10	0.27	0.22	0.60	0.25	0.70	0.28	0.76	0.27	0.73
90	2.572	0.021	1.067	0.008	0.10	0.26	0.23	0.59	0.27	0.69	0.29	0.74	0.28	0.72
100	2.285	0.019	0.960	0.007	0.09	0.23	0.21	0.52	0.24	0.61	0.26	0.66	0.26	0.64
110	2.142	0.017	0.888	0.007	0.09	0.22	0.19	0.49	0.22	0.57	0.24	0.62	0.24	0.60
120	2.067	0.017	0.871	0.007	0.08	0.21	0.19	0.47	0.22	0.55	0.24	0.60	0.23	0.58
130	2.017	0.016	0.879	0.007	0.09	0.21	0.19	0.46	0.22	0.54	0.24	0.58	0.23	0.57
140	1.977	0.016	0.855	0.007	0.08	0.20	0.18	0.45	0.22	0.53	0.23	0.57	0.23	0.56
150	1.811	0.015	0.798	0.006	0.08	0.19	0.17	0.41	0.20	0.48	0.22	0.52	0.21	0.51
160	1.683	0.014	0.804	0.006	0.08	0.17	0.17	0.38	0.20	0.45	0.22	0.49	0.21	0.47
170	1.539	0.012	0.804	0.006	0.08	0.16	0.17	0.35	0.20	0.41	0.22	0.45	0.21	0.43
180	1.398	0.011	0.803	0.006	0.08	0.14	0.17	0.32	0.20	0.37	0.22	0.40	0.21	0.39
190	1.272	0.010	0.786	0.006	0.08	0.13	0.17	0.29	0.20	0.34	0.22	0.37	0.21	0.36
200	1.152	0.009	0.761	0.006	0.07	0.12	0.16	0.26	0.19	0.31	0.21	0.33	0.20	0.32
210	0.984	0.008	0.673	0.005	0.07	0.10	0.15	0.23	0.17	0.26	0.18	0.28	0.18	0.28
220	0.893	0.007	0.661	0.005	0.06	0.09	0.14	0.20	0.17	0.24	0.18	0.26	0.18	0.25
230	0.855	0.007	0.703	0.005	0.07	0.09	0.15	0.20	0.18	0.23	0.19	0.25	0.19	0.24
240	0.947	0.008	0.855	0.007	0.08	0.10	0.18	0.22	0.22	0.25	0.23	0.27	0.23	0.27
250	1.048	0.008	1.007	0.008	0.10	0.11	0.22	0.24	0.25	0.28	0.28	0.30	0.27	0.29
260	1.285	0.010	1.248	0.010	0.12	0.13	0.27	0.29	0.32	0.34	0.34	0.37	0.33	0.36
270	1.684	0.014	1.676	0.013	0.16	0.17	0.36	0.39	0.42	0.45	0.46	0.49	0.45	0.47
280	1.980	0.016	2.106	0.016	0.20	0.20	0.46	0.45	0.53	0.53	0.58	0.57	0.56	0.56
290	2.248	0.018	2.535	0.019	0.25	0.23	0.55	0.51	0.64	0.60	0.69	0.65	0.67	0.63
300	2.678	0.022	3.141	0.024	0.30	0.27	0.68	0.61	0.79	0.72	0.86	0.78	0.83	0.75
310	2.115	0.017	2.742	0.021	0.27	0.22	0.59	0.48	0.69	0.57	0.75	0.61	0.73	0.59
320	1.577	0.013	2.387	0.018	0.23	0.16	0.52	0.36	0.60	0.42	0.65	0.46	0.63	0.44
330	1.620	0.013	2.592	0.020	0.25	0.17	0.56	0.37	0.66	0.43	0.71	0.47	0.69	0.46
340	1.512	0.012	2.578	0.020	0.25	0.15	0.56	0.35	0.65	0.40	0.71	0.44	0.69	0.42
350	1.542	0.012	2.476	0.019	0.24	0.16	0.54	0.35	0.63	0.41	0.68	0.45	0.66	0.43
360	1.539	0.012	2.395	0.018	0.23	0.16	0.52	0.35	0.61	0.41	0.66	0.45	0.64	0.43
370	1.464	0.012	2.361	0.018	0.23	0.15	0.51	0.33	0.60	0.39	0.65	0.42	0.63	0.41
380	1.337	0.011	2.569	0.020	0.25	0.14	0.56	0.31	0.65	0.36	0.70	0.39	0.68	0.38
390	1.212	0.010	2.461	0.019	0.24	0.12	0.53	0.28	0.62	0.32	0.67	0.35	0.65	0.34
400	1.269	0.010	2.614	0.020	0.25	0.13	0.57	0.29	0.66	0.34	0.72	0.37	0.69	0.36
410	1.648	0.013	2.532	0.019	0.24	0.17	0.55	0.38	0.64	0.44	0.69	0.48	0.67	0.46
420	1.024	0.008	2.038	0.016	0.20	0.10	0.44	0.23	0.52	0.27	0.56	0.30	0.54	0.29
430	0.716	0.006	1.695	0.013	0.16	0.07	0.37	0.16	0.43	0.19	0.46	0.21	0.45	0.20
440	0.644	0.005	1.468	0.011	0.14	0.07	0.32	0.15	0.37	0.17	0.40	0.19	0.39	0.18
450	1.158	0.009	1.615	0.012	0.16	0.12	0.35	0.26	0.41	0.31	0.44	0.34	0.43	0.33
460	0.842	0.007	1.335	0.010	0.13	0.09	0.29	0.19	0.34	0.23	0.37	0.24	0.35	0.24
470	1.413	0.011	1.602	0.012	0.15	0.14	0.35	0.32	0.41	0.38	0.44	0.41	0.43	0.40
480	1.711	0.014	1.716	0.013	0.17	0.17	0.37	0.39	0.43	0.46	0.47	0.50	0.46	0.48
490	1.088	0.009	1.476	0.011	0.14	0.11	0.32	0.25	0.37	0.29	0.40	0.31	0.39	0.31
500	0.696	0.006	0.574	0.004	0.06	0.07	0.12	0.16	0.15	0.19	0.16	0.20	0.15	0.20
510	0.949	0.008	0.447	0.003	0.04	0.10	0.10	0.22	0.11	0.25	0.12	0.27	0.12	0.27
520	1.179	0.010	0.361	0.003	0.03	0.12	0.08	0.27	0.09	0.32	0.10	0.34	0.10	0.33
530	1.068	0.009	0.332	0.003	0.03	0.11	0.07	0.24	0.08	0.29	0.09	0.31	0.09	0.30
540	1.501	0.012	0.665	0.005	0.06	0.15	0.14	0.34	0.17	0.40	0.18	0.43	0.18	0.42
550	1.490	0.012	0.504	0.004	0.05	0.15	0.11	0.34	0.13	0.40	0.14	0.43	0.13	0.42
560	1.946	0.016	1.877	0.014	0.18	0.20	0.41	0.45	0.47	0.52	0.51	0.56	0.50	0.55
570	2.474	0.020	2.860	0.022	0.28	0.25	0.62	0.57	0.72	0.66	0.78	0.72	0.76	0.69
580	2.059	0.017	1.870	0.014	0.18	0.21	0.40	0.47	0.47	0.55	0.51	0.60	0.50	0.58
590	0.587	0.005	0.831	0.006	0.08	0.06	0.18	0.13	0.21	0.16	0.23	0.17	0.22	0.16
600	0.548	0.004	0.858	0.007	0.08	0.06	0.19	0.13	0.22	0.15	0.23	0.16	0.23	0.15
610	0.543	0.004	0.850	0.007	0.08	0.06	0.18	0.12	0.21	0.15	0.23	0.16	0.23	0.15
620	0.538	0.004	0.842	0.006	0.08	0.06	0.18	0.12	0.21	0.14	0.23	0.16	0.22	0.15
630	0.533	0.004	0.834	0.006	0.08	0.05	0.18	0.12	0.21	0.14	0.23	0.15	0.22	0.15
640	0.528	0.004	0.826	0.006	0.08	0.05	0.18	0.12	0.21	0.14	0.23	0.15	0.22	0.15
650	0.523	0.004	0.818	0.006	0.08	0.05	0.18	0.12	0.21	0.14	0.22	0.15	0.22	0.15
660	0.518	0.004	0.810	0.006	0.08	0.05	0.18	0.12	0.20	0.14	0.22	0.15	0.22	0.15
670	0.513	0.004	0.802	0.006	0.08	0.05	0.17	0.12	0.20	0.14	0.22	0.15	0.21	0.14
680	0.508	0.004	0.794	0.006	0.08	0.05	0.17	0.12	0.20	0.14	0.22	0.15	0.21	0.14
690	0.503	0.004	0.786	0.006	0.08	0.05	0.17	0.12	0.20	0.13	0.22	0.15	0.21	0.14
700	0.498	0.004	0.778	0.006	0.08	0.05	0.17	0.11	0.20	0.13	0.21	0.14	0.21	0.14
710	0.493	0.004	0.770	0.006	0.07	0.05	0.17	0.11	0.19	0.13	0.21	0.14	0.20	0.14
720	0.488	0.004	0.762	0.006	0.07	0.05	0.16	0.11	0.19	0.13	0.21	0.14	0.20	0.14
730	0.483	0.004	0.754	0.006	0.07	0.05	0.16	0.11	0.19	0.13	0.21	0.14	0.20	0.14
740	0.478	0.004	0.746	0.006	0.07	0.05	0.16	0.11	0.19	0.13	0.20	0.14	0.20	0.13
750	0.473	0.004	0.738	0.006	0.07	0.05	0.16	0.11	0.19	0.13	0.20	0.14	0.20	0.13
760	0.468	0.004	0.730	0.006	0.07	0.05	0.16	0.11	0.18	0.13	0.20	0.14	0.19	0.13
770	0.463	0.004	0.722	0.006	0.07	0.05	0.16	0.11	0.18	0.12	0.20	0.13	0.19	0.13
780	0.458	0.004	0.714	0.005	0.07	0.05	0.15	0.10	0.18	0.12	0.20	0.13	0.19	0.13
790	0.453	0.004	0.706	0.005	0.07	0.05	0.15	0.10	0.18	0.12	0.19	0.13	0.19	0.13
800	0.448	0.004	0.698	0.005	0.07	0.05	0.15	0.10	0.18	0.12	0.19	0.13	0.19	0.13
810	0.443	0.004	0.690	0.005	0.07	0.05	0.15	0.10	0.17	0.12	0.19	0.13	0.18	0.12
820	0.438	0.004	0.682	0.005	0.07	0.04	0.15	0.10	0.17	0.12	0.19	0.13	0.18	0.12
830	0.433	0.004	0.674	0.005	0.07	0.04	0.15	0.10	0.17	0.12	0.18	0.13	0.18	0.12
840	0.428	0.003	0.666	0.005	0.06	0.04	0.14	0.10	0.17	0.11	0.18	0.12	0.18	0.12
850	0.423	0.003	0.658	0.005	0.06	0.04	0.14	0.10	0.17	0.11	0.18	0.12	0.17	0.12
860	0.418	0.003	0.650	0.005	0.06	0.04	0.14	0.10	0.16	0.11	0.18	0.12	0.17	0.12
870	0.413	0.003	0.642	0.005	0.06	0.04	0.14	0.09	0.16	0.11	0.18	0.12	0.17	0.12
880	0.408	0.003	0.634	0.005	0.06	0.04	0.14	0.09	0.16	0.11	0.17	0.12	0.17	0.11
890	0.403	0.003	0.626	0.005	0.06	0.04	0.14	0.09	0.16	0.11	0.17	0.12	0.17	0.11
900	0.398	0.003	0.618	0.005	0.06	0.04	0.13	0.09	0.16	0.11	0.17	0.12	0.16	0.11
910	0.393	0.003	0.610	0.005	0.06	0.04	0.13	0.09	0.15	0.11	0.17	0.11	0.16	0.11
920	0.388	0.003	0.602	0.005	0.06	0.04	0.13	0.09	0.15	0.10	0.16	0.11	0.16	0.11
930	0.383	0.003	0.594	0.005	0.06	0.04	0.13	0.09	0.15	0.10	0.16	0.11	0.16	0.11
940	0.378	0.003	0.586	0.004	0.06	0.04	0.13	0.09	0.15	0.10	0.16	0.11	0.16	0.11
950	0.373	0.003	0.578	0.004	0.06	0.04	0.13	0.09	0.15	0.10	0.16	0.11	0.15	0.10
960	0.368	0.003	0.570	0.004	0.06	0.04	0.12	0.08	0.14	0.10	0.16	0.11	0.15	0.10
970	0.363	0.003	0.562	0.004	0.05	0.04	0.12	0.08	0.14	0.10	0.15	0.11	0.15	0.10
980	0.358	0.003	0.554	0.004	0.05	0.04	0.12	0.08	0.14	0.10	0.15	0.10	0.15	0.10
990	0.353	0.003	0.546	0.004	0.05	0.04	0.12	0.08	0.14	0.09	0.15	0.10	0.15	0.10
1000	0.348	0.003	0.538	0.004	0.05	0.04	0.12	0.08	0.14	0.09	0.15	0.10	0.14	0.10
1010	0.343	0.003	0.530	0.004	0.05	0.04	0.11	0.08	0.13	0.09	0.15	0.10	0.14	0.10
1020	0.338	0.003	0.522	0.004	0.05	0.03	0.11	0.08	0.13	0.09	0.14	0.10	0.14	0.09
1030	0.333	0.003	0.514	0.004	0.05	0.03	0.11	0.08	0.13	0.09	0.14	0.10	0.14	0.09
1040	0.328	0.003	0.506	0.004	0.05	0.03	0.11	0.08	0.13	0.09	0.14	0.09	0.13	0.09
1050	0.323	0.003	0.498	0.004	0.05	0.03	0.11	0.07	0.13	0.09	0.14	0.09	0.13	0.09
1060	0.318	0.003	0.490	0.004	0.05	0.03	0.11	0.07	0.12	0.09	0.13	0.09	0.13	0.09
1070	0.313	0.003	0.482	0.004	0.05	0.03	0.10	0.07	0.12	0.08	0.13	0.09	0.13	0.09
1080	0.308	0.002	0.474	0.004	0.05	0.03	0.10	0.07	0.12	0.08	0.13	0.09	0.13	0.09
1090	0.303	0.002	0.466	0.004	0.05	0.03	0.10	0.07	0.12	0.08	0.13	0.09	0.12	0.09
1100	0.298	0.002	0.458	0.004	0.04	0.03	0.10	0.07	0.12	0.08	0.13	0.09	0.12	0.08
1110	0.293	0.002	0.450	0.003	0.04	0.03	0.10	0.07	0.11	0.08	0.12	0.08	0.12	0.08
1120	0.288	0.002	0.442	0.003	0.04	0.03	0.10	0.07	0.11	0.08	0.12	0.08	0.12	0.08
1130	0.283	0.002	0.434	0.003	0.04	0.03	0.09	0.06	0.11	0.08	0.12	0.08	0.12	0.08
1140	0.278	0.002	0.426	0.003	0.04	0.03	0.09	0.06	0.11	0.07	0.12	0.08	0.11	0.08
1150	0.273	0.002	0.418	0.003	0.04	0.03	0.09	0.06	0.11	0.07	0.11	0.08	0.11	0.08
1160	0.268	0.002	0.410	0.003	0.04	0.03	0.09	0.06	0.10	0.07	0.11	0.08	0.11	0.08
1170	0.263	0.002	0.402	0.003	0.04	0.03	0.09	0.06	0.10	0.07	0.11	0.08	0.11	0.07
1180	0.258	0.002	0.394	0.003	0.04	0.03	0.09	0.06	0.10	0.07	0.11	0.07	0.10	0.07
1190	0.253	0.002	0.386	0.003	0.04	0.03	0.08	0.06	0.10	0.07	0.11	0.07	0.10	0.07
1200	0.248	0.002	0.378	0.003	0.04	0.03	0.08	0.06	0.10	0.07	0.10	0.07	0.10	0.07
1210	0.243	0.002	0.370	0.003	0.04	0.02	0.08	0.06	0.09	0.06	0.10	0.07	0.10	0.07
1220	0.238	0.002	0.362	0.003	0.04	0.02	0.08	0.05	0.09	0.06	0.10	0.07	0.10	0.07
1230	0.233	0.002	0.354	0.003	0.03	0.02	0.08	0.05	0.09	0.06	0.10	0.07	0.09	0.07
1240	0.228	0.002	0.346	0.003	0.03	0.02	0.07	0.05	0.09	0.06	0.09	0.07	0.09	0.06
1250	0.223	0.002	0.338	0.003	0.03	0.02	0.07	0.05	0.09	0.06	0.09	0.06	0.09	0.06
1260	0.218	0.002	0.330	0.003	0.03	0.02	0.07	0.05	0.08	0.06	0.09	0.06	0.09	0.06
1270	0.213	0.002	0.322	0.002	0.03	0.02	0.07	0.05	0.08	0.06	0.09	0.06	0.09	0.06
1280	0.208	0.002	0.314	0.002	0.03	0.02	0.07	0.05	0.08	0.06	0.09	0.06	0.08	0.06
1290	0.203	0.002	0.306	0.002	0.03	0.02	0.07	0.05	0.08	0.05	0.08	0.06	0.08	0.06
1300	0.198	0.002	0.298	0.002	0.03	0.02	0.06	0.05	0.08	0.05	0.08	0.06	0.08	0.06
1310	0.193	0.002	0.290	0.002	0.03	0.02	0.06	0.04	0.07	0.05	0.08	0.06	0.08	0.05
1320	0.188	0.002	0.282	0.002	0.03	0.02	0.06	0.04	0.07	0.05	0.08	0.05	0.07	0.05
1330	0.183	0.001	0.274	0.002	0.03	0.02	0.06	0.04	0.07	0.05	0.08	0.05	0.07	0.05
1340	0.178	0.001	0.266	0.002	0.03	0.02	0.06	0.04	0.07	0.05	0.07	0.05	0.07	0.05
1350	0.173	0.001	0.258	0.002	0.02	0.02	0.06	0.04	0.07	0.05	0.07	0.05	0.07	0.05
1360	0.168	0.001	0.250	0.002	0.02	0.02	0.05	0.04	0.06	0.04	0.07	0.05	0.07	0.05
1370	0.163	0.001	0.242	0.002	0.02	0.02	0.05	0.04	0.06	0.04	0.07	0.05	0.06	0.05
1380	0.158	0.001	0.234	0.002	0.02	0.02	0.05	0.04	0.06	0.04	0.06	0.05	0.06	0.04
1390	0.153	0.001	0.226	0.002	0.02	0.02	0.05	0.03	0.06	0.04	0.06	0.04	0.06	0.04
1400	0.148	0.001	0.218	0.002	0.02	0.02	0.05	0.03	0.06	0.04	0.06	0.04	0.06	0.04
1410	0.143	0.001	0.210	0.002	0.02	0.01	0.05	0.03	0.05	0.04	0.06	0.04	0.06	0.04
1420	0.138	0.001	0.202	0.002	0.02	0.01	0.04	0.03	0.05	0.04	0.06	0.04	0.05	0.04
1430	0.133	0.001	0.194	0.001	0.02	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.04
1440	0.128	0.001	0.186	0.001	0.02	0.01	0.04	0.03	0.05	0.03	0.05	0.04	0.05	0.04
1450	0.123	0.001	0.178	0.001	0.02	0.01	0.04	0.03	0.05	0.03	0.05	0.04	0.05	0.03
1460	0.118	0.001	0.170	0.001	0.02	0.01	0.04	0.03	0.04	0.03	0.05	0.03	0.05	0.03
1470	0.113	0.001	0.162	0.001	0.02	0.01	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1480	0.108	0.001	0.154	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03
1490	0.103	0.001	0.146	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03
1500	0.098	0.001	0.138	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.03
1510	0.093	0.001	0.130	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.04	0.03	0.03	0.03
1520	0.088	0.001	0.122	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1530	0.083	0.001	0.114	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1540	0.078	0.001	0.106	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1550	0.073	0.001	0.098	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02
1560	0.068	0.001	0.090	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1570	0.063	0.001	0.082	0.001	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1580	0.058	0.000	0.074	0.001	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1590	0.053	0.000	0.066	0.001	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01
1600	0.048	0.000	0.058	0.000	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1610	0.043	0.000	0.050	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1620	0.038	0.000	0.042	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1630	0.033	0.000	0.034	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1640	0.028	0.000	0.026	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1650	0.023	0.000	0.018	0.000	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01

SD-670	Moonlight	0	0	Avg. Net Sl	7.54	5.19	4.50	4.19	4.04					
SD-670	325.763	0	308.756	1639			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	pring-Hdpn	pring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.034	0.000	0.023	0.000	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
10	1.162	0.004	1.487	0.005	0.43	0.32	0.30	0.22	0.26	0.19	0.24	0.18	0.23	0.17
20	1.676	0.005	2.424	0.008	0.71	0.46	0.49	0.32	0.42	0.28	0.39	0.26	0.38	0.25
30	1.370	0.004	2.808	0.009	0.82	0.38	0.56	0.26	0.49	0.23	0.45	0.21	0.44	0.20
40	3.433	0.011	3.493	0.011	1.02	0.95	0.70	0.65	0.61	0.56	0.56	0.53	0.55	0.51
50	4.577	0.014	3.212	0.010	0.94	1.26	0.64	0.87	0.56	0.75	0.52	0.70	0.50	0.68
60	4.658	0.014	2.564	0.008	0.75	1.29	0.51	0.88	0.45	0.77	0.41	0.71	0.40	0.69
70	5.139	0.016	2.956	0.010	0.86	1.42	0.59	0.98	0.51	0.85	0.48	0.79	0.46	0.76
80	5.959	0.018	3.605	0.012	1.05	1.64	0.72	1.13	0.63	0.98	0.58	0.91	0.56	0.88
90	6.271	0.019	3.584	0.012	1.04	1.73	0.72	1.19	0.62	1.03	0.58	0.96	0.56	0.93
100	6.669	0.020	3.647	0.012	1.06	1.84	0.73	1.27	0.63	1.10	0.59	1.02	0.57	0.99
110	7.059	0.022	3.925	0.013	1.14	1.95	0.79	1.34	0.68	1.16	0.63	1.08	0.61	1.04
120	6.703	0.021	3.559	0.012	1.04	1.85	0.71	1.27	0.62	1.10	0.58	1.03	0.56	0.99
130	6.357	0.020	3.247	0.011	0.95	1.75	0.65	1.21	0.56	1.05	0.52	0.97	0.51	0.94
140	6.045	0.019	3.002	0.010	0.87	1.67	0.60	1.15	0.52	0.99	0.49	0.93	0.47	0.89
150	5.749	0.018	2.783	0.009	0.81	1.59	0.56	1.09	0.48	0.95	0.45	0.88	0.43	0.85
160	5.418	0.017	2.524	0.008	0.73	1.50	0.51	1.03	0.44	0.89	0.41	0.83	0.39	0.80
170	5.081	0.016	2.162	0.007	0.63	1.40	0.43	0.96	0.38	0.84	0.35	0.78	0.34	0.75
180	4.839	0.015	1.882	0.006	0.55	1.34	0.38	0.92	0.33	0.80	0.30	0.74	0.29	0.72
190	4.694	0.014	1.686	0.005	0.49	1.30	0.34	0.89	0.29	0.77	0.27	0.72	0.26	0.69
200	4.563	0.014	1.551	0.005	0.45	1.26	0.31	0.87	0.27	0.75	0.25	0.70	0.24	0.68
210	4.279	0.013	1.474	0.005	0.43	1.18	0.30	0.81	0.26	0.70	0.24	0.66	0.23	0.63
220	4.091	0.013	1.592	0.005	0.46	1.13	0.32	0.78	0.28	0.67	0.26	0.63	0.25	0.61
230	3.920	0.012	1.711	0.006	0.50	1.08	0.34	0.74	0.30	0.64	0.28	0.60	0.27	0.58
240	3.838	0.012	1.866	0.006	0.54	1.06	0.37	0.73	0.32	0.63	0.30	0.59	0.29	0.57
250	4.034	0.012	2.114	0.007	0.62	1.11	0.42	0.77	0.37	0.66	0.34	0.62	0.33	0.60
260	4.249	0.013	2.371	0.008	0.69	1.17	0.48	0.81	0.41	0.70	0.38	0.65	0.37	0.63
270	4.462	0.014	2.638	0.009	0.77	1.23	0.53	0.85	0.46	0.73	0.43	0.68	0.41	0.66
280	4.478	0.014	2.709	0.009	0.79	1.24	0.54	0.85	0.47	0.74	0.44	0.69	0.42	0.66
290	4.102	0.013	2.427	0.008	0.71	1.13	0.49	0.78	0.42	0.67	0.39	0.63	0.38	0.61
300	3.767	0.012	2.134	0.007	0.62	1.04	0.43	0.72	0.37	0.62	0.34	0.58	0.33	0.56
310	3.449	0.011	1.840	0.006	0.54	0.95	0.37	0.65	0.32	0.57	0.30	0.53	0.29	0.51
320	3.138	0.010	1.543	0.005	0.45	0.87	0.31	0.60	0.27	0.52	0.25	0.48	0.24	0.46
330	2.953	0.009	1.351	0.004	0.39	0.81	0.27	0.56	0.23	0.49	0.22	0.45	0.21	0.44
340	3.102	0.010	1.425	0.005	0.41	0.86	0.29	0.59	0.25	0.51	0.23	0.48	0.22	0.46
350	3.678	0.011	1.897	0.006	0.55	1.01	0.38	0.70	0.33	0.61	0.31	0.56	0.30	0.54
360	4.179	0.013	2.300	0.007	0.67	1.15	0.46	0.79	0.40	0.69	0.37	0.64	0.36	0.62
370	4.272	0.013	2.363	0.008	0.69	1.18	0.47	0.81	0.41	0.70	0.38	0.65	0.37	0.63
380	4.371	0.013	2.422	0.008	0.71	1.21	0.49	0.83	0.42	0.72	0.39	0.67	0.38	0.65
390	4.410	0.014	2.398	0.008	0.70	1.22	0.48	0.84	0.42	0.73	0.39	0.68	0.37	0.65
400	4.636	0.014	2.588	0.008	0.75	1.28	0.52	0.88	0.45	0.76	0.42	0.71	0.40	0.69
410	5.291	0.016	3.282	0.011	0.96	1.46	0.66	1.00	0.57	0.87	0.53	0.81	0.51	0.78
420	5.948	0.018	3.984	0.013	1.16	1.64	0.80	1.13	0.69	0.98	0.64	0.91	0.62	0.88
430	5.817	0.018	3.911	0.013	1.14	1.61	0.78	1.10	0.68	0.96	0.63	0.89	0.61	0.86
440	5.456	0.017	3.617	0.012	1.05	1.51	0.72	1.04	0.63	0.90	0.58	0.84	0.56	0.81
450	5.043	0.015	3.317	0.011	0.97	1.39	0.66	0.96	0.58	0.83	0.54	0.77	0.52	0.75
460	4.617	0.014	2.961	0.010	0.86	1.27	0.59	0.88	0.51	0.76	0.48	0.71	0.46	0.68
470	4.338	0.013	2.808	0.009	0.82	1.20	0.56	0.82	0.49	0.71	0.45	0.66	0.44	0.64
480	4.048	0.012	2.653	0.009	0.77	1.12	0.53	0.77	0.46	0.67	0.43	0.62	0.41	0.60
490	3.754	0.012	2.498	0.008	0.73	1.04	0.50	0.71	0.43	0.62	0.40	0.58	0.39	0.56
500	3.463	0.011	2.382	0.008	0.69	0.96	0.48	0.66	0.41	0.57	0.38	0.53	0.37	0.51
510	3.219	0.010	2.358	0.008	0.69	0.89	0.47	0.61	0.41	0.53	0.38	0.49	0.37	0.48
520	3.006	0.009	2.382	0.008	0.69	0.83	0.48	0.57	0.41	0.49	0.38	0.46	0.37	0.44
530	2.795	0.009	2.401	0.008	0.70	0.77	0.48	0.53	0.42	0.46	0.39	0.43	0.37	0.41
540	2.516	0.008	2.415	0.008	0.70	0.69	0.48	0.48	0.42	0.41	0.39	0.39	0.38	0.37
550	2.130	0.007	2.429	0.008	0.71	0.59	0.49	0.40	0.42	0.35	0.39	0.33	0.38	0.32
560	1.826	0.006	2.493	0.008	0.73	0.50	0.50	0.35	0.43	0.30	0.40	0.28	0.39	0.27
570	1.716	0.005	2.732	0.009	0.80	0.47	0.55	0.33	0.47	0.28	0.44	0.26	0.43	0.25
580	1.655	0.005	3.058	0.010	0.89	0.46	0.61	0.31	0.53	0.27	0.49	0.25	0.48	0.24
590	1.644	0.005	3.319	0.011	0.97	0.45	0.67	0.31	0.58	0.27	0.54	0.25	0.52	0.24
600	1.620	0.005	3.527	0.011	1.03	0.45	0.71	0.31	0.61	0.27	0.57	0.25	0.55	0.24
610	1.602	0.005	3.685	0.012	1.07	0.44	0.74	0.30	0.64	0.26	0.60	0.25	0.58	0.24
620	1.633	0.005	3.862	0.013	1.12	0.45	0.77	0.31	0.67	0.27	0.62	0.25	0.60	0.24
630	1.732	0.005	4.112	0.013	1.20	0.48	0.82	0.33	0.71	0.28	0.66	0.27	0.64	0.26
640	1.825	0.006	4.357	0.014	1.27	0.50	0.87	0.35	0.76	0.30	0.70	0.28	0.68	0.27
650	1.778	0.005	4.391	0.014	1.28	0.49	0.88	0.34	0.76	0.29	0.71	0.27	0.69	0.26
660	1.328	0.004	3.916	0.013	1.14	0.37	0.78	0.25	0.68	0.22	0.63	0.20	0.61	0.20
670	1.241	0.004	3.775	0.012	1.10	0.34	0.76	0.24	0.66	0.20	0.61	0.19	0.59	0.18
680	1.183	0.004	3.715	0.012	1.08	0.33	0.74	0.22	0.64	0.19	0.60	0.18	0.58	0.18
690	1.055	0.003	3.671	0.012	1.07	0.29	0.74	0.20	0.64	0.17	0.59	0.16	0.57	0.16
700	0.912	0.003	3.574	0.012	1.04	0.25	0.72	0.17	0.62	0.15	0.58	0.14	0.56	0.13
710	0.863	0.003	3.522	0.011	1.03	0.24	0.71	0.16	0.61	0.14	0.57	0.13	0.55	0.13
720	0.849	0.003	3.485	0.011	1.01	0.23	0.70	0.16	0.60	0.14	0.56	0.13	0.54	0.13
730	0.775	0.002	3.410	0.011	0.99	0.21	0.68	0.15	0.59	0.13	0.55	0.12	0.53	0.11
740	0.946	0.003	3.549	0.011	1.03	0.26	0.71	0.18	0.62	0.16	0.57	0.14	0.55	0.14
750	1.159	0.004	3.711	0.012	1.08	0.32	0.74	0.22	0.64	0.19	0.60	0.18	0.58	0.17
760	0.922	0.003	3.370	0.011	0.98	0.25	0.68	0.18	0.58	0.15	0.54	0.14	0.53	0.14
770	0.679	0.002	2.777	0.009	0.81	0.19	0.56	0.13	0.48	0.11	0.45	0.10	0.43	0.10
780	0.689	0.002	2.689	0.009	0.78	0.19	0.54	0.13	0.47	0.11	0.43	0.11	0.42	0.10
790	0.753	0.002	2.797	0.009	0.81	0.21	0.56	0.14	0.49	0.12	0.45	0.12	0.44	0.11
800	0.999	0.003	3.001	0.010	0.87	0.28	0.60	0.19	0.52	0.16	0.49	0.15	0.47	0.15
810	0.738	0.002	2.566	0.008	0.75	0.20	0.51	0.14	0.45	0.12	0.41	0.11	0.40	0.11
820	0.859	0.003	2.532	0.008	0.74	0.24	0.51	0.16	0.44	0.14	0.41	0.13	0.40	0.13
830	1.154	0.004	2.761	0.009	0.80	0.32	0.55	0.22	0.48	0.19	0.45	0.18	0.43	0.17
840	1.305	0.004	2.843	0.009	0.83	0.36	0.57	0.25	0.49	0.21	0.46	0.20	0.44	0.19
850	0.927	0.003	2.366	0.008	0.69	0.26	0.47	0.18	0.41	0.15	0.38	0.14	0.37	0.14
860	1.035	0.003	2.454	0.008	0.71	0.29	0.49	0.20	0.43	0.17	0.40	0.16	0.38	0.15
870	1.427	0.004	2.863	0.009	0.83	0.39	0.57	0.27	0.50	0.23	0.46	0.22	0.45	0.21
880	0.982	0.003	2.428	0.008	0.71	0.27	0.49	0.19	0.42	0.16	0.39	0.15	0.38	0.15
890	1.512	0.005	2.347	0.008	0.68	0.42	0.47	0.29	0.41	0.25	0.38	0.23	0.37	0.22
900	0.710	0.002	1.232	0.004	0.36	0.20	0.25	0.13	0.21	0.12	0.20	0.11	0.19	0.11
910	0.604	0.002	1.177	0.004	0.34	0.17	0.24	0.11	0.20	0.10	0.19	0.09	0.18	0.09
920	0.830	0.003	1.603	0.005	0.47	0.23	0.32	0.16	0.28	0.14	0.26	0.13	0.25	0.12
930	0.531	0.002	1.094	0.004	0.32	0.15	0.22	0.10	0.19	0.09	0.18	0.08	0.17	0.08
940	0.760	0.002	1.194	0.004	0.35	0.21	0.24	0.14	0.21	0.13	0.19	0.12	0.19	0.11
950	0.878	0.003	1.246	0.004	0.36	0.24	0.25	0.17	0.22	0.14	0.20	0.13	0.19	0.13
960	0.973	0.003	1.266	0.004	0.37	0.27	0.25	0.18	0.22	0.16	0.20	0.15	0.20	0.14
970	0.990	0.003	1.296	0.004	0.38	0.27	0.26	0.19	0.22	0.16	0.21	0.15	0.20	0.15
980	0.906	0.003	1.280	0.004	0.37	0.25	0.26	0.17	0.22	0.15	0.21	0.14	0.20	0.13
990	0.781	0.002	1.159	0.004	0.34	0.22	0.23	0.15	0.20	0.13	0.19	0.12	0.18	0.12
1000	0.782	0.002	1.194	0.004	0.35	0.22	0.24	0.15	0.21	0.13	0.19	0.12	0.19	0.12
1010	0.775	0.002	1.226	0.004	0.36	0.21	0.25	0.15	0.21	0.13	0.20	0.12	0.19	0.11
1020	0.783	0.002	1.302	0.004	0.38	0.22	0.26	0.15	0.23	0.13	0.21	0.12	0.20	0.12
1030	0.712	0.002	1.262	0.004	0.37	0.20	0.25	0.14	0.22	0.12	0.20	0.11	0.20	0.11
1040	0.886	0.003	1.608	0.005	0.47	0.24	0.32	0.17	0.28	0.15	0.26	0.14	0.25	0.13
1050	1.141	0.004	1.899	0.006	0.55	0.31	0.38	0.22	0.33	0.19	0.31	0.17	0.30	0.17
1060	1.431	0.004	1.864	0.006	0.54	0.39	0.37	0.27	0.32	0.24	0.30	0.22	0.29	0.21
1070	1.255	0.004	1.777	0.006	0.52	0.35	0.36	0.24	0.31	0.21	0.29	0.19	0.28	0.19
1080	1.059	0.003	1.600	0.005	0.47	0.29	0.32	0.20	0.28	0.17	0.26	0.16	0.25	0.16
1090	0.864	0.003	1.449	0.005	0.42	0.24	0.29	0.16	0.25	0.14	0.23	0.13	0.23	0.13
1100	0.982	0.003	1.579	0.005	0.46	0.27	0.32	0.19	0.27	0.16	0.26	0.15	0.25	0.15
1110	0.726	0.002	1.491	0.005	0.43	0.20	0.30	0.14	0.26	0.12	0.24	0.11	0.23	0.11
1120	0.636	0.002	1.316	0.004	0.38	0.18	0.26	0.12	0.23	0.10	0.21	0.10	0.21	0.09
1130	1.177	0.004	1.740	0.006	0.51	0.32	0.35	0.22	0.30	0.19	0.28	0.18	0.27	0.17
1140	0.953	0.003	1.430	0.005	0.42	0.26	0.29	0.18	0.25	0.16	0.23	0.15	0.22	0.14
1150	0.745	0.002	1.410	0.005	0.41	0.21	0.28	0.14	0.24	0.12	0.23	0.11	0.22	0.11
1160	0.802	0.002	1.696	0.005	0.49	0.22	0.34	0.15	0.29	0.13	0.27	0.12	0.26	0.12
1170	0.966	0.003	1.837	0.006	0.53	0.27	0.37	0.18	0.32	0.16	0.30	0.15	0.29	0.14
1180	1.101	0.003	1.670	0.005	0.49	0.30	0.33	0.21	0.29	0.18	0.27	0.17	0.26	0.16
1190	1.291	0.004	1.231	0.004	0.36	0.36	0.25	0.25	0.21	0.21	0.20	0.20	0.19	0.19
1200	1.916	0.006	1.352	0.004	0.39	0.53	0.27	0.36	0.23	0.32	0.22	0.29	0.21	0.28
1210	1.570	0.005	0.779	0.003	0.23	0.43	0.16	0.30	0.14	0.26	0.13	0.24	0.12	0.23
1220	1.175	0.004	0.645	0.002	0.19	0.32	0.13	0.22	0.11	0.19	0.10	0.18	0.10	0.17
1230	1.011	0.003	0.588	0.002	0.17	0.28	0.12	0.19	0.10	0.17	0.10	0.15	0.09	0.15
1240	1.018	0.003	0.572	0.002	0.17	0.28	0.11	0.19	0.10	0.17	0.09	0.16	0.09	0.15
1250	0.917	0.003	0.525	0.002	0.15	0.25	0.11	0.17	0.09	0.15	0.08	0.14	0.08	0.14
1260	0.818	0.003	0.518	0.002	0.15	0.23	0.10	0.16	0.09	0.13	0.08	0.13	0.08	0.12
1270	0.715	0.002	0.501	0.002	0.15	0.20	0.10	0.14	0.09	0.12	0.08	0.11	0.08	0.11
1280	0.599	0.002	0.481	0.002	0.14	0.17	0.10	0.11	0.08	0.10	0.08	0.09	0.08	0.09
1290	0.516	0.002	0.469	0.002	0.14	0.14	0.09	0.10	0.08	0.08	0.08	0.08	0.07	0.08
1300	0.520	0.002	0.457	0.001	0.13	0.14	0.09	0.10	0.08	0.09	0.07	0.08	0.07	0.08
1310	0.476	0.001	0.445	0.001	0.13	0.13	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.07
1320	0.462	0.001	0.433	0.001	0.13	0.13	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.07
1330	0.448	0.001	0.421	0.001	0.12	0.12	0.08	0.09	0.07	0.07	0.07	0.07	0.07	0.07
1340	0.434	0.001	0.409	0.001	0.12	0.12	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06
1350	0.420	0.001	0.397	0.001	0.12	0.12	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06
1360	0.406	0.001	0.385	0.001	0.11	0.11	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06
1370	0.392	0.001	0.373	0.001	0.11	0.11	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
1380	0.378	0.001	0.361	0.001	0.11	0.10	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
1390	0.364	0.001	0.349	0.001	0.10	0.10	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05
1400	0.350	0.001	0.337	0.001	0.10	0.10	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05
1410	0.336	0.001	0.325	0.001	0.09	0.09	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.05
1420	0.322	0.001	0.313	0.001	0.09	0.09	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05
1430	0.308	0.001	0.301	0.001	0.09	0.08	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05
1440	0.294	0.001	0.289	0.001	0.08	0.08	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.04
1450	0.280	0.001	0.277	0.001	0.08	0.08	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04
1460	0.266	0.001	0.265	0.001	0.08	0.07	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04
1470	0.252	0.001	0.253	0.001	0.07	0.07	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04
1480	0.238	0.001	0.241	0.001	0.07	0.07	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04
1490	0.224	0.001	0.229	0.001	0.07	0.06	0.05	0.04	0.04	0.04	0.04	0.03	0.04	0.03
1500	0.210	0.001	0.217	0.001	0.06	0.06	0.04	0.04	0.04	0.03	0.04	0.03	0.03	0.03
1510	0.196	0.001	0.205	0.001	0.06	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03
1520	0.182	0.001	0.193	0.001	0.06	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1530	0.168	0.001	0.181	0.001	0.05	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.02
1540	0.154	0.000	0.169	0.001	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02
1550	0.140	0.000	0.157	0.001	0.05	0.04	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02
1560	0.126	0.000	0.145	0.000	0.04	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
1570	0.112	0.000	0.133	0.000	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1580	0.098	0.000	0.121	0.000	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
1590	0.084	0.000	0.109	0.000	0.03	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01
1600	0.070	0.000	0.097	0.000	0.03	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1610	0.056	0.000	0.085	0.000	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1620	0.042	0.000	0.073	0.000	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1630	0.028	0.000	0.061	0.000	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00
1640	0.014	0.000	0.049	0.000	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00

SD-0675	Stone Steps	0	0	Avg. Net SL	4.33	5.06	4.80	4.51	4.26						
SD-675	188.01	0	174.875	1230	**Sand Depth (ft)**								*a/s=*	*119.19*	*ft²/m*
X (ft)	Difference	Fall ratio	Difference	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	
-10	0.434	0.002308	0.606	0.003465	0.18	0.12	0.21	0.14	0.20	0.13	0.19	0.12	0.18	0.12	
0	2.983	0.015866	3.417	0.01954	1.01	0.82	1.18	0.96	1.12	0.91	1.05	0.85	0.99	0.81	
10	3.43	0.018244	3.368	0.019259	0.99	0.94	1.16	1.10	1.10	1.04	1.04	0.98	0.98	0.93	
20	3.048	0.016212	3.046	0.017418	0.90	0.84	1.05	0.98	1.00	0.93	0.94	0.87	0.89	0.82	
30	2.753	0.014643	2.687	0.015365	0.79	0.76	0.93	0.88	0.88	0.84	0.83	0.79	0.78	0.74	
40	2.424	0.012893	2.359	0.01349	0.70	0.67	0.81	0.78	0.77	0.74	0.73	0.69	0.69	0.66	
50	2.172	0.011553	1.99	0.01138	0.59	0.60	0.69	0.70	0.65	0.66	0.61	0.62	0.58	0.59	
60	1.996	0.010616	1.779	0.010173	0.53	0.55	0.61	0.64	0.58	0.61	0.55	0.57	0.52	0.54	
70	1.883	0.010015	1.629	0.009315	0.48	0.52	0.56	0.60	0.53	0.57	0.50	0.54	0.47	0.51	
80	1.786	0.009499	1.433	0.008194	0.42	0.49	0.49	0.57	0.47	0.54	0.44	0.51	0.42	0.48	
90	1.825	0.009707	1.341	0.007668	0.40	0.50	0.46	0.59	0.44	0.56	0.41	0.52	0.39	0.49	
100	2.285	0.012154	1.634	0.009344	0.48	0.63	0.56	0.73	0.53	0.70	0.50	0.65	0.47	0.62	
110	2.716	0.014446	1.922	0.010991	0.57	0.75	0.66	0.87	0.63	0.83	0.59	0.78	0.56	0.73	
120	2.907	0.015462	2.048	0.011711	0.60	0.80	0.71	0.93	0.67	0.88	0.63	0.83	0.60	0.79	
130	3.161	0.016813	2.177	0.012449	0.64	0.87	0.75	1.01	0.71	0.96	0.67	0.90	0.63	0.85	
140	3.484	0.018531	2.313	0.013227	0.68	0.96	0.80	1.12	0.76	1.06	0.71	1.00	0.67	0.94	
150	3.789	0.020153	2.427	0.013878	0.72	1.04	0.84	1.22	0.79	1.15	0.75	1.08	0.71	1.02	
160	3.91	0.020797	2.362	0.013507	0.70	1.07	0.82	1.26	0.77	1.19	0.73	1.12	0.69	1.06	
170	3.627	0.019292	1.935	0.011065	0.57	1.00	0.67	1.16	0.63	1.10	0.59	1.04	0.56	0.98	
180	3.355	0.017845	1.548	0.008852	0.46	0.92	0.53	1.08	0.51	1.02	0.48	0.96	0.45	0.91	
190	3.083	0.016398	1.235	0.007062	0.36	0.85	0.43	0.99	0.40	0.94	0.38	0.88	0.36	0.83	
200	2.866	0.015244	1.084	0.006199	0.32	0.79	0.37	0.92	0.35	0.87	0.33	0.82	0.32	0.77	
210	2.939	0.015632	1.211	0.006925	0.36	0.81	0.42	0.94	0.40	0.89	0.37	0.84	0.35	0.79	
220	2.989	0.015898	1.279	0.007314	0.38	0.82	0.44	0.96	0.42	0.91	0.39	0.85	0.37	0.81	
230	2.846	0.015137	1.188	0.006793	0.35	0.78	0.41	0.91	0.39	0.87	0.37	0.81	0.35	0.77	
240	2.958	0.015733	1.343	0.00768	0.40	0.81	0.46	0.95	0.44	0.90	0.41	0.85	0.39	0.80	
250	3.214	0.017095	1.626	0.009298	0.48	0.88	0.56	1.03	0.53	0.98	0.50	0.92	0.47	0.87	
260	3.423	0.018206	1.843	0.010539	0.54	0.94	0.64	1.10	0.60	1.04	0.57	0.98	0.54	0.93	
270	3.258	0.017329	1.674	0.009573	0.49	0.89	0.58	1.05	0.55	0.99	0.51	0.93	0.49	0.88	
280	2.95	0.015691	1.347	0.007703	0.40	0.81	0.46	0.95	0.44	0.90	0.41	0.84	0.39	0.80	
290	3.176	0.016893	1.535	0.008778	0.45	0.87	0.53	1.02	0.50	0.97	0.47	0.91	0.45	0.86	
300	3.394	0.018052	1.704	0.009744	0.50	0.93	0.59	1.09	0.56	1.03	0.52	0.97	0.50	0.92	
310	3.608	0.01919	1.86	0.010636	0.55	0.99	0.64	1.16	0.61	1.10	0.57	1.03	0.54	0.98	
320	3.725	0.019813	1.937	0.011076	0.57	1.02	0.67	1.20	0.63	1.13	0.60	1.07	0.56	1.01	
330	3.291	0.017504	1.566	0.008955	0.46	0.90	0.54	1.06	0.51	1.00	0.48	0.94	0.46	0.89	
340	2.743	0.01459	1.12	0.006405	0.33	0.75	0.39	0.88	0.37	0.84	0.34	0.78	0.33	0.74	
350	2.23	0.011861	0.721	0.004123	0.21	0.61	0.25	0.72	0.24	0.68	0.22	0.64	0.21	0.60	
360	1.967	0.010462	0.574	0.003282	0.17	0.54	0.20	0.63	0.19	0.60	0.18	0.56	0.17	0.53	
370	1.831	0.009739	0.518	0.002962	0.15	0.50	0.18	0.59	0.17	0.56	0.16	0.52	0.15	0.50	
380	1.702	0.009053	0.474	0.002711	0.14	0.47	0.16	0.55	0.16	0.52	0.15	0.49	0.14	0.46	
390	1.62	0.008617	0.477	0.002728	0.14	0.44	0.16	0.52	0.16	0.49	0.15	0.46	0.14	0.44	
400	1.505	0.008005	0.479	0.002739	0.14	0.41	0.17	0.48	0.16	0.46	0.15	0.43	0.14	0.41	
410	1.371	0.007292	0.509	0.002911	0.15	0.38	0.18	0.44	0.17	0.42	0.16	0.39	0.15	0.37	
420	1.271	0.00676	0.57	0.003259	0.17	0.35	0.20	0.41	0.19	0.39	0.18	0.36	0.17	0.34	
430	1.27	0.006755	0.698	0.003991	0.21	0.35	0.24	0.41	0.23	0.39	0.21	0.36	0.20	0.34	
440	1.394	0.007414	0.913	0.005221	0.27	0.38	0.32	0.45	0.30	0.42	0.28	0.40	0.27	0.38	
450	1.468	0.007808	1.113	0.006365	0.33	0.40	0.38	0.47	0.36	0.45	0.34	0.42	0.32	0.40	
460	1.528	0.008127	1.306	0.007468	0.39	0.42	0.45	0.49	0.43	0.47	0.40	0.44	0.38	0.41	
470	1.547	0.008228	1.494	0.008543	0.44	0.42	0.52	0.50	0.49	0.47	0.46	0.44	0.43	0.42	
480	1.585	0.00843	1.654	0.009458	0.49	0.44	0.57	0.51	0.54	0.48	0.51	0.45	0.48	0.43	
490	1.584	0.008425	1.817	0.01039	0.54	0.44	0.63	0.51	0.59	0.48	0.56	0.45	0.53	0.43	
500	1.663	0.008845	2.115	0.012094	0.62	0.46	0.73	0.53	0.69	0.51	0.65	0.48	0.61	0.45	
510	1.741	0.00926	2.418	0.013827	0.71	0.48	0.83	0.56	0.79	0.53	0.74	0.50	0.70	0.47	
520	1.542	0.008202	2.352	0.01345	0.69	0.42	0.81	0.50	0.77	0.47	0.72	0.44	0.68	0.42	
530	1.143	0.006079	2.02	0.011551	0.60	0.31	0.70	0.37	0.66	0.35	0.62	0.33	0.59	0.31	
540	0.99	0.005266	1.978	0.011311	0.58	0.27	0.68	0.32	0.65	0.30	0.61	0.28	0.57	0.27	
550	0.793	0.004218	1.983	0.01134	0.59	0.22	0.68	0.25	0.65	0.24	0.61	0.23	0.58	0.21	
560	0.898	0.004776	2.342	0.013392	0.69	0.25	0.81	0.29	0.77	0.27	0.72	0.26	0.68	0.24	
570	1.033	0.005494	2.745	0.015697	0.81	0.28	0.95	0.33	0.90	0.31	0.84	0.30	0.80	0.28	
580	1.474	0.00784	3.276	0.018733	0.97	0.40	1.13	0.47	1.07	0.45	1.01	0.42	0.95	0.40	
590	1.822	0.009691	3.306	0.018905	0.98	0.50	1.14	0.58	1.08	0.55	1.02	0.52	0.96	0.49	
600	1.541	0.008196	3.109	0.017778	0.92	0.42	1.07	0.49	1.02	0.47	0.96	0.44	0.90	0.42	
610	1.153	0.006133	2.907	0.016623	0.86	0.32	1.00	0.37	0.95	0.35	0.89	0.33	0.84	0.31	
620	1.097	0.005835	2.819	0.01612	0.83	0.30	0.97	0.35	0.92	0.33	0.87	0.31	0.82	0.30	
630	0.938	0.004989	2.341	0.013387	0.69	0.26	0.81	0.30	0.77	0.29	0.72	0.27	0.68	0.25	
640	0.882	0.004691	2.226	0.012729	0.66	0.24	0.77	0.28	0.73	0.27	0.68	0.25	0.65	0.24	
650	1.16	0.00617	2.173	0.012426	0.64	0.32	0.75	0.37	0.71	0.35	0.67	0.33	0.63	0.31	
660	1.43	0.007606	2.158	0.01234	0.64	0.39	0.74	0.46	0.71	0.44	0.66	0.41	0.63	0.39	
670	1.436	0.007638	2.119	0.012117	0.63	0.39	0.73	0.46	0.69	0.44	0.65	0.41	0.62	0.39	
680	0.943	0.005016	1.856	0.010613	0.55	0.26	0.64	0.30	0.61	0.29	0.57	0.27	0.54	0.25	
690	0.652	0.003468	1.523	0.008709	0.45	0.18	0.53	0.21	0.50	0.20	0.47	0.19	0.44	0.18	
700	0.774	0.004117	1.373	0.007851	0.41	0.21	0.47	0.25	0.45	0.24	0.42	0.22	0.40	0.21	
710	0.568	0.003021	1.288	0.007365	0.38	0.16	0.44	0.18	0.42	0.17	0.40	0.16	0.37	0.15	
720	0.424	0.002255	1.107	0.00633	0.33	0.12	0.38	0.14	0.36	0.13	0.34	0.12	0.32	0.11	
730	0.721	0.003835	1.083	0.006193	0.32	0.20	0.37	0.23	0.35	0.22	0.33	0.21	0.31	0.19	
740	0.759	0.004037	1.049	0.005999	0.31	0.21	0.36	0.24	0.34	0.23	0.32	0.22	0.30	0.21	
750	0.683	0.003633	0.762	0.004357	0.23	0.19	0.26	0.22	0.25	0.21	0.23	0.20	0.22	0.18	
760	0.961	0.005111	0.94	0.005375	0.28	0.26	0.32	0.31	0.31	0.29	0.29	0.27	0.27	0.26	
770	1.002	0.00533	1.234	0.007056	0.36	0.28	0.43	0.32	0.40	0.31	0.38	0.29	0.36	0.27	
780	0.658	0.0035	1.345	0.007691	0.40	0.18	0.46	0.21	0.44	0.20	0.41	0.19	0.39	0.18	
790	0.563	0.002995	1.383	0.007909	0.41	0.15	0.48	0.18	0.45	0.17	0.43	0.16	0.40	0.15	
800	0.52	0.002766	0.876	0.005009	0.26	0.14	0.30	0.17	0.29	0.16	0.27	0.15	0.25	0.14	
810	0.485	0.00258	0.704	0.004026	0.21	0.13	0.24	0.16	0.23	0.15	0.22	0.14	0.20	0.13	
820	0.467	0.002484	0.783	0.004477	0.23	0.13	0.27	0.15	0.26	0.14	0.24	0.13	0.23	0.13	
830	0.485	0.00258	1.168	0.006679	0.34	0.13	0.40	0.16	0.38	0.15	0.36	0.14	0.34	0.13	
840	0.615	0.003271	1.266	0.007239	0.37	0.17	0.44	0.20	0.41	0.19	0.39	0.18	0.37	0.17	
850	0.562	0.002989	1.12	0.006405	0.33	0.15	0.39	0.18	0.37	0.17	0.34	0.16	0.33	0.15	
860	0.524	0.002787	0.87	0.004975	0.26	0.14	0.30	0.17	0.28	0.16	0.27	0.15	0.25	0.14	
870	0.451	0.002399	0.843	0.004821	0.25	0.12	0.29	0.14	0.28	0.14	0.26	0.13	0.25	0.12	
880	0.333	0.001771	0.807	0.004615	0.24	0.09	0.28	0.11	0.26	0.10	0.25	0.10	0.23	0.09	
890	0.76	0.004042	1.454	0.008315	0.43	0.21	0.50	0.24	0.48	0.23	0.45	0.22	0.42	0.21	
900	0.348	0.001851	0.931	0.005324	0.27	0.10	0.32	0.11	0.30	0.11	0.29	0.10	0.27	0.09	
910	0.597	0.003175	1.135	0.00649	0.34	0.16	0.39	0.19	0.37	0.18	0.35	0.17	0.33	0.16	
920	0.964	0.005127	1.312	0.007503	0.39	0.26	0.45	0.31	0.43	0.29	0.40	0.28	0.38	0.26	
930	1.392	0.007404	1.67	0.00955	0.49	0.38	0.58	0.45	0.55	0.42	0.51	0.40	0.49	0.38	
940	1.405	0.007473	1.602	0.009161	0.47	0.39	0.55	0.45	0.52	0.43	0.49	0.40	0.47	0.38	
950	1.29	0.006861	1.448	0.00828	0.43	0.35	0.50	0.41	0.47	0.39	0.45	0.37	0.42	0.35	
960	1.102	0.005861	1.13	0.006462	0.33	0.30	0.39	0.35	0.37	0.34	0.35	0.32	0.33	0.30	
970	1.122	0.005968	0.81	0.004632	0.24	0.31	0.28	0.36	0.27	0.34	0.25	0.32	0.24	0.30	
980	1.198	0.006372	0.653	0.003734	0.19	0.33	0.23	0.38	0.21	0.36	0.20	0.34	0.19	0.32	
990	1.046	0.005564	0.697	0.003986	0.21	0.29	0.24	0.34	0.23	0.32	0.21	0.30	0.20	0.28	
1000	1.078	0.005734	0.847	0.004843	0.25	0.30	0.29	0.35	0.28	0.33	0.26	0.31	0.25	0.29	
1010	0.981	0.005218	0.89	0.005089	0.26	0.27	0.31	0.31	0.29	0.30	0.27	0.28	0.26	0.27	
1020	0.871	0.004633	0.886	0.005066	0.26	0.24	0.31	0.28	0.29	0.27	0.27	0.25	0.26	0.24	
1030	0.895	0.00476	1.006	0.005753	0.30	0.25	0.35	0.29	0.33	0.27	0.31	0.26	0.29	0.24	
1040	0.948	0.005042	1.235	0.007062	0.36	0.26	0.43	0.30	0.40	0.29	0.38	0.27	0.36	0.26	
1050	1.046	0.005564	1.528	0.008738	0.45	0.29	0.53	0.34	0.50	0.32	0.47	0.30	0.44	0.28	
1060	1.033	0.005494	1.624	0.009287	0.48	0.28	0.56	0.33	0.53	0.31	0.50	0.30	0.47	0.28	
1070	0.759	0.004037	1.303	0.007451	0.38	0.21	0.45	0.24	0.43	0.23	0.40	0.22	0.38	0.21	
1080	0.872	0.004638	1.273	0.007279	0.38	0.24	0.44	0.28	0.42	0.27	0.39	0.25	0.37	0.24	
1090	0.473	0.002516	0.738	0.00422	0.22	0.13	0.25	0.15	0.24	0.14	0.23	0.14	0.21	0.13	
1100	0.455	0.00242	0.549	0.003139	0.16	0.12	0.19	0.15	0.18	0.14	0.17	0.13	0.16	0.12	
1110	0.425	0.002261	0.509	0.002911	0.15	0.12	0.18	0.14	0.17	0.13	0.16	0.12	0.15	0.11	
1120	0.395	0.002101	0.469	0.002682	0.14	0.11	0.16	0.13	0.15	0.12	0.14	0.11	0.14	0.11	
1130	0.365	0.001941	0.429	0.002453	0.13	0.10	0.15	0.12	0.14	0.11	0.13	0.10	0.12	0.10	
1140	0.335	0.001782	0.389	0.002224	0.11	0.09	0.13	0.11	0.13	0.10	0.12	0.10	0.11	0.09	
1150	0.305	0.001622	0.349	0.001996	0.10	0.08	0.12	0.10	0.11	0.09	0.11	0.09	0.10	0.08	
1160	0.275	0.001463	0.309	0.001767	0.09	0.08	0.11	0.09	0.10	0.08	0.10	0.08	0.09	0.07	
1170	0.245	0.001303	0.269	0.001538	0.08	0.07	0.09	0.08	0.09	0.07	0.08	0.07	0.08	0.07	
1180	0.215	0.001144	0.229	0.00131	0.07	0.06	0.08	0.07	0.07	0.07	0.07	0.06	0.07	0.06	
1190	0.185	0.000984	0.189	0.001081	0.06	0.05	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	
1200	0.155	0.000824	0.149	0.000852	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	
1210	0.125	0.000665	0.109	0.000623	0.03	0.03	0.04	0.04	0.04	0.04	0.03	0.04	0.03	0.03	
1220	0.095	0.000505	0.069	0.000395	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	
1230	0.065	0.000346	0.029	0.000166	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	

SD-0680	Beacons	0	0	Avg. Net Sl	2.67	3.87	4.01	3.94	3.81					
SD-680	269.71	0	210.742	1357			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.030	0.000	0.023	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
10	6.439	0.024	6.588	0.031	1.00	0.76	1.44	1.10	1.49	1.14	1.47	1.12	1.42	1.08
20	6.008	0.022	6.548	0.031	0.99	0.71	1.43	1.03	1.48	1.06	1.46	1.04	1.41	1.01
30	5.776	0.021	5.975	0.028	0.90	0.68	1.31	0.99	1.35	1.02	1.33	1.00	1.29	0.97
40	5.631	0.021	5.842	0.028	0.88	0.67	1.28	0.96	1.32	1.00	1.30	0.98	1.26	0.95
50	5.291	0.020	5.651	0.027	0.85	0.63	1.24	0.90	1.28	0.94	1.26	0.92	1.22	0.89
60	5.073	0.019	5.112	0.024	0.77	0.60	1.12	0.87	1.16	0.90	1.14	0.88	1.10	0.85
70	4.867	0.018	4.607	0.022	0.70	0.58	1.01	0.83	1.04	0.86	1.03	0.85	0.99	0.82
80	4.740	0.018	4.172	0.020	0.63	0.56	0.91	0.81	0.95	0.84	0.93	0.82	0.90	0.80
90	4.701	0.017	3.913	0.019	0.59	0.56	0.86	0.80	0.89	0.83	0.87	0.82	0.84	0.79
100	4.587	0.017	3.725	0.018	0.56	0.54	0.81	0.78	0.84	0.81	0.83	0.80	0.80	0.77
110	4.312	0.016	3.366	0.016	0.51	0.51	0.74	0.74	0.76	0.76	0.75	0.75	0.73	0.73
120	4.130	0.015	3.084	0.015	0.47	0.49	0.67	0.71	0.70	0.73	0.69	0.72	0.66	0.70
130	4.056	0.015	2.950	0.014	0.45	0.48	0.65	0.69	0.67	0.72	0.66	0.71	0.64	0.68
140	4.007	0.015	2.888	0.014	0.44	0.47	0.63	0.68	0.65	0.71	0.64	0.70	0.62	0.68
150	3.948	0.015	2.845	0.013	0.43	0.47	0.62	0.67	0.64	0.70	0.63	0.69	0.61	0.67
160	3.889	0.014	2.824	0.013	0.43	0.46	0.62	0.66	0.64	0.69	0.63	0.68	0.61	0.66
170	3.879	0.014	2.840	0.013	0.43	0.46	0.62	0.66	0.64	0.69	0.63	0.67	0.61	0.65
180	3.903	0.014	2.864	0.014	0.43	0.46	0.63	0.67	0.65	0.69	0.64	0.68	0.62	0.66
190	3.952	0.015	2.898	0.014	0.44	0.47	0.63	0.68	0.66	0.70	0.65	0.69	0.62	0.67
200	4.007	0.015	2.926	0.014	0.44	0.47	0.64	0.68	0.66	0.71	0.65	0.70	0.63	0.68
210	3.967	0.015	2.848	0.014	0.43	0.47	0.62	0.68	0.65	0.70	0.63	0.69	0.61	0.67
220	3.817	0.014	2.656	0.013	0.40	0.45	0.58	0.65	0.60	0.68	0.59	0.66	0.57	0.64
230	3.686	0.014	2.462	0.012	0.37	0.44	0.54	0.63	0.56	0.65	0.55	0.64	0.53	0.62
240	3.555	0.013	2.270	0.011	0.34	0.42	0.50	0.61	0.51	0.63	0.51	0.62	0.49	0.60
250	3.428	0.013	2.076	0.010	0.31	0.41	0.45	0.59	0.47	0.61	0.46	0.60	0.45	0.58
260	3.301	0.012	1.880	0.009	0.28	0.39	0.41	0.56	0.43	0.58	0.42	0.57	0.41	0.56
270	3.181	0.012	1.680	0.008	0.25	0.38	0.37	0.54	0.38	0.56	0.37	0.55	0.36	0.54
280	3.267	0.012	1.686	0.008	0.26	0.39	0.37	0.56	0.38	0.58	0.38	0.57	0.36	0.55
290	3.500	0.013	1.848	0.009	0.28	0.41	0.40	0.60	0.42	0.62	0.41	0.61	0.40	0.59
300	3.760	0.014	2.081	0.010	0.31	0.44	0.46	0.64	0.47	0.67	0.46	0.65	0.45	0.63
310	3.746	0.014	2.053	0.010	0.31	0.44	0.45	0.64	0.47	0.66	0.46	0.65	0.44	0.63
320	3.274	0.012	1.576	0.007	0.24	0.39	0.34	0.56	0.36	0.58	0.35	0.57	0.34	0.55
330	3.014	0.011	1.327	0.006	0.20	0.36	0.29	0.52	0.30	0.53	0.30	0.52	0.29	0.51
340	3.683	0.014	2.024	0.010	0.31	0.44	0.44	0.63	0.46	0.65	0.45	0.64	0.44	0.62
350	3.063	0.011	1.427	0.007	0.22	0.36	0.31	0.52	0.32	0.54	0.32	0.53	0.31	0.52
360	2.517	0.009	0.871	0.004	0.13	0.30	0.19	0.43	0.20	0.45	0.19	0.44	0.19	0.42
370	2.475	0.009	0.761	0.004	0.12	0.29	0.17	0.42	0.17	0.44	0.17	0.43	0.16	0.42
380	2.788	0.010	1.023	0.005	0.15	0.33	0.22	0.48	0.23	0.49	0.23	0.48	0.22	0.47
390	3.154	0.012	1.332	0.006	0.20	0.37	0.29	0.54	0.30	0.56	0.30	0.55	0.29	0.53
400	3.505	0.013	1.595	0.008	0.24	0.41	0.35	0.60	0.36	0.62	0.36	0.61	0.34	0.59
410	3.843	0.014	1.842	0.009	0.28	0.45	0.40	0.66	0.42	0.68	0.41	0.67	0.40	0.65
420	4.046	0.015	1.984	0.009	0.30	0.48	0.43	0.69	0.45	0.72	0.44	0.70	0.43	0.68
430	3.971	0.015	1.921	0.009	0.29	0.47	0.42	0.68	0.44	0.70	0.43	0.69	0.41	0.67
440	3.890	0.014	1.846	0.009	0.28	0.46	0.40	0.66	0.42	0.69	0.41	0.68	0.40	0.66
450	3.783	0.014	1.782	0.008	0.27	0.45	0.39	0.65	0.40	0.67	0.40	0.66	0.38	0.64
460	3.621	0.013	1.719	0.008	0.26	0.43	0.38	0.62	0.39	0.64	0.38	0.63	0.37	0.61
470	3.458	0.013	1.654	0.008	0.25	0.41	0.36	0.59	0.37	0.61	0.37	0.60	0.36	0.58
480	3.438	0.013	1.692	0.008	0.26	0.41	0.37	0.59	0.38	0.61	0.38	0.60	0.36	0.58
490	3.373	0.013	1.724	0.008	0.26	0.40	0.38	0.58	0.39	0.60	0.38	0.59	0.37	0.57
500	3.047	0.011	1.673	0.008	0.25	0.36	0.37	0.52	0.38	0.54	0.37	0.53	0.36	0.51
510	2.745	0.010	1.761	0.008	0.27	0.32	0.39	0.47	0.40	0.49	0.39	0.48	0.38	0.46
520	2.599	0.010	1.945	0.009	0.29	0.31	0.43	0.44	0.44	0.46	0.43	0.45	0.42	0.44
530	2.178	0.008	1.783	0.008	0.27	0.26	0.39	0.37	0.40	0.39	0.40	0.38	0.38	0.37
540	1.856	0.007	1.508	0.007	0.23	0.22	0.33	0.32	0.34	0.33	0.34	0.32	0.33	0.31
550	1.694	0.006	1.593	0.008	0.24	0.20	0.35	0.29	0.36	0.30	0.35	0.29	0.34	0.29
560	2.406	0.009	2.000	0.009	0.30	0.28	0.44	0.41	0.45	0.43	0.45	0.42	0.43	0.41
570	2.532	0.009	2.045	0.010	0.31	0.30	0.45	0.43	0.46	0.45	0.46	0.44	0.44	0.43
580	2.378	0.009	1.988	0.009	0.30	0.28	0.43	0.41	0.45	0.42	0.44	0.41	0.43	0.40
590	1.942	0.007	1.792	0.009	0.27	0.23	0.39	0.33	0.41	0.34	0.40	0.34	0.39	0.33
600	1.874	0.007	1.865	0.009	0.28	0.22	0.41	0.32	0.42	0.33	0.42	0.33	0.40	0.32
610	1.934	0.007	1.859	0.009	0.28	0.23	0.41	0.33	0.42	0.34	0.41	0.34	0.40	0.33
620	2.065	0.008	1.517	0.007	0.23	0.24	0.33	0.35	0.34	0.37	0.34	0.36	0.33	0.35
630	2.251	0.008	1.772	0.008	0.27	0.27	0.39	0.38	0.40	0.40	0.39	0.39	0.38	0.38
640	2.138	0.008	1.193	0.006	0.18	0.25	0.26	0.37	0.27	0.38	0.27	0.37	0.26	0.36
650	2.007	0.007	1.164	0.006	0.18	0.24	0.25	0.34	0.26	0.36	0.26	0.35	0.25	0.34
660	2.416	0.009	1.748	0.008	0.26	0.29	0.38	0.41	0.40	0.43	0.39	0.42	0.38	0.41
670	2.641	0.010	1.764	0.008	0.27	0.31	0.39	0.45	0.40	0.47	0.39	0.46	0.38	0.44
680	2.367	0.009	1.423	0.007	0.22	0.28	0.31	0.40	0.32	0.42	0.32	0.41	0.31	0.40
690	2.785	0.010	1.484	0.007	0.22	0.33	0.32	0.48	0.34	0.49	0.33	0.48	0.32	0.47
700	1.671	0.006	1.062	0.005	0.16	0.20	0.23	0.29	0.24	0.30	0.24	0.29	0.23	0.28
710	1.797	0.007	2.164	0.010	0.33	0.21	0.47	0.31	0.49	0.32	0.48	0.31	0.47	0.30
720	1.634	0.006	2.247	0.011	0.34	0.19	0.49	0.28	0.51	0.29	0.50	0.28	0.48	0.28
730	1.350	0.005	1.860	0.009	0.28	0.16	0.41	0.23	0.42	0.24	0.41	0.23	0.40	0.23
740	0.823	0.003	1.251	0.006	0.19	0.10	0.27	0.14	0.28	0.15	0.28	0.14	0.27	0.14
750	0.680	0.003	1.165	0.006	0.18	0.08	0.25	0.12	0.26	0.12	0.26	0.12	0.25	0.11
760	0.670	0.002	1.555	0.007	0.24	0.08	0.34	0.11	0.35	0.12	0.35	0.12	0.34	0.11
770	0.660	0.002	1.010	0.005	0.15	0.08	0.22	0.11	0.23	0.12	0.22	0.11	0.22	0.11
780	0.650	0.002	0.994	0.005	0.15	0.08	0.22	0.11	0.23	0.12	0.22	0.11	0.21	0.11
790	0.640	0.002	0.978	0.005	0.15	0.08	0.21	0.11	0.22	0.11	0.22	0.11	0.21	0.11
800	0.630	0.002	0.962	0.005	0.15	0.07	0.21	0.11	0.22	0.11	0.21	0.11	0.21	0.11
810	0.620	0.002	0.946	0.004	0.14	0.07	0.21	0.11	0.21	0.11	0.21	0.11	0.20	0.10
820	0.610	0.002	0.930	0.004	0.14	0.07	0.20	0.10	0.21	0.11	0.21	0.11	0.20	0.10
830	0.600	0.002	0.914	0.004	0.14	0.07	0.20	0.10	0.21	0.11	0.20	0.10	0.20	0.10
840	0.590	0.002	0.898	0.004	0.14	0.07	0.20	0.10	0.20	0.10	0.20	0.10	0.19	0.10
850	0.580	0.002	0.882	0.004	0.13	0.07	0.19	0.10	0.20	0.10	0.20	0.10	0.19	0.10
860	0.570	0.002	0.866	0.004	0.13	0.07	0.19	0.10	0.20	0.10	0.19	0.10	0.19	0.10
870	0.560	0.002	0.850	0.004	0.13	0.07	0.19	0.10	0.19	0.10	0.19	0.10	0.18	0.09
880	0.550	0.002	0.834	0.004	0.13	0.07	0.18	0.09	0.19	0.10	0.19	0.10	0.18	0.09
890	0.540	0.002	0.818	0.004	0.12	0.06	0.18	0.09	0.19	0.10	0.18	0.09	0.18	0.09
900	0.530	0.002	0.802	0.004	0.12	0.06	0.18	0.09	0.18	0.09	0.18	0.09	0.17	0.09
910	0.520	0.002	0.786	0.004	0.12	0.06	0.17	0.09	0.18	0.09	0.17	0.09	0.17	0.09
920	0.510	0.002	0.770	0.004	0.12	0.06	0.17	0.09	0.17	0.09	0.17	0.09	0.17	0.09
930	0.500	0.002	0.754	0.004	0.11	0.06	0.16	0.09	0.17	0.09	0.17	0.09	0.16	0.08
940	0.490	0.002	0.738	0.004	0.11	0.06	0.16	0.08	0.17	0.09	0.16	0.09	0.16	0.08
950	0.480	0.002	0.722	0.003	0.11	0.06	0.16	0.08	0.16	0.08	0.16	0.08	0.16	0.08
960	0.470	0.002	0.706	0.003	0.11	0.06	0.15	0.08	0.16	0.08	0.16	0.08	0.15	0.08
970	0.460	0.002	0.690	0.003	0.10	0.05	0.15	0.08	0.16	0.08	0.15	0.08	0.15	0.08
980	0.450	0.002	0.674	0.003	0.10	0.05	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08
990	0.440	0.002	0.658	0.003	0.10	0.05	0.14	0.08	0.15	0.08	0.15	0.08	0.14	0.07
1000	0.430	0.002	0.642	0.003	0.10	0.05	0.14	0.07	0.15	0.08	0.14	0.07	0.14	0.07
1010	0.420	0.002	0.626	0.003	0.09	0.05	0.14	0.07	0.14	0.07	0.14	0.07	0.13	0.07
1020	0.410	0.002	0.610	0.003	0.09	0.05	0.13	0.07	0.14	0.07	0.14	0.07	0.13	0.07
1030	0.400	0.001	0.594	0.003	0.09	0.05	0.13	0.07	0.13	0.07	0.13	0.07	0.13	0.07
1040	0.390	0.001	0.578	0.003	0.09	0.05	0.13	0.07	0.13	0.07	0.13	0.07	0.12	0.07
1050	0.380	0.001	0.562	0.003	0.09	0.04	0.12	0.06	0.13	0.07	0.13	0.07	0.12	0.06
1060	0.370	0.001	0.546	0.003	0.08	0.04	0.12	0.06	0.12	0.07	0.12	0.06	0.12	0.06
1070	0.360	0.001	0.530	0.003	0.08	0.04	0.12	0.06	0.12	0.06	0.12	0.06	0.11	0.06
1080	0.350	0.001	0.514	0.002	0.08	0.04	0.11	0.06	0.12	0.06	0.11	0.06	0.11	0.06
1090	0.340	0.001	0.498	0.002	0.08	0.04	0.11	0.06	0.11	0.06	0.11	0.06	0.11	0.06
1100	0.330	0.001	0.482	0.002	0.07	0.04	0.11	0.06	0.11	0.06	0.11	0.06	0.10	0.06
1110	0.320	0.001	0.466	0.002	0.07	0.04	0.10	0.05	0.11	0.06	0.10	0.06	0.10	0.05
1120	0.310	0.001	0.450	0.002	0.07	0.04	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05
1130	0.300	0.001	0.434	0.002	0.07	0.04	0.09	0.05	0.10	0.05	0.10	0.05	0.09	0.05
1140	0.290	0.001	0.418	0.002	0.06	0.03	0.09	0.05	0.09	0.05	0.09	0.05	0.09	0.05
1150	0.280	0.001	0.402	0.002	0.06	0.03	0.09	0.05	0.09	0.05	0.09	0.05	0.09	0.05
1160	0.270	0.001	0.386	0.002	0.06	0.03	0.08	0.05	0.09	0.05	0.09	0.05	0.08	0.05
1170	0.260	0.001	0.370	0.002	0.06	0.03	0.08	0.04	0.08	0.05	0.08	0.05	0.08	0.04
1180	0.250	0.001	0.354	0.002	0.05	0.03	0.08	0.04	0.08	0.04	0.08	0.04	0.08	0.04
1190	0.240	0.001	0.338	0.002	0.05	0.03	0.07	0.04	0.08	0.04	0.08	0.04	0.07	0.04
1200	0.230	0.001	0.322	0.002	0.05	0.03	0.07	0.04	0.07	0.04	0.07	0.04	0.07	0.04
1210	0.220	0.001	0.306	0.001	0.05	0.03	0.07	0.04	0.07	0.04	0.07	0.04	0.07	0.04
1220	0.210	0.001	0.290	0.001	0.04	0.02	0.06	0.04	0.07	0.04	0.06	0.04	0.06	0.04
1230	0.200	0.001	0.274	0.001	0.04	0.02	0.06	0.03	0.06	0.04	0.06	0.03	0.06	0.03
1240	0.190	0.001	0.258	0.001	0.04	0.02	0.06	0.03	0.06	0.03	0.06	0.03	0.06	0.03
1250	0.180	0.001	0.242	0.001	0.04	0.02	0.05	0.03	0.05	0.03	0.05	0.03	0.05	0.03
1260	0.170	0.001	0.226	0.001	0.03	0.02	0.05	0.03	0.05	0.03	0.05	0.03	0.05	0.03
1270	0.160	0.001	0.210	0.001	0.03	0.02	0.05	0.03	0.05	0.03	0.05	0.03	0.05	0.03
1280	0.150	0.001	0.194	0.001	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1290	0.140	0.001	0.178	0.001	0.03	0.02	0.04	0.02	0.04	0.02	0.04	0.02	0.04	0.02
1300	0.130	0.000	0.162	0.001	0.02	0.02	0.04	0.02	0.04	0.02	0.04	0.02	0.03	0.02
1310	0.120	0.000	0.146	0.001	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1320	0.110	0.000	0.130	0.001	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1330	0.100	0.000	0.114	0.001	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
1340	0.090	0.000	0.098	0.000	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1350	0.080	0.000	0.082	0.000	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1360	0.070	0.000	0.066	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

SD-0690	Leucadia	0	0	Avg. Net Sl	4.62	3.23	3.16	3.15	3.14					
SD-690	98.1278	0	105.601	1470			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	2.782	0.028	3.016	0.029	1.57	1.56	1.10	1.09	1.08	1.07	1.07	1.06	1.07	1.06
10	2.570	0.026	3.304	0.031	1.72	1.44	1.20	1.01	1.18	0.99	1.17	0.98	1.17	0.98
20	3.050	0.031	3.749	0.036	1.96	1.71	1.37	1.20	1.34	1.17	1.33	1.17	1.33	1.16
30	2.836	0.029	3.376	0.032	1.76	1.59	1.23	1.11	1.21	1.09	1.20	1.08	1.20	1.08
40	2.546	0.026	2.914	0.028	1.52	1.43	1.06	1.00	1.04	0.98	1.04	0.97	1.03	0.97
50	2.130	0.022	2.434	0.023	1.27	1.20	0.89	0.84	0.87	0.82	0.87	0.81	0.86	0.81
60	1.736	0.018	2.024	0.019	1.06	0.97	0.74	0.68	0.72	0.67	0.72	0.66	0.72	0.66
70	1.302	0.013	1.549	0.015	0.81	0.73	0.56	0.51	0.55	0.50	0.55	0.50	0.55	0.50
80	1.020	0.010	1.179	0.011	0.61	0.57	0.43	0.40	0.42	0.39	0.42	0.39	0.42	0.39
90	0.912	0.009	0.963	0.009	0.50	0.51	0.35	0.36	0.34	0.35	0.34	0.35	0.34	0.35
100	0.802	0.008	0.777	0.007	0.41	0.45	0.28	0.31	0.28	0.31	0.28	0.31	0.28	0.31
110	0.661	0.007	0.592	0.006	0.31	0.37	0.22	0.26	0.21	0.25	0.21	0.25	0.21	0.25
120	0.646	0.007	0.547	0.005	0.29	0.36	0.20	0.25	0.20	0.25	0.19	0.25	0.19	0.25
130	0.665	0.007	0.533	0.005	0.28	0.37	0.19	0.26	0.19	0.26	0.19	0.25	0.19	0.25
140	0.652	0.007	0.506	0.005	0.26	0.37	0.18	0.26	0.18	0.25	0.18	0.25	0.18	0.25
150	0.778	0.008	0.612	0.006	0.32	0.44	0.22	0.31	0.22	0.30	0.22	0.30	0.22	0.30
160	0.926	0.009	0.704	0.007	0.37	0.52	0.26	0.36	0.25	0.36	0.25	0.35	0.25	0.35
170	1.085	0.011	0.798	0.008	0.42	0.61	0.29	0.43	0.28	0.42	0.28	0.42	0.28	0.41
180	1.134	0.012	0.805	0.008	0.42	0.64	0.29	0.45	0.29	0.44	0.29	0.43	0.29	0.43
190	1.126	0.011	0.756	0.007	0.39	0.63	0.28	0.44	0.27	0.43	0.27	0.43	0.27	0.43
200	1.153	0.012	0.714	0.007	0.37	0.65	0.26	0.45	0.25	0.44	0.25	0.44	0.25	0.44
210	1.213	0.012	0.680	0.006	0.35	0.68	0.25	0.48	0.24	0.47	0.24	0.46	0.24	0.46
220	1.219	0.012	0.613	0.006	0.32	0.68	0.22	0.48	0.22	0.47	0.22	0.47	0.22	0.46
230	1.361	0.014	0.710	0.007	0.37	0.76	0.26	0.53	0.25	0.52	0.25	0.52	0.25	0.52
240	1.512	0.015	0.818	0.008	0.43	0.85	0.30	0.59	0.29	0.58	0.29	0.58	0.29	0.58
250	1.717	0.017	1.010	0.010	0.53	0.96	0.37	0.67	0.36	0.66	0.36	0.66	0.36	0.65
260	1.942	0.020	1.264	0.012	0.66	1.09	0.46	0.76	0.45	0.75	0.45	0.74	0.45	0.74
270	1.865	0.019	1.226	0.012	0.64	1.05	0.45	0.73	0.44	0.72	0.44	0.71	0.43	0.71
280	1.466	0.015	0.848	0.008	0.44	0.82	0.31	0.58	0.30	0.56	0.30	0.56	0.30	0.56
290	1.108	0.011	0.486	0.005	0.25	0.62	0.18	0.43	0.17	0.43	0.17	0.42	0.17	0.42
300	1.250	0.013	0.632	0.006	0.33	0.70	0.23	0.49	0.23	0.48	0.22	0.48	0.22	0.48
310	1.437	0.015	0.842	0.008	0.44	0.81	0.31	0.56	0.30	0.55	0.30	0.55	0.30	0.55
320	1.587	0.016	1.059	0.010	0.55	0.89	0.39	0.62	0.38	0.61	0.38	0.61	0.38	0.61
330	1.702	0.017	1.287	0.012	0.67	0.96	0.47	0.67	0.46	0.65	0.46	0.65	0.46	0.65
340	1.748	0.018	1.454	0.014	0.76	0.98	0.53	0.69	0.52	0.67	0.52	0.67	0.52	0.67
350	1.750	0.018	1.572	0.015	0.82	0.98	0.57	0.69	0.56	0.67	0.56	0.67	0.56	0.67
360	1.759	0.018	1.681	0.016	0.88	0.99	0.61	0.69	0.60	0.68	0.60	0.67	0.60	0.67
370	1.649	0.017	1.697	0.016	0.88	0.93	0.62	0.65	0.61	0.63	0.60	0.63	0.60	0.63
380	1.349	0.014	1.569	0.015	0.82	0.76	0.57	0.53	0.56	0.52	0.56	0.52	0.56	0.51
390	1.019	0.010	1.427	0.014	0.74	0.57	0.52	0.40	0.51	0.39	0.51	0.39	0.51	0.39
400	0.832	0.008	1.364	0.013	0.71	0.47	0.50	0.33	0.49	0.32	0.48	0.32	0.48	0.32
410	0.794	0.008	1.349	0.013	0.70	0.45	0.49	0.31	0.48	0.31	0.48	0.30	0.48	0.30
420	0.697	0.007	1.270	0.012	0.66	0.39	0.46	0.27	0.45	0.27	0.45	0.27	0.45	0.27
430	0.607	0.006	1.172	0.011	0.61	0.34	0.43	0.24	0.42	0.23	0.42	0.23	0.42	0.23
440	0.521	0.005	1.061	0.010	0.55	0.29	0.39	0.20	0.38	0.20	0.38	0.20	0.38	0.20
450	0.398	0.004	0.889	0.008	0.46	0.22	0.32	0.16	0.32	0.15	0.32	0.15	0.32	0.15
460	0.255	0.003	0.658	0.006	0.34	0.14	0.24	0.10	0.23	0.10	0.23	0.10	0.23	0.10
470	0.472	0.005	0.785	0.007	0.41	0.26	0.29	0.19	0.28	0.18	0.28	0.18	0.28	0.18
480	0.729	0.007	0.949	0.009	0.49	0.41	0.35	0.29	0.34	0.28	0.34	0.28	0.34	0.28
490	0.586	0.006	0.712	0.007	0.37	0.33	0.26	0.23	0.25	0.23	0.25	0.22	0.25	0.22
500	0.579	0.006	0.638	0.006	0.33	0.32	0.23	0.23	0.23	0.22	0.23	0.22	0.23	0.22
510	0.686	0.007	0.703	0.007	0.37	0.38	0.26	0.27	0.25	0.26	0.25	0.26	0.25	0.26
520	0.704	0.007	0.678	0.006	0.35	0.40	0.25	0.28	0.24	0.27	0.24	0.27	0.24	0.27
530	0.691	0.007	0.612	0.006	0.32	0.39	0.22	0.27	0.22	0.27	0.22	0.26	0.22	0.26
540	0.709	0.007	0.599	0.006	0.31	0.40	0.22	0.28	0.21	0.27	0.21	0.27	0.21	0.27
550	0.742	0.008	0.647	0.006	0.34	0.42	0.24	0.29	0.23	0.29	0.23	0.28	0.23	0.28
560	0.599	0.006	0.518	0.005	0.27	0.34	0.19	0.24	0.18	0.23	0.18	0.23	0.18	0.23
570	0.579	0.006	0.531	0.005	0.28	0.32	0.19	0.23	0.19	0.22	0.19	0.22	0.19	0.22
580	0.531	0.005	0.487	0.005	0.25	0.30	0.18	0.21	0.17	0.20	0.17	0.20	0.17	0.20
590	0.601	0.006	0.534	0.005	0.28	0.34	0.19	0.24	0.19	0.23	0.19	0.23	0.19	0.23
600	0.594	0.006	0.523	0.005	0.27	0.33	0.19	0.23	0.19	0.23	0.19	0.23	0.19	0.23
610	0.588	0.006	0.548	0.005	0.29	0.33	0.20	0.23	0.20	0.23	0.19	0.22	0.19	0.22
620	0.581	0.006	0.814	0.008	0.42	0.33	0.30	0.23	0.29	0.22	0.29	0.22	0.29	0.22
630	0.574	0.006	0.805	0.008	0.42	0.32	0.29	0.23	0.29	0.22	0.29	0.22	0.29	0.22
640	0.568	0.006	0.795	0.008	0.41	0.32	0.29	0.22	0.28	0.22	0.28	0.22	0.28	0.22
650	0.561	0.006	0.786	0.007	0.41	0.31	0.29	0.22	0.28	0.22	0.28	0.21	0.28	0.21
660	0.554	0.006	0.776	0.007	0.40	0.31	0.28	0.22	0.28	0.21	0.28	0.21	0.28	0.21
670	0.547	0.006	0.767	0.007	0.40	0.31	0.28	0.21	0.27	0.21	0.27	0.21	0.27	0.21
680	0.541	0.006	0.758	0.007	0.40	0.30	0.28	0.21	0.27	0.21	0.27	0.21	0.27	0.21
690	0.534	0.005	0.748	0.007	0.39	0.30	0.27	0.21	0.27	0.21	0.27	0.20	0.27	0.20
700	0.527	0.005	0.739	0.007	0.39	0.30	0.27	0.21	0.26	0.20	0.26	0.20	0.26	0.20
710	0.521	0.005	0.729	0.007	0.38	0.29	0.27	0.20	0.26	0.20	0.26	0.20	0.26	0.20
720	0.514	0.005	0.720	0.007	0.38	0.29	0.26	0.20	0.26	0.20	0.26	0.20	0.26	0.20
730	0.507	0.005	0.711	0.007	0.37	0.28	0.26	0.20	0.25	0.19	0.25	0.19	0.25	0.19
740	0.500	0.005	0.701	0.007	0.37	0.28	0.26	0.20	0.25	0.19	0.25	0.19	0.25	0.19
750	0.494	0.005	0.692	0.007	0.36	0.28	0.25	0.19	0.25	0.19	0.25	0.19	0.25	0.19
760	0.487	0.005	0.682	0.006	0.36	0.27	0.25	0.19	0.24	0.19	0.24	0.19	0.24	0.19
770	0.480	0.005	0.673	0.006	0.35	0.27	0.25	0.19	0.24	0.18	0.24	0.18	0.24	0.18
780	0.474	0.005	0.664	0.006	0.35	0.27	0.24	0.19	0.24	0.18	0.24	0.18	0.24	0.18
790	0.467	0.005	0.654	0.006	0.34	0.26	0.24	0.18	0.23	0.18	0.23	0.18	0.23	0.18
800	0.460	0.005	0.645	0.006	0.34	0.26	0.24	0.18	0.23	0.18	0.23	0.18	0.23	0.18
810	0.454	0.005	0.635	0.006	0.33	0.25	0.23	0.18	0.23	0.17	0.23	0.17	0.23	0.17
820	0.447	0.005	0.626	0.006	0.33	0.25	0.23	0.18	0.22	0.17	0.22	0.17	0.22	0.17
830	0.440	0.004	0.617	0.006	0.32	0.25	0.22	0.17	0.22	0.17	0.22	0.17	0.22	0.17
840	0.434	0.004	0.607	0.006	0.32	0.24	0.22	0.17	0.22	0.17	0.22	0.17	0.22	0.17
850	0.427	0.004	0.598	0.006	0.31	0.24	0.22	0.17	0.21	0.16	0.21	0.16	0.21	0.16
860	0.420	0.004	0.588	0.006	0.31	0.24	0.21	0.16	0.21	0.16	0.21	0.16	0.21	0.16
870	0.413	0.004	0.579	0.005	0.30	0.23	0.21	0.16	0.21	0.16	0.21	0.16	0.21	0.16
880	0.407	0.004	0.570	0.005	0.30	0.23	0.21	0.16	0.20	0.16	0.20	0.16	0.20	0.16
890	0.400	0.004	0.560	0.005	0.29	0.22	0.20	0.16	0.20	0.15	0.20	0.15	0.20	0.15
900	0.393	0.004	0.551	0.005	0.29	0.22	0.20	0.15	0.20	0.15	0.20	0.15	0.20	0.15
910	0.387	0.004	0.541	0.005	0.28	0.22	0.20	0.15	0.19	0.15	0.19	0.15	0.19	0.15
920	0.380	0.004	0.532	0.005	0.28	0.21	0.19	0.15	0.19	0.15	0.19	0.15	0.19	0.14
930	0.373	0.004	0.523	0.005	0.27	0.21	0.19	0.15	0.19	0.14	0.19	0.14	0.19	0.14
940	0.367	0.004	0.513	0.005	0.27	0.21	0.19	0.14	0.18	0.14	0.18	0.14	0.18	0.14
950	0.360	0.004	0.504	0.005	0.26	0.20	0.18	0.14	0.18	0.14	0.18	0.14	0.18	0.14
960	0.353	0.004	0.494	0.005	0.26	0.20	0.18	0.14	0.18	0.14	0.18	0.14	0.18	0.13
970	0.346	0.004	0.485	0.005	0.25	0.19	0.18	0.14	0.17	0.13	0.17	0.13	0.17	0.13
980	0.340	0.003	0.476	0.005	0.25	0.19	0.17	0.13	0.17	0.13	0.17	0.13	0.17	0.13
990	0.333	0.003	0.466	0.004	0.24	0.19	0.17	0.13	0.17	0.13	0.17	0.13	0.17	0.13
1000	0.326	0.003	0.457	0.004	0.24	0.18	0.17	0.13	0.16	0.13	0.16	0.12	0.16	0.12
1010	0.320	0.003	0.447	0.004	0.23	0.18	0.16	0.13	0.16	0.12	0.16	0.12	0.16	0.12
1020	0.313	0.003	0.438	0.004	0.23	0.18	0.16	0.12	0.16	0.12	0.16	0.12	0.16	0.12
1030	0.306	0.003	0.429	0.004	0.22	0.17	0.16	0.12	0.15	0.12	0.15	0.12	0.15	0.12
1040	0.300	0.003	0.419	0.004	0.22	0.17	0.15	0.12	0.15	0.12	0.15	0.11	0.15	0.11
1050	0.293	0.003	0.410	0.004	0.21	0.16	0.15	0.11	0.15	0.11	0.15	0.11	0.15	0.11
1060	0.286	0.003	0.400	0.004	0.21	0.16	0.15	0.11	0.14	0.11	0.14	0.11	0.14	0.11
1070	0.279	0.003	0.391	0.004	0.20	0.16	0.14	0.11	0.14	0.11	0.14	0.11	0.14	0.11
1080	0.273	0.003	0.382	0.004	0.20	0.15	0.14	0.11	0.14	0.10	0.14	0.10	0.14	0.10
1090	0.266	0.003	0.372	0.004	0.19	0.15	0.14	0.10	0.13	0.10	0.13	0.10	0.13	0.10
1100	0.259	0.003	0.363	0.003	0.19	0.15	0.13	0.10	0.13	0.10	0.13	0.10	0.13	0.10
1110	0.253	0.003	0.353	0.003	0.18	0.14	0.13	0.10	0.13	0.10	0.13	0.10	0.13	0.10
1120	0.246	0.003	0.344	0.003	0.18	0.14	0.13	0.10	0.12	0.09	0.12	0.09	0.12	0.09
1130	0.239	0.002	0.335	0.003	0.17	0.13	0.12	0.09	0.12	0.09	0.12	0.09	0.12	0.09
1140	0.233	0.002	0.325	0.003	0.17	0.13	0.12	0.09	0.12	0.09	0.12	0.09	0.12	0.09
1150	0.226	0.002	0.316	0.003	0.16	0.13	0.12	0.09	0.11	0.09	0.11	0.09	0.11	0.09
1160	0.219	0.002	0.306	0.003	0.16	0.12	0.11	0.09	0.11	0.08	0.11	0.08	0.11	0.08
1170	0.212	0.002	0.297	0.003	0.15	0.12	0.11	0.08	0.11	0.08	0.11	0.08	0.11	0.08
1180	0.206	0.002	0.288	0.003	0.15	0.12	0.10	0.08	0.10	0.08	0.10	0.08	0.10	0.08
1190	0.199	0.002	0.278	0.003	0.15	0.11	0.10	0.08	0.10	0.08	0.10	0.08	0.10	0.08
1200	0.192	0.002	0.269	0.003	0.14	0.11	0.10	0.08	0.10	0.07	0.10	0.07	0.10	0.07
1210	0.186	0.002	0.259	0.002	0.14	0.10	0.09	0.07	0.09	0.07	0.09	0.07	0.09	0.07
1220	0.179	0.002	0.250	0.002	0.13	0.10	0.09	0.07	0.09	0.07	0.09	0.07	0.09	0.07
1230	0.172	0.002	0.241	0.002	0.13	0.10	0.09	0.07	0.09	0.07	0.09	0.07	0.09	0.07
1240	0.166	0.002	0.231	0.002	0.12	0.09	0.08	0.06	0.08	0.06	0.08	0.06	0.08	0.06
1250	0.159	0.002	0.222	0.002	0.12	0.09	0.08	0.06	0.08	0.06	0.08	0.06	0.08	0.06
1260	0.152	0.002	0.212	0.002	0.11	0.09	0.08	0.06	0.08	0.06	0.08	0.06	0.08	0.06
1270	0.145	0.001	0.203	0.002	0.11	0.08	0.07	0.06	0.07	0.06	0.07	0.06	0.07	0.06
1280	0.139	0.001	0.194	0.002	0.10	0.08	0.07	0.05	0.07	0.05	0.07	0.05	0.07	0.05
1290	0.132	0.001	0.184	0.002	0.10	0.07	0.07	0.05	0.07	0.05	0.07	0.05	0.07	0.05
1300	0.125	0.001	0.175	0.002	0.09	0.07	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1310	0.119	0.001	0.165	0.002	0.09	0.07	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1320	0.112	0.001	0.156	0.001	0.08	0.06	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04
1330	0.105	0.001	0.147	0.001	0.08	0.06	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1340	0.098	0.001	0.137	0.001	0.07	0.06	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1350	0.092	0.001	0.128	0.001	0.07	0.05	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1360	0.085	0.001	0.118	0.001	0.06	0.05	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1370	0.078	0.001	0.109	0.001	0.06	0.04	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1380	0.072	0.001	0.100	0.001	0.05	0.04	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1390	0.065	0.001	0.090	0.001	0.05	0.04	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02
1400	0.058	0.001	0.081	0.001	0.04	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1410	0.052	0.001	0.071	0.001	0.04	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1420	0.045	0.000	0.062	0.001	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1430	0.038	0.000	0.053	0.000	0.03	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1440	0.031	0.000	0.043	0.000	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1450	0.025	0.000	0.034	0.000	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1460	0.018	0.000	0.024	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1470	0.011	0.000	0.015	0.000	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00

SD-0695	Leucadia	0	0	Avg. Net Sl	4.02	2.75	2.62	2.62	2.69					
SD-695	104.044	0	143.745	1500			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.016	0.000	0.010	0.000	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
10	2.509	0.024	2.507	0.017	0.84	1.16	0.57	0.79	0.55	0.75	0.55	0.75	0.56	0.77
20	2.681	0.026	2.717	0.019	0.91	1.23	0.62	0.84	0.59	0.81	0.59	0.81	0.61	0.83
30	2.668	0.026	2.824	0.020	0.94	1.23	0.64	0.84	0.61	0.80	0.61	0.80	0.63	0.82
40	2.439	0.023	2.938	0.020	0.98	1.12	0.67	0.77	0.64	0.73	0.64	0.73	0.66	0.75
50	2.207	0.021	2.988	0.021	1.00	1.02	0.68	0.70	0.65	0.66	0.65	0.66	0.67	0.68
60	2.055	0.020	2.674	0.019	0.89	0.95	0.61	0.65	0.58	0.62	0.58	0.62	0.60	0.63
70	1.866	0.018	2.328	0.016	0.78	0.86	0.53	0.59	0.51	0.56	0.51	0.56	0.52	0.58
80	1.713	0.016	2.094	0.015	0.70	0.79	0.48	0.54	0.46	0.51	0.46	0.51	0.47	0.53
90	1.522	0.015	1.949	0.014	0.65	0.70	0.44	0.48	0.42	0.46	0.42	0.46	0.44	0.47
100	1.513	0.015	1.827	0.013	0.61	0.70	0.42	0.48	0.40	0.45	0.40	0.45	0.41	0.47
110	1.532	0.015	1.763	0.012	0.59	0.71	0.40	0.48	0.38	0.46	0.38	0.46	0.39	0.47
120	1.452	0.014	1.677	0.012	0.56	0.67	0.38	0.46	0.36	0.44	0.36	0.44	0.37	0.45
130	1.229	0.012	1.417	0.010	0.47	0.57	0.32	0.39	0.31	0.37	0.31	0.37	0.32	0.38
140	1.070	0.010	1.197	0.008	0.40	0.49	0.27	0.34	0.26	0.32	0.26	0.32	0.27	0.33
150	0.966	0.009	1.035	0.007	0.34	0.44	0.24	0.30	0.23	0.29	0.23	0.29	0.23	0.30
160	0.923	0.009	0.905	0.006	0.30	0.43	0.21	0.29	0.20	0.28	0.20	0.28	0.20	0.28
170	0.885	0.009	0.784	0.005	0.26	0.41	0.18	0.28	0.17	0.27	0.17	0.27	0.18	0.27
180	0.945	0.009	0.758	0.005	0.25	0.44	0.17	0.30	0.16	0.28	0.16	0.28	0.17	0.29
190	1.260	0.012	0.932	0.006	0.31	0.58	0.21	0.40	0.20	0.38	0.20	0.38	0.21	0.39
200	1.625	0.016	1.148	0.008	0.38	0.75	0.26	0.51	0.25	0.49	0.25	0.49	0.26	0.50
210	1.868	0.018	1.369	0.010	0.46	0.86	0.31	0.59	0.30	0.56	0.30	0.56	0.31	0.58
220	1.913	0.018	1.450	0.010	0.48	0.88	0.33	0.60	0.32	0.57	0.32	0.57	0.32	0.59
230	1.927	0.019	1.503	0.010	0.50	0.89	0.34	0.61	0.33	0.58	0.33	0.58	0.34	0.59
240	1.611	0.015	1.310	0.009	0.44	0.74	0.30	0.51	0.28	0.48	0.28	0.48	0.29	0.50
250	1.633	0.016	1.324	0.009	0.44	0.75	0.30	0.51	0.29	0.49	0.29	0.49	0.30	0.50
260	1.846	0.018	1.496	0.010	0.50	0.85	0.34	0.58	0.33	0.55	0.33	0.55	0.33	0.57
270	1.844	0.018	1.455	0.010	0.48	0.85	0.33	0.58	0.32	0.55	0.32	0.55	0.32	0.57
280	1.853	0.018	1.483	0.010	0.49	0.85	0.34	0.58	0.32	0.56	0.32	0.56	0.33	0.57
290	1.354	0.013	1.137	0.008	0.38	0.62	0.26	0.43	0.25	0.41	0.25	0.41	0.25	0.42
300	1.174	0.011	1.112	0.008	0.37	0.54	0.25	0.37	0.24	0.35	0.24	0.35	0.25	0.36
310	0.990	0.010	1.109	0.008	0.37	0.46	0.25	0.31	0.24	0.30	0.24	0.30	0.25	0.31
320	0.857	0.008	1.094	0.008	0.36	0.39	0.25	0.27	0.24	0.26	0.24	0.26	0.24	0.26
330	0.706	0.007	1.084	0.008	0.36	0.33	0.25	0.22	0.24	0.21	0.24	0.21	0.24	0.22
340	0.524	0.005	1.070	0.007	0.36	0.24	0.24	0.17	0.23	0.16	0.23	0.16	0.24	0.16
350	0.563	0.005	1.286	0.009	0.43	0.26	0.29	0.18	0.28	0.17	0.28	0.17	0.29	0.17
360	0.571	0.005	1.499	0.010	0.50	0.26	0.34	0.18	0.33	0.17	0.33	0.17	0.33	0.18
370	0.538	0.005	1.697	0.012	0.57	0.25	0.39	0.17	0.37	0.16	0.37	0.16	0.38	0.17
380	0.505	0.005	1.896	0.013	0.63	0.23	0.43	0.16	0.41	0.15	0.41	0.15	0.42	0.16
390	0.575	0.006	2.087	0.015	0.70	0.26	0.48	0.18	0.45	0.17	0.45	0.17	0.47	0.18
400	0.684	0.007	2.260	0.016	0.75	0.31	0.52	0.22	0.49	0.21	0.49	0.21	0.50	0.21
410	0.602	0.006	2.079	0.014	0.69	0.28	0.47	0.19	0.45	0.18	0.45	0.18	0.46	0.19
420	0.622	0.006	1.991	0.014	0.66	0.29	0.45	0.20	0.43	0.19	0.43	0.19	0.44	0.19
430	0.619	0.006	1.803	0.013	0.60	0.29	0.41	0.19	0.39	0.19	0.39	0.19	0.40	0.19
440	0.558	0.005	1.574	0.011	0.52	0.26	0.36	0.18	0.34	0.17	0.34	0.17	0.35	0.17
450	0.483	0.005	1.358	0.009	0.45	0.22	0.31	0.15	0.30	0.15	0.30	0.15	0.30	0.15
460	0.440	0.004	1.199	0.008	0.40	0.20	0.27	0.14	0.26	0.13	0.26	0.13	0.27	0.14
470	0.360	0.003	1.021	0.007	0.34	0.17	0.23	0.11	0.22	0.11	0.22	0.11	0.23	0.11
480	0.321	0.003	0.854	0.006	0.28	0.15	0.19	0.10	0.19	0.10	0.19	0.10	0.19	0.10
490	0.346	0.003	0.696	0.005	0.23	0.16	0.16	0.11	0.15	0.10	0.15	0.10	0.16	0.11
500	0.290	0.003	0.602	0.004	0.20	0.13	0.14	0.09	0.13	0.09	0.13	0.09	0.13	0.09
510	0.319	0.003	0.525	0.004	0.17	0.15	0.12	0.10	0.11	0.10	0.11	0.10	0.12	0.10
520	0.367	0.004	0.566	0.004	0.19	0.17	0.13	0.12	0.12	0.11	0.12	0.11	0.13	0.11
530	0.349	0.003	0.713	0.005	0.24	0.16	0.16	0.11	0.16	0.10	0.16	0.10	0.16	0.11
540	0.556	0.005	0.824	0.006	0.27	0.26	0.19	0.18	0.18	0.17	0.18	0.17	0.18	0.17
550	0.711	0.007	0.891	0.006	0.30	0.33	0.20	0.22	0.19	0.21	0.19	0.21	0.20	0.22
560	0.529	0.005	0.765	0.005	0.25	0.24	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.16
570	0.701	0.007	0.718	0.005	0.24	0.32	0.16	0.22	0.16	0.21	0.16	0.21	0.16	0.22
580	0.810	0.008	0.716	0.005	0.24	0.37	0.16	0.26	0.16	0.24	0.16	0.24	0.16	0.25
590	0.862	0.008	0.718	0.005	0.24	0.40	0.16	0.27	0.16	0.26	0.16	0.26	0.16	0.27
600	0.746	0.007	0.768	0.005	0.26	0.34	0.18	0.23	0.17	0.22	0.17	0.22	0.17	0.23
610	0.576	0.006	0.757	0.005	0.25	0.27	0.17	0.18	0.16	0.17	0.16	0.17	0.17	0.18
620	0.563	0.005	0.758	0.005	0.25	0.26	0.17	0.18	0.16	0.17	0.16	0.17	0.17	0.17
630	0.969	0.009	0.928	0.006	0.31	0.45	0.21	0.31	0.20	0.29	0.20	0.29	0.21	0.30
640	0.986	0.009	1.089	0.008	0.36	0.45	0.25	0.31	0.24	0.30	0.24	0.30	0.24	0.30
650	0.929	0.009	1.068	0.007	0.36	0.43	0.24	0.29	0.23	0.28	0.23	0.28	0.24	0.29
660	0.706	0.007	1.057	0.007	0.35	0.33	0.24	0.22	0.23	0.21	0.23	0.21	0.24	0.22
670	0.596	0.006	1.289	0.009	0.43	0.27	0.29	0.19	0.28	0.18	0.28	0.18	0.29	0.18
680	0.937	0.009	1.462	0.010	0.49	0.43	0.33	0.30	0.32	0.28	0.32	0.28	0.33	0.29
690	1.018	0.010	1.606	0.011	0.54	0.47	0.37	0.32	0.35	0.31	0.35	0.31	0.36	0.31
700	0.827	0.008	1.421	0.010	0.47	0.38	0.32	0.26	0.31	0.25	0.31	0.25	0.32	0.26
710	0.549	0.005	1.272	0.009	0.42	0.25	0.29	0.17	0.28	0.16	0.28	0.16	0.28	0.17
720	0.486	0.005	1.152	0.008	0.38	0.22	0.26	0.15	0.25	0.15	0.25	0.15	0.26	0.15
730	1.183	0.011	1.628	0.011	0.54	0.54	0.37	0.37	0.35	0.36	0.35	0.36	0.36	0.37
740	1.304	0.013	1.661	0.012	0.55	0.60	0.38	0.41	0.36	0.39	0.36	0.39	0.37	0.40
750	1.103	0.011	1.437	0.010	0.48	0.51	0.33	0.35	0.31	0.33	0.31	0.33	0.32	0.34
760	0.670	0.006	1.157	0.008	0.39	0.31	0.26	0.21	0.25	0.20	0.25	0.20	0.26	0.21
770	0.590	0.006	0.961	0.007	0.32	0.27	0.22	0.19	0.21	0.18	0.21	0.18	0.21	0.18
780	0.556	0.005	1.140	0.008	0.38	0.26	0.26	0.18	0.25	0.17	0.25	0.17	0.25	0.17
790	0.521	0.005	1.514	0.011	0.50	0.24	0.35	0.16	0.33	0.16	0.33	0.16	0.34	0.16
800	0.478	0.005	1.364	0.009	0.45	0.22	0.31	0.15	0.30	0.14	0.30	0.14	0.30	0.15
810	0.596	0.006	1.598	0.011	0.53	0.27	0.36	0.19	0.35	0.18	0.35	0.18	0.36	0.18
820	0.908	0.009	1.831	0.013	0.61	0.42	0.42	0.29	0.40	0.27	0.40	0.27	0.41	0.28
830	0.935	0.009	1.669	0.012	0.56	0.43	0.38	0.29	0.36	0.28	0.36	0.28	0.37	0.29
840	0.804	0.008	1.490	0.010	0.50	0.37	0.34	0.25	0.32	0.24	0.32	0.24	0.33	0.25
850	0.540	0.005	0.810	0.006	0.27	0.25	0.18	0.17	0.18	0.16	0.18	0.16	0.18	0.17
860	0.532	0.005	0.798	0.006	0.27	0.24	0.18	0.17	0.17	0.16	0.17	0.16	0.18	0.16
870	0.524	0.005	0.785	0.005	0.26	0.24	0.18	0.16	0.17	0.16	0.17	0.16	0.18	0.16
880	0.515	0.005	0.773	0.005	0.26	0.24	0.18	0.16	0.17	0.15	0.17	0.15	0.17	0.16
890	0.507	0.005	0.760	0.005	0.25	0.23	0.17	0.16	0.17	0.15	0.17	0.15	0.17	0.16
900	0.499	0.005	0.748	0.005	0.25	0.23	0.17	0.16	0.16	0.15	0.16	0.15	0.17	0.15
910	0.491	0.005	0.736	0.005	0.25	0.23	0.17	0.15	0.16	0.15	0.16	0.15	0.16	0.15
920	0.483	0.005	0.723	0.005	0.24	0.22	0.16	0.15	0.16	0.14	0.16	0.14	0.16	0.15
930	0.474	0.005	0.711	0.005	0.24	0.22	0.16	0.15	0.15	0.14	0.15	0.14	0.16	0.15
940	0.466	0.004	0.698	0.005	0.23	0.21	0.16	0.15	0.15	0.14	0.15	0.14	0.16	0.14
950	0.458	0.004	0.686	0.005	0.23	0.21	0.16	0.14	0.15	0.14	0.15	0.14	0.15	0.14
960	0.450	0.004	0.674	0.005	0.22	0.21	0.15	0.14	0.15	0.14	0.15	0.14	0.15	0.14
970	0.442	0.004	0.661	0.005	0.22	0.20	0.15	0.14	0.14	0.13	0.14	0.13	0.15	0.14
980	0.433	0.004	0.649	0.005	0.22	0.20	0.15	0.14	0.14	0.13	0.14	0.13	0.14	0.13
990	0.425	0.004	0.636	0.004	0.21	0.20	0.15	0.13	0.14	0.13	0.14	0.13	0.14	0.13
1000	0.417	0.004	0.624	0.004	0.21	0.19	0.14	0.13	0.14	0.13	0.14	0.13	0.14	0.13
1010	0.409	0.004	0.612	0.004	0.20	0.19	0.14	0.13	0.13	0.12	0.13	0.12	0.14	0.13
1020	0.401	0.004	0.599	0.004	0.20	0.18	0.14	0.13	0.13	0.12	0.13	0.12	0.13	0.12
1030	0.392	0.004	0.587	0.004	0.20	0.18	0.13	0.12	0.13	0.12	0.13	0.12	0.13	0.12
1040	0.384	0.004	0.574	0.004	0.19	0.18	0.13	0.12	0.12	0.12	0.12	0.12	0.13	0.12
1050	0.376	0.004	0.562	0.004	0.19	0.17	0.13	0.12	0.12	0.11	0.12	0.11	0.13	0.12
1060	0.368	0.004	0.550	0.004	0.18	0.17	0.13	0.12	0.12	0.11	0.12	0.11	0.12	0.11
1070	0.360	0.003	0.537	0.004	0.18	0.17	0.12	0.11	0.12	0.11	0.12	0.11	0.12	0.11
1080	0.351	0.003	0.525	0.004	0.17	0.16	0.12	0.11	0.11	0.11	0.11	0.11	0.12	0.11
1090	0.343	0.003	0.512	0.004	0.17	0.16	0.12	0.11	0.11	0.10	0.11	0.10	0.11	0.11
1100	0.335	0.003	0.500	0.003	0.17	0.15	0.11	0.11	0.11	0.10	0.11	0.10	0.11	0.10
1110	0.327	0.003	0.488	0.003	0.16	0.15	0.11	0.10	0.11	0.10	0.11	0.10	0.11	0.10
1120	0.319	0.003	0.475	0.003	0.16	0.15	0.11	0.10	0.10	0.10	0.10	0.10	0.11	0.10
1130	0.310	0.003	0.463	0.003	0.15	0.14	0.11	0.10	0.10	0.09	0.10	0.09	0.10	0.10
1140	0.302	0.003	0.450	0.003	0.15	0.14	0.10	0.10	0.10	0.09	0.10	0.09	0.10	0.09
1150	0.294	0.003	0.438	0.003	0.15	0.14	0.10	0.09	0.10	0.09	0.10	0.09	0.10	0.09
1160	0.286	0.003	0.426	0.003	0.14	0.13	0.10	0.09	0.09	0.09	0.09	0.09	0.10	0.09
1170	0.278	0.003	0.413	0.003	0.14	0.13	0.09	0.09	0.09	0.08	0.09	0.08	0.09	0.09
1180	0.269	0.003	0.401	0.003	0.13	0.12	0.09	0.08	0.09	0.08	0.09	0.08	0.09	0.08
1190	0.261	0.003	0.388	0.003	0.13	0.12	0.09	0.08	0.08	0.08	0.08	0.08	0.09	0.08
1200	0.253	0.002	0.376	0.003	0.13	0.12	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08
1210	0.245	0.002	0.364	0.003	0.12	0.11	0.08	0.08	0.08	0.07	0.08	0.07	0.08	0.08
1220	0.237	0.002	0.351	0.002	0.12	0.11	0.08	0.07	0.08	0.07	0.08	0.07	0.08	0.07
1230	0.228	0.002	0.339	0.002	0.11	0.11	0.08	0.07	0.07	0.07	0.07	0.07	0.08	0.07
1240	0.220	0.002	0.326	0.002	0.11	0.10	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1250	0.212	0.002	0.314	0.002	0.10	0.10	0.07	0.07	0.07	0.06	0.07	0.06	0.07	0.07
1260	0.204	0.002	0.302	0.002	0.10	0.09	0.07	0.06	0.07	0.06	0.07	0.06	0.07	0.06
1270	0.196	0.002	0.289	0.002	0.10	0.09	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06
1280	0.187	0.002	0.277	0.002	0.09	0.09	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
1290	0.179	0.002	0.264	0.002	0.09	0.08	0.06	0.06	0.06	0.05	0.06	0.05	0.06	0.06
1300	0.171	0.002	0.252	0.002	0.08	0.08	0.06	0.05	0.05	0.05	0.05	0.05	0.06	0.05
1310	0.163	0.002	0.240	0.002	0.08	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
1320	0.155	0.001	0.227	0.002	0.08	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
1330	0.146	0.001	0.215	0.001	0.07	0.07	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05
1340	0.138	0.001	0.202	0.001	0.07	0.06	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.04
1350	0.130	0.001	0.190	0.001	0.06	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
1360	0.122	0.001	0.178	0.001	0.06	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
1370	0.114	0.001	0.165	0.001	0.06	0.05	0.04	0.04	0.04	0.03	0.04	0.03	0.04	0.04
1380	0.105	0.001	0.153	0.001	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1390	0.097	0.001	0.140	0.001	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1400	0.089	0.001	0.128	0.001	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1410	0.081	0.001	0.116	0.001	0.04	0.04	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02
1420	0.073	0.001	0.103	0.001	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1430	0.064	0.001	0.091	0.001	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1440	0.056	0.001	0.078	0.001	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1450	0.048	0.000	0.066	0.000	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
1460	0.040	0.000	0.054	0.000	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1470	0.032	0.000	0.041	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1480	0.023	0.000	0.029	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1490	0.015	0.000	0.016	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.007	0.000	0.004	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0700	Grandview	0	0	Avg. Net Sa	2.23	2.19	2.07	2.10	2.19					
SD-700	156.8425	0	206.84	1515			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	2.478	0.016	2.920	0.014	0.37	0.42	0.37	0.41	0.35	0.39	0.35	0.39	0.37	0.41
10	2.613	0.017	3.000	0.015	0.38	0.44	0.38	0.44	0.36	0.41	0.36	0.42	0.38	0.44
20	2.204	0.014	2.591	0.013	0.33	0.37	0.33	0.37	0.31	0.35	0.31	0.35	0.33	0.37
30	1.833	0.012	2.230	0.011	0.29	0.31	0.28	0.31	0.27	0.29	0.27	0.29	0.28	0.31
40	1.499	0.010	1.894	0.009	0.24	0.25	0.24	0.25	0.23	0.24	0.23	0.24	0.24	0.25
50	1.307	0.008	1.646	0.008	0.21	0.22	0.21	0.22	0.20	0.21	0.20	0.21	0.21	0.22
60	1.315	0.008	1.557	0.008	0.20	0.22	0.20	0.22	0.19	0.21	0.19	0.21	0.20	0.22
70	1.372	0.009	1.557	0.008	0.20	0.23	0.20	0.23	0.19	0.22	0.19	0.22	0.20	0.23
80	1.250	0.008	1.405	0.007	0.18	0.21	0.18	0.21	0.17	0.20	0.17	0.20	0.18	0.21
90	1.102	0.007	1.222	0.006	0.16	0.19	0.15	0.18	0.15	0.17	0.15	0.18	0.15	0.18
100	1.008	0.006	1.082	0.005	0.14	0.17	0.14	0.17	0.13	0.16	0.13	0.16	0.14	0.17
110	0.976	0.006	0.998	0.005	0.13	0.17	0.13	0.16	0.12	0.15	0.12	0.16	0.13	0.16
120	0.919	0.006	0.901	0.004	0.12	0.16	0.11	0.15	0.11	0.14	0.11	0.15	0.11	0.15
130	0.834	0.005	0.780	0.004	0.10	0.14	0.10	0.14	0.09	0.13	0.09	0.13	0.10	0.14
140	0.759	0.005	0.678	0.003	0.09	0.13	0.09	0.13	0.08	0.12	0.08	0.12	0.09	0.13
150	0.712	0.005	0.606	0.003	0.08	0.12	0.08	0.12	0.07	0.11	0.07	0.11	0.08	0.12
160	0.684	0.004	0.556	0.003	0.07	0.12	0.07	0.11	0.07	0.11	0.07	0.11	0.07	0.11
170	0.652	0.004	0.506	0.002	0.06	0.11	0.06	0.11	0.06	0.10	0.06	0.10	0.06	0.11
180	0.616	0.004	0.458	0.002	0.06	0.10	0.06	0.10	0.05	0.10	0.06	0.10	0.06	0.10
190	0.583	0.004	0.428	0.002	0.05	0.10	0.05	0.10	0.05	0.09	0.05	0.09	0.05	0.10
200	0.553	0.004	0.411	0.002	0.05	0.09	0.05	0.09	0.05	0.09	0.05	0.09	0.05	0.09
210	0.526	0.003	0.399	0.002	0.05	0.09	0.05	0.09	0.05	0.08	0.05	0.08	0.05	0.09
220	0.507	0.003	0.399	0.002	0.05	0.09	0.05	0.08	0.05	0.08	0.05	0.08	0.05	0.08
230	0.526	0.003	0.436	0.002	0.06	0.09	0.06	0.09	0.05	0.08	0.05	0.08	0.06	0.09
240	0.599	0.004	0.523	0.003	0.07	0.10	0.07	0.10	0.06	0.09	0.06	0.10	0.07	0.10
250	0.656	0.004	0.604	0.003	0.08	0.11	0.08	0.11	0.07	0.10	0.07	0.10	0.08	0.11
260	0.653	0.004	0.626	0.003	0.08	0.11	0.08	0.11	0.07	0.10	0.08	0.10	0.08	0.11
270	0.624	0.004	0.598	0.003	0.08	0.11	0.08	0.10	0.07	0.10	0.07	0.10	0.08	0.10
280	0.644	0.004	0.611	0.003	0.08	0.11	0.08	0.11	0.07	0.10	0.07	0.10	0.08	0.11
290	0.667	0.004	0.621	0.003	0.08	0.11	0.08	0.11	0.07	0.10	0.07	0.11	0.08	0.11
300	0.694	0.004	0.646	0.003	0.08	0.12	0.08	0.12	0.08	0.11	0.08	0.11	0.08	0.12
310	0.837	0.005	0.790	0.004	0.10	0.14	0.10	0.14	0.09	0.13	0.10	0.13	0.10	0.14
320	1.112	0.007	1.049	0.005	0.13	0.19	0.13	0.19	0.13	0.17	0.13	0.18	0.13	0.19
330	1.384	0.009	1.285	0.006	0.16	0.23	0.16	0.23	0.15	0.22	0.16	0.22	0.16	0.23
340	1.650	0.011	1.515	0.007	0.19	0.28	0.19	0.28	0.18	0.26	0.18	0.26	0.19	0.28
350	1.878	0.012	1.727	0.008	0.22	0.32	0.22	0.31	0.21	0.30	0.21	0.30	0.22	0.31
360	2.057	0.013	1.940	0.009	0.25	0.35	0.25	0.34	0.23	0.32	0.23	0.33	0.25	0.34
370	2.219	0.014	2.163	0.010	0.28	0.38	0.27	0.37	0.26	0.35	0.26	0.35	0.27	0.37
380	2.306	0.015	2.317	0.011	0.30	0.39	0.29	0.38	0.28	0.36	0.28	0.37	0.29	0.38
390	2.267	0.014	2.367	0.011	0.30	0.38	0.30	0.38	0.28	0.36	0.29	0.36	0.30	0.38
400	2.203	0.014	2.384	0.012	0.31	0.37	0.30	0.37	0.28	0.35	0.29	0.35	0.30	0.37
410	2.140	0.014	2.356	0.011	0.30	0.36	0.30	0.36	0.28	0.34	0.28	0.34	0.30	0.36
420	2.098	0.013	2.351	0.011	0.30	0.35	0.30	0.35	0.28	0.33	0.28	0.33	0.30	0.35
430	2.075	0.013	2.395	0.012	0.31	0.35	0.30	0.35	0.29	0.33	0.29	0.33	0.30	0.35
440	2.038	0.013	2.461	0.012	0.32	0.34	0.31	0.34	0.29	0.32	0.30	0.32	0.31	0.34
450	2.002	0.013	2.525	0.012	0.32	0.34	0.32	0.33	0.30	0.31	0.30	0.32	0.32	0.33
460	1.919	0.012	2.538	0.012	0.33	0.32	0.32	0.32	0.30	0.30	0.31	0.31	0.32	0.32
470	1.740	0.011	2.466	0.012	0.32	0.29	0.31	0.29	0.29	0.27	0.30	0.28	0.31	0.29
480	1.596	0.010	2.462	0.012	0.32	0.27	0.31	0.27	0.29	0.25	0.30	0.25	0.31	0.27
490	1.423	0.009	2.417	0.012	0.31	0.24	0.31	0.24	0.29	0.22	0.29	0.23	0.31	0.24
500	1.288	0.008	2.409	0.012	0.31	0.22	0.30	0.21	0.29	0.20	0.29	0.21	0.30	0.21
510	1.277	0.008	2.561	0.012	0.33	0.22	0.32	0.21	0.31	0.20	0.31	0.20	0.32	0.21
520	1.232	0.008	2.697	0.013	0.35	0.21	0.34	0.21	0.32	0.19	0.33	0.20	0.34	0.21
530	1.231	0.008	2.880	0.014	0.37	0.21	0.36	0.21	0.34	0.19	0.35	0.20	0.36	0.21
540	1.317	0.008	3.123	0.015	0.40	0.22	0.40	0.22	0.37	0.21	0.38	0.21	0.39	0.22
550	1.377	0.009	3.391	0.016	0.43	0.23	0.43	0.23	0.40	0.22	0.41	0.22	0.43	0.23
560	1.483	0.009	3.603	0.017	0.46	0.25	0.46	0.25	0.43	0.23	0.44	0.24	0.46	0.25
570	1.631	0.010	3.723	0.018	0.48	0.28	0.47	0.27	0.44	0.26	0.45	0.26	0.47	0.27
580	2.108	0.013	4.069	0.020	0.52	0.36	0.51	0.35	0.49	0.33	0.49	0.34	0.51	0.35
590	2.369	0.015	4.236	0.020	0.54	0.40	0.54	0.40	0.51	0.37	0.51	0.38	0.54	0.40
600	1.986	0.013	3.934	0.019	0.50	0.34	0.50	0.33	0.47	0.31	0.48	0.32	0.50	0.33
610	1.396	0.009	3.554	0.017	0.46	0.24	0.45	0.23	0.42	0.22	0.43	0.22	0.45	0.23
620	1.340	0.009	3.142	0.015	0.40	0.23	0.40	0.22	0.37	0.21	0.38	0.21	0.40	0.22
630	2.060	0.013	2.846	0.014	0.37	0.35	0.36	0.34	0.34	0.32	0.34	0.33	0.36	0.34
640	2.148	0.014	2.654	0.013	0.34	0.36	0.34	0.36	0.32	0.34	0.32	0.34	0.34	0.36
650	1.677	0.011	2.353	0.011	0.30	0.28	0.30	0.28	0.28	0.26	0.28	0.27	0.30	0.28
660	1.172	0.007	2.117	0.010	0.27	0.20	0.27	0.20	0.25	0.18	0.26	0.19	0.27	0.20
670	0.943	0.006	1.837	0.009	0.24	0.16	0.23	0.16	0.22	0.15	0.22	0.15	0.23	0.16
680	1.056	0.007	1.693	0.008	0.22	0.18	0.21	0.18	0.20	0.17	0.20	0.17	0.21	0.18
690	1.222	0.008	1.734	0.008	0.22	0.21	0.22	0.20	0.21	0.19	0.21	0.19	0.22	0.20
700	1.287	0.008	1.855	0.009	0.24	0.22	0.23	0.21	0.22	0.20	0.22	0.20	0.23	0.21
710	1.261	0.008	1.859	0.009	0.24	0.21	0.24	0.21	0.22	0.20	0.22	0.20	0.24	0.21
720	1.203	0.008	1.810	0.009	0.23	0.20	0.23	0.20	0.22	0.19	0.22	0.19	0.23	0.20
730	1.006	0.006	1.794	0.009	0.23	0.17	0.23	0.17	0.21	0.16	0.22	0.16	0.23	0.17
740	0.772	0.005	1.738	0.008	0.22	0.13	0.22	0.13	0.21	0.12	0.21	0.12	0.22	0.13
750	0.627	0.004	1.699	0.008	0.22	0.11	0.21	0.10	0.20	0.10	0.21	0.10	0.21	0.10
760	0.602	0.004	1.690	0.008	0.22	0.10	0.21	0.10	0.20	0.09	0.20	0.10	0.21	0.10
770	0.650	0.004	1.684	0.008	0.22	0.11	0.21	0.11	0.20	0.10	0.20	0.10	0.21	0.11
780	0.966	0.006	1.778	0.009	0.23	0.16	0.22	0.16	0.21	0.15	0.21	0.15	0.22	0.16
790	1.295	0.008	1.703	0.008	0.22	0.22	0.22	0.22	0.20	0.20	0.21	0.21	0.22	0.22
800	1.369	0.009	1.662	0.008	0.21	0.23	0.21	0.23	0.20	0.22	0.20	0.22	0.21	0.23
810	1.823	0.012	2.187	0.011	0.28	0.31	0.28	0.30	0.26	0.29	0.26	0.29	0.28	0.30
820	2.228	0.014	2.451	0.012	0.31	0.38	0.31	0.37	0.29	0.35	0.30	0.35	0.31	0.37
830	1.772	0.011	2.048	0.010	0.26	0.30	0.26	0.30	0.24	0.28	0.25	0.28	0.26	0.30
840	1.256	0.008	1.601	0.008	0.21	0.21	0.20	0.21	0.19	0.20	0.19	0.20	0.20	0.21
850	0.967	0.006	1.267	0.006	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.16	0.16
860	0.924	0.006	1.212	0.006	0.16	0.16	0.15	0.15	0.14	0.15	0.15	0.15	0.15	0.15
870	1.283	0.008	1.308	0.006	0.17	0.22	0.17	0.21	0.16	0.20	0.16	0.20	0.17	0.21
880	1.676	0.011	1.565	0.008	0.20	0.28	0.20	0.28	0.19	0.26	0.19	0.27	0.20	0.28
890	1.763	0.011	1.665	0.008	0.21	0.30	0.21	0.29	0.20	0.28	0.20	0.28	0.21	0.29
900	1.402	0.009	1.520	0.007	0.19	0.24	0.19	0.23	0.18	0.22	0.18	0.22	0.19	0.23
910	1.136	0.007	1.506	0.007	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.19	0.19
920	1.251	0.008	1.691	0.008	0.22	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.21	0.21
930	1.459	0.009	1.861	0.009	0.24	0.25	0.24	0.24	0.22	0.23	0.22	0.23	0.24	0.24
940	1.597	0.010	1.958	0.009	0.25	0.27	0.25	0.27	0.23	0.25	0.24	0.25	0.25	0.27
950	2.235	0.014	2.312	0.011	0.30	0.38	0.29	0.37	0.28	0.35	0.28	0.36	0.29	0.37
960	2.509	0.016	2.194	0.011	0.28	0.42	0.28	0.42	0.26	0.39	0.26	0.40	0.28	0.42
970	2.307	0.015	1.952	0.009	0.25	0.39	0.25	0.38	0.23	0.36	0.24	0.37	0.25	0.38
980	1.897	0.012	1.834	0.009	0.24	0.32	0.23	0.32	0.22	0.30	0.22	0.30	0.23	0.32
990	1.676	0.011	1.567	0.008	0.20	0.28	0.20	0.28	0.19	0.26	0.19	0.27	0.20	0.28
1000	1.697	0.011	1.435	0.007	0.18	0.29	0.18	0.28	0.17	0.27	0.17	0.27	0.18	0.28
1010	1.356	0.009	1.310	0.006	0.17	0.23	0.17	0.23	0.16	0.21	0.16	0.22	0.17	0.23
1020	0.874	0.006	1.109	0.005	0.14	0.15	0.14	0.15	0.13	0.14	0.13	0.14	0.14	0.15
1030	0.657	0.004	0.927	0.004	0.12	0.11	0.12	0.11	0.11	0.10	0.11	0.10	0.12	0.11
1040	0.701	0.004	0.735	0.004	0.09	0.12	0.09	0.12	0.09	0.11	0.09	0.11	0.09	0.12
1050	0.775	0.005	0.668	0.003	0.09	0.13	0.08	0.13	0.08	0.12	0.08	0.12	0.08	0.13
1060	0.496	0.003	0.655	0.003	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
1070	0.486	0.003	0.642	0.003	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
1080	0.475	0.003	0.629	0.003	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.08	0.08	0.08
1090	0.465	0.003	0.616	0.003	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.08	0.08
1100	0.454	0.003	0.603	0.003	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.08	0.08
1110	0.444	0.003	0.590	0.003	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1120	0.433	0.003	0.577	0.003	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1130	0.423	0.003	0.564	0.003	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1140	0.412	0.003	0.551	0.003	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.07	0.07	0.07
1150	0.402	0.003	0.538	0.003	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.07	0.07
1160	0.391	0.002	0.525	0.003	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.07	0.07
1170	0.381	0.002	0.512	0.002	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
1180	0.370	0.002	0.499	0.002	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
1190	0.360	0.002	0.486	0.002	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
1200	0.349	0.002	0.473	0.002	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.06
1210	0.339	0.002	0.460	0.002	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.05	0.06	0.06
1220	0.328	0.002	0.447	0.002	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.06	0.05
1230	0.318	0.002	0.434	0.002	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
1240	0.307	0.002	0.421	0.002	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
1250	0.297	0.002	0.408	0.002	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
1260	0.286	0.002	0.395	0.002	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05
1270	0.276	0.002	0.382	0.002	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05
1280	0.265	0.002	0.369	0.002	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.04
1290	0.255	0.002	0.356	0.002	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.04
1300	0.244	0.002	0.343	0.002	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
1310	0.234	0.001	0.330	0.002	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
1320	0.223	0.001	0.317	0.002	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
1330	0.213	0.001	0.304	0.001	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.03	0.04	0.04
1340	0.202	0.001	0.291	0.001	0.04	0.03	0.04	0.03	0.03	0.03	0.04	0.03	0.04	0.03
1350	0.192	0.001	0.278	0.001	0.04	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.03
1360	0.181	0.001	0.265	0.001	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1370	0.171	0.001	0.252	0.001	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1380	0.160	0.001	0.239	0.001	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1390	0.150	0.001	0.226	0.001	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1400	0.139	0.001	0.213	0.001	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1410	0.129	0.001	0.200	0.001	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.02
1420	0.118	0.001	0.187	0.001	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1430	0.108	0.001	0.174	0.001	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1440	0.097	0.001	0.161	0.001	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1450	0.086	0.001	0.148	0.001	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1460	0.076	0.000	0.135	0.001	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1470	0.065	0.000	0.122	0.001	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1480	0.055	0.000	0.109	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1490	0.044	0.000	0.096	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1500	0.034	0.000	0.083	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1510	0.023	0.000	0.070	0.000	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1520	0.013	0.000	0.057	0.000	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00

SD-0710	Batiquitos	0	0	Avg. Net Sl	0.73	1.41	1.45	1.52	1.69					
SD-710	297.786	0	279.863	1485			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.066	0.000	0.069	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.852	0.006	1.568	0.006	0.05	0.05	0.09	0.10	0.10	0.11	0.10	0.11	0.11	0.13
20	3.731	0.013	3.365	0.012	0.11	0.11	0.20	0.21	0.21	0.22	0.22	0.23	0.24	0.25
30	3.151	0.011	2.458	0.009	0.08	0.09	0.15	0.18	0.15	0.18	0.16	0.19	0.18	0.21
40	3.507	0.012	2.344	0.008	0.07	0.10	0.14	0.20	0.15	0.20	0.15	0.21	0.17	0.24
50	4.162	0.014	2.436	0.009	0.08	0.12	0.15	0.23	0.15	0.24	0.16	0.25	0.18	0.28
60	4.390	0.015	2.348	0.008	0.07	0.13	0.14	0.25	0.15	0.26	0.15	0.27	0.17	0.30
70	4.471	0.015	2.391	0.009	0.07	0.13	0.14	0.25	0.15	0.26	0.15	0.27	0.17	0.30
80	4.241	0.014	2.156	0.008	0.07	0.12	0.13	0.24	0.13	0.25	0.14	0.26	0.16	0.29
90	4.385	0.015	1.977	0.007	0.06	0.13	0.12	0.25	0.12	0.26	0.13	0.27	0.14	0.30
100	4.699	0.016	2.085	0.007	0.07	0.14	0.12	0.26	0.13	0.27	0.13	0.29	0.15	0.32
110	4.978	0.017	2.256	0.008	0.07	0.15	0.14	0.28	0.14	0.29	0.15	0.30	0.16	0.34
120	5.231	0.018	2.494	0.009	0.08	0.15	0.15	0.29	0.15	0.30	0.16	0.32	0.18	0.35
130	5.157	0.017	2.452	0.009	0.08	0.15	0.15	0.29	0.15	0.30	0.16	0.31	0.18	0.35
140	4.652	0.016	1.984	0.007	0.06	0.14	0.12	0.26	0.12	0.27	0.13	0.28	0.14	0.31
150	4.218	0.014	1.540	0.006	0.05	0.12	0.09	0.24	0.10	0.25	0.10	0.26	0.11	0.29
160	3.916	0.013	1.254	0.004	0.04	0.11	0.08	0.22	0.08	0.23	0.08	0.24	0.09	0.26
170	3.645	0.012	1.030	0.004	0.03	0.11	0.06	0.21	0.06	0.21	0.07	0.22	0.07	0.25
180	3.136	0.011	0.811	0.003	0.03	0.09	0.05	0.18	0.05	0.18	0.05	0.19	0.06	0.21
190	3.013	0.010	0.970	0.003	0.03	0.09	0.06	0.17	0.06	0.18	0.06	0.18	0.07	0.20
200	2.921	0.010	1.095	0.004	0.03	0.09	0.07	0.16	0.07	0.17	0.07	0.18	0.08	0.20
210	2.556	0.009	0.940	0.003	0.03	0.07	0.06	0.14	0.06	0.15	0.06	0.16	0.07	0.17
220	2.213	0.007	0.791	0.003	0.02	0.06	0.05	0.12	0.05	0.13	0.05	0.13	0.06	0.15
230	1.930	0.006	0.478	0.002	0.01	0.06	0.03	0.11	0.03	0.11	0.03	0.12	0.03	0.13
240	1.748	0.006	0.370	0.001	0.01	0.05	0.02	0.10	0.02	0.10	0.02	0.11	0.03	0.12
250	1.688	0.006	0.378	0.001	0.01	0.05	0.02	0.10	0.02	0.10	0.02	0.10	0.03	0.11
260	1.723	0.006	0.461	0.002	0.01	0.05	0.03	0.10	0.03	0.10	0.03	0.10	0.03	0.12
270	1.829	0.006	0.554	0.002	0.02	0.05	0.03	0.10	0.03	0.11	0.04	0.11	0.04	0.12
280	1.945	0.007	0.622	0.002	0.02	0.06	0.04	0.11	0.04	0.11	0.04	0.12	0.04	0.13
290	2.070	0.007	0.632	0.002	0.02	0.06	0.04	0.12	0.04	0.12	0.04	0.13	0.05	0.14
300	2.288	0.008	0.694	0.002	0.02	0.07	0.04	0.13	0.04	0.13	0.04	0.14	0.05	0.15
310	2.505	0.008	0.760	0.003	0.02	0.07	0.05	0.14	0.05	0.15	0.05	0.15	0.05	0.17
320	2.813	0.009	0.893	0.003	0.03	0.08	0.05	0.16	0.06	0.16	0.06	0.17	0.06	0.19
330	3.466	0.012	1.315	0.005	0.04	0.10	0.08	0.20	0.08	0.20	0.09	0.21	0.09	0.23
340	4.110	0.014	1.773	0.006	0.06	0.12	0.11	0.23	0.11	0.24	0.11	0.25	0.13	0.28
350	4.755	0.016	2.222	0.008	0.07	0.14	0.13	0.27	0.14	0.28	0.14	0.29	0.16	0.32
360	5.186	0.017	2.534	0.009	0.08	0.15	0.15	0.29	0.16	0.30	0.16	0.32	0.18	0.35
370	5.598	0.019	2.790	0.010	0.09	0.16	0.17	0.32	0.17	0.33	0.18	0.34	0.20	0.38
380	5.597	0.019	2.660	0.010	0.08	0.16	0.16	0.32	0.16	0.33	0.17	0.34	0.19	0.38
390	5.510	0.019	2.506	0.009	0.08	0.16	0.15	0.31	0.16	0.32	0.16	0.34	0.18	0.37
400	5.405	0.018	2.402	0.009	0.07	0.16	0.14	0.30	0.15	0.31	0.16	0.33	0.17	0.37
410	5.344	0.018	2.315	0.008	0.07	0.16	0.14	0.30	0.14	0.31	0.15	0.33	0.17	0.36
420	5.288	0.018	2.283	0.008	0.07	0.16	0.14	0.30	0.14	0.31	0.15	0.32	0.16	0.36
430	5.211	0.017	2.402	0.009	0.07	0.15	0.14	0.29	0.15	0.30	0.16	0.32	0.17	0.35
440	5.130	0.017	2.474	0.009	0.08	0.15	0.15	0.29	0.15	0.30	0.16	0.31	0.18	0.35
450	5.046	0.017	2.626	0.009	0.08	0.15	0.16	0.28	0.16	0.29	0.17	0.31	0.19	0.34
460	4.913	0.016	2.809	0.010	0.09	0.14	0.17	0.28	0.17	0.29	0.18	0.30	0.20	0.33
470	4.761	0.016	2.906	0.010	0.09	0.14	0.17	0.27	0.18	0.28	0.19	0.29	0.21	0.32
480	4.532	0.015	2.979	0.011	0.09	0.13	0.18	0.26	0.18	0.26	0.19	0.28	0.21	0.31
490	4.347	0.015	2.872	0.010	0.09	0.13	0.17	0.24	0.18	0.25	0.19	0.26	0.21	0.29
500	4.062	0.014	2.677	0.010	0.08	0.12	0.16	0.23	0.17	0.24	0.17	0.25	0.19	0.27
510	3.564	0.012	2.444	0.009	0.08	0.10	0.15	0.20	0.15	0.21	0.16	0.22	0.18	0.24
520	3.551	0.012	2.645	0.009	0.08	0.10	0.16	0.20	0.16	0.21	0.17	0.22	0.19	0.24
530	3.317	0.011	2.723	0.010	0.08	0.10	0.16	0.19	0.17	0.19	0.18	0.20	0.20	0.22
540	2.609	0.009	2.490	0.009	0.08	0.08	0.15	0.15	0.15	0.15	0.16	0.16	0.18	0.18
550	2.115	0.007	2.290	0.008	0.07	0.06	0.14	0.12	0.14	0.12	0.15	0.13	0.16	0.14
560	2.337	0.008	2.600	0.009	0.08	0.07	0.16	0.13	0.16	0.14	0.17	0.14	0.19	0.16
570	1.931	0.006	2.365	0.008	0.07	0.06	0.14	0.11	0.15	0.11	0.15	0.12	0.17	0.13
580	1.268	0.004	2.085	0.007	0.07	0.04	0.12	0.07	0.13	0.07	0.13	0.08	0.15	0.09
590	1.087	0.004	2.303	0.008	0.07	0.03	0.14	0.06	0.14	0.06	0.15	0.07	0.17	0.07
600	1.281	0.004	2.924	0.010	0.09	0.04	0.18	0.07	0.18	0.07	0.19	0.08	0.21	0.09
610	1.154	0.004	2.681	0.010	0.08	0.03	0.16	0.06	0.17	0.07	0.17	0.07	0.19	0.08
620	1.659	0.006	2.928	0.010	0.09	0.05	0.18	0.09	0.18	0.10	0.19	0.10	0.21	0.11
630	0.925	0.003	2.217	0.008	0.07	0.03	0.13	0.05	0.14	0.05	0.14	0.06	0.16	0.06
640	0.543	0.002	1.864	0.007	0.06	0.02	0.11	0.03	0.12	0.03	0.12	0.03	0.13	0.04
650	0.907	0.003	1.966	0.007	0.06	0.03	0.12	0.05	0.12	0.05	0.13	0.06	0.14	0.06
660	0.835	0.003	1.771	0.006	0.06	0.02	0.11	0.05	0.11	0.05	0.11	0.05	0.13	0.06
670	1.127	0.004	1.639	0.006	0.05	0.03	0.10	0.06	0.10	0.07	0.11	0.07	0.12	0.08
680	0.849	0.003	1.586	0.006	0.05	0.02	0.09	0.05	0.10	0.05	0.10	0.05	0.11	0.06
690	0.664	0.002	1.513	0.005	0.05	0.02	0.09	0.04	0.09	0.04	0.10	0.04	0.11	0.04
700	0.728	0.002	1.900	0.007	0.06	0.02	0.11	0.04	0.12	0.04	0.12	0.04	0.14	0.05
710	0.862	0.003	2.498	0.009	0.08	0.03	0.15	0.05	0.15	0.05	0.16	0.05	0.18	0.06
720	1.209	0.004	3.220	0.012	0.10	0.04	0.19	0.07	0.20	0.07	0.21	0.07	0.23	0.08
730	1.840	0.006	4.136	0.015	0.13	0.05	0.25	0.10	0.26	0.11	0.27	0.11	0.30	0.12
740	1.115	0.004	3.528	0.013	0.11	0.03	0.21	0.06	0.22	0.06	0.23	0.07	0.25	0.08
750	1.427	0.005	3.858	0.014	0.12	0.04	0.23	0.08	0.24	0.08	0.25	0.09	0.28	0.10
760	1.311	0.004	3.607	0.013	0.11	0.04	0.22	0.07	0.22	0.08	0.23	0.08	0.26	0.09
770	1.093	0.004	3.007	0.011	0.09	0.03	0.18	0.06	0.19	0.06	0.19	0.07	0.22	0.07
780	0.666	0.002	2.394	0.009	0.07	0.02	0.14	0.04	0.15	0.04	0.15	0.04	0.17	0.05
790	0.663	0.002	2.504	0.009	0.08	0.02	0.15	0.04	0.16	0.04	0.16	0.04	0.18	0.04
800	0.768	0.003	2.765	0.010	0.09	0.02	0.17	0.04	0.17	0.04	0.18	0.05	0.20	0.05
810	1.134	0.004	3.460	0.012	0.11	0.03	0.21	0.06	0.21	0.07	0.22	0.07	0.25	0.08
820	1.025	0.003	3.616	0.013	0.11	0.03	0.22	0.06	0.22	0.06	0.23	0.06	0.26	0.07
830	1.275	0.004	4.064	0.015	0.13	0.04	0.24	0.07	0.25	0.07	0.26	0.08	0.29	0.09
840	1.242	0.004	3.920	0.014	0.12	0.04	0.23	0.07	0.24	0.07	0.25	0.08	0.28	0.08
850	1.360	0.005	3.308	0.012	0.10	0.04	0.20	0.08	0.20	0.08	0.21	0.08	0.24	0.09
860	2.019	0.007	3.541	0.013	0.11	0.06	0.21	0.11	0.22	0.12	0.23	0.12	0.25	0.14
870	1.803	0.006	3.270	0.012	0.10	0.05	0.20	0.10	0.20	0.10	0.21	0.11	0.24	0.12
880	1.885	0.006	3.138	0.011	0.10	0.06	0.19	0.11	0.19	0.11	0.20	0.11	0.23	0.13
890	1.786	0.006	2.971	0.011	0.09	0.05	0.18	0.10	0.18	0.10	0.19	0.11	0.21	0.12
900	1.492	0.005	2.705	0.010	0.08	0.04	0.16	0.08	0.17	0.09	0.18	0.09	0.19	0.10
910	1.225	0.004	2.400	0.009	0.07	0.04	0.14	0.07	0.15	0.07	0.16	0.07	0.17	0.08
920	1.020	0.003	2.221	0.008	0.07	0.03	0.13	0.06	0.14	0.06	0.14	0.06	0.16	0.07
930	0.853	0.003	2.144	0.008	0.07	0.03	0.13	0.05	0.13	0.05	0.14	0.05	0.15	0.06
940	0.805	0.003	2.171	0.008	0.07	0.02	0.13	0.05	0.13	0.05	0.14	0.05	0.16	0.05
950	0.758	0.003	2.237	0.008	0.07	0.02	0.13	0.04	0.14	0.04	0.14	0.05	0.16	0.05
960	0.697	0.002	2.160	0.008	0.07	0.02	0.13	0.04	0.13	0.04	0.14	0.04	0.16	0.05
970	0.839	0.003	2.323	0.008	0.07	0.02	0.14	0.05	0.14	0.05	0.15	0.05	0.17	0.06
980	0.793	0.003	2.185	0.008	0.07	0.02	0.13	0.04	0.14	0.05	0.14	0.05	0.16	0.05
990	1.654	0.006	3.115	0.011	0.10	0.05	0.19	0.09	0.19	0.10	0.20	0.10	0.22	0.11
1000	1.533	0.005	2.919	0.010	0.09	0.04	0.17	0.09	0.18	0.09	0.19	0.09	0.21	0.10
1010	1.646	0.006	2.806	0.010	0.09	0.05	0.17	0.09	0.17	0.10	0.18	0.10	0.20	0.11
1020	1.085	0.004	2.017	0.007	0.06	0.03	0.12	0.06	0.12	0.06	0.13	0.07	0.15	0.07
1030	0.821	0.003	1.715	0.006	0.05	0.02	0.10	0.05	0.11	0.05	0.11	0.05	0.12	0.06
1040	1.039	0.003	1.800	0.006	0.06	0.03	0.11	0.06	0.11	0.06	0.12	0.06	0.13	0.07
1050	1.181	0.004	1.836	0.007	0.06	0.03	0.11	0.07	0.11	0.07	0.12	0.07	0.13	0.08
1060	1.095	0.004	1.774	0.006	0.06	0.03	0.11	0.06	0.11	0.06	0.11	0.07	0.13	0.07
1070	1.064	0.004	1.756	0.006	0.05	0.03	0.11	0.06	0.11	0.06	0.11	0.06	0.13	0.07
1080	1.070	0.004	1.883	0.007	0.06	0.03	0.11	0.06	0.12	0.06	0.12	0.07	0.14	0.07
1090	1.352	0.005	2.151	0.008	0.07	0.04	0.13	0.08	0.13	0.08	0.14	0.08	0.15	0.09
1100	1.178	0.004	1.871	0.007	0.06	0.03	0.11	0.07	0.12	0.07	0.12	0.07	0.13	0.08
1110	1.028	0.003	1.599	0.006	0.05	0.03	0.10	0.06	0.10	0.06	0.10	0.06	0.12	0.07
1120	0.809	0.003	1.561	0.006	0.05	0.02	0.09	0.05	0.10	0.05	0.10	0.05	0.11	0.05
1130	0.852	0.003	1.524	0.005	0.05	0.02	0.09	0.05	0.09	0.05	0.10	0.05	0.11	0.06
1140	1.109	0.004	1.739	0.006	0.05	0.03	0.10	0.06	0.11	0.06	0.11	0.07	0.13	0.08
1150	1.449	0.005	2.105	0.008	0.07	0.04	0.13	0.08	0.13	0.08	0.14	0.09	0.15	0.10
1160	1.006	0.003	1.601	0.006	0.05	0.03	0.10	0.06	0.10	0.06	0.10	0.06	0.12	0.07
1170	1.126	0.004	1.689	0.006	0.05	0.03	0.10	0.06	0.10	0.07	0.11	0.07	0.12	0.08
1180	1.021	0.003	1.564	0.006	0.05	0.03	0.09	0.06	0.10	0.06	0.10	0.06	0.11	0.07
1190	0.904	0.003	1.378	0.005	0.04	0.03	0.08	0.05	0.09	0.05	0.09	0.05	0.10	0.06
1200	1.334	0.004	1.826	0.007	0.06	0.04	0.11	0.08	0.11	0.08	0.12	0.08	0.13	0.09
1210	1.148	0.004	1.572	0.006	0.05	0.03	0.09	0.06	0.10	0.07	0.10	0.07	0.11	0.08
1220	1.184	0.004	1.717	0.006	0.05	0.03	0.10	0.07	0.11	0.07	0.11	0.07	0.12	0.08
1230	1.114	0.004	1.523	0.005	0.05	0.03	0.09	0.06	0.09	0.06	0.10	0.07	0.11	0.08
1240	0.860	0.003	1.163	0.004	0.04	0.03	0.07	0.05	0.07	0.05	0.08	0.05	0.08	0.06
1250	0.806	0.003	1.026	0.004	0.03	0.02	0.06	0.05	0.06	0.05	0.07	0.05	0.07	0.05
1260	0.829	0.003	1.009	0.004	0.03	0.02	0.06	0.05	0.06	0.05	0.07	0.05	0.07	0.06
1270	0.759	0.003	0.913	0.003	0.03	0.02	0.05	0.04	0.06	0.04	0.06	0.05	0.07	0.05
1280	0.756	0.003	0.873	0.003	0.03	0.02	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05
1290	1.002	0.003	1.000	0.004	0.03	0.03	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07
1300	0.783	0.003	0.855	0.003	0.03	0.02	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05
1310	0.582	0.002	0.654	0.002	0.02	0.02	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04
1320	0.560	0.002	0.594	0.002	0.02	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.04
1330	0.472	0.002	0.593	0.002	0.02	0.01	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1340	0.383	0.001	0.576	0.002	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.02	0.04	0.03
1350	0.358	0.001	0.538	0.002	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.02
1360	0.332	0.001	0.500	0.002	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.02
1370	0.307	0.001	0.462	0.002	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1380	0.281	0.001	0.424	0.002	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1390	0.256	0.001	0.386	0.001	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1400	0.230	0.001	0.348	0.001	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1410	0.205	0.001	0.310	0.001	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1420	0.179	0.001	0.272	0.001	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1430	0.154	0.001	0.234	0.001	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1440	0.128	0.000	0.196	0.001	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1450	0.103	0.000	0.158	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1460	0.077	0.000	0.120	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01
1470	0.051	0.000	0.082	0.000	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1480	0.026	0.000	0.044	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.000	0.000	0.006	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CB-0720	Batiquitos	0	0	Avg. Net Sl	0.01	0.40	0.62	0.73	0.49					
CB-720	493.724	0	508.685	1556			**Sand Depth (ft)**					*a/s=*	*119.19*	*ft²/m*
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall
0	0.457	0.001	0.578	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
10	0.968	0.002	0.909	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01
20	0.905	0.002	0.974	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01
30	0.638	0.001	0.874	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
40	0.722	0.001	0.946	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
50	0.883	0.002	1.040	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01
60	1.172	0.002	1.342	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01
70	1.524	0.003	1.704	0.003	0.00	0.00	0.02	0.01	0.02	0.02	0.03	0.03	0.02	0.02
80	2.633	0.005	2.788	0.005	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
90	3.334	0.007	3.497	0.007	0.00	0.00	0.03	0.03	0.05	0.05	0.06	0.06	0.04	0.04
100	3.150	0.006	3.334	0.007	0.00	0.00	0.03	0.03	0.05	0.05	0.06	0.06	0.04	0.04
110	2.526	0.005	2.773	0.005	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
120	1.622	0.003	1.985	0.004	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.02
130	1.333	0.003	1.751	0.003	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.02	0.02
140	1.601	0.003	1.970	0.004	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.03	0.02	0.02
150	2.382	0.005	2.623	0.005	0.00	0.00	0.02	0.02	0.04	0.04	0.05	0.04	0.03	0.03
160	3.343	0.007	3.534	0.007	0.00	0.00	0.03	0.03	0.05	0.05	0.06	0.06	0.04	0.04
170	3.976	0.008	3.965	0.008	0.00	0.00	0.04	0.04	0.06	0.06	0.07	0.07	0.05	0.05
180	4.721	0.010	4.356	0.009	0.00	0.00	0.04	0.05	0.06	0.07	0.07	0.08	0.05	0.06
190	5.552	0.011	4.765	0.009	0.00	0.00	0.05	0.05	0.07	0.08	0.08	0.10	0.05	0.07
200	6.023	0.012	4.657	0.009	0.00	0.00	0.04	0.06	0.07	0.09	0.08	0.11	0.05	0.07
210	6.287	0.013	4.408	0.009	0.00	0.00	0.04	0.06	0.06	0.09	0.08	0.11	0.05	0.07
220	6.601	0.013	4.307	0.008	0.00	0.00	0.04	0.06	0.06	0.10	0.07	0.12	0.05	0.08
230	6.763	0.014	4.077	0.008	0.00	0.00	0.04	0.07	0.06	0.10	0.07	0.12	0.05	0.08
240	6.776	0.014	3.771	0.007	0.00	0.00	0.04	0.07	0.06	0.10	0.06	0.12	0.04	0.08
250	6.735	0.014	3.549	0.007	0.00	0.00	0.03	0.07	0.05	0.10	0.06	0.12	0.04	0.08
260	6.640	0.013	3.371	0.007	0.00	0.00	0.03	0.06	0.05	0.10	0.06	0.12	0.04	0.08
270	6.492	0.013	3.196	0.006	0.00	0.00	0.03	0.06	0.05	0.10	0.05	0.11	0.04	0.08
280	6.324	0.013	3.039	0.006	0.00	0.00	0.03	0.06	0.04	0.10	0.05	0.11	0.03	0.07
290	6.108	0.012	2.896	0.006	0.00	0.00	0.03	0.06	0.04	0.09	0.05	0.11	0.03	0.07
300	5.791	0.012	2.674	0.005	0.00	0.00	0.03	0.06	0.04	0.09	0.05	0.10	0.03	0.07
310	5.408	0.011	2.429	0.005	0.00	0.00	0.02	0.05	0.04	0.08	0.04	0.10	0.03	0.06
320	4.979	0.010	2.208	0.004	0.00	0.00	0.02	0.05	0.03	0.07	0.04	0.09	0.03	0.06
330	4.556	0.009	2.027	0.004	0.00	0.00	0.02	0.04	0.03	0.07	0.03	0.08	0.02	0.05
340	4.294	0.009	1.975	0.004	0.00	0.00	0.02	0.04	0.03	0.06	0.03	0.08	0.02	0.05
350	4.250	0.009	2.103	0.004	0.00	0.00	0.02	0.04	0.03	0.06	0.04	0.08	0.02	0.05
360	4.284	0.009	2.305	0.005	0.00	0.00	0.02	0.04	0.03	0.06	0.04	0.08	0.03	0.05
370	4.341	0.009	2.497	0.005	0.00	0.00	0.02	0.04	0.04	0.07	0.04	0.08	0.03	0.05
380	4.546	0.009	2.771	0.005	0.00	0.00	0.03	0.04	0.04	0.07	0.05	0.08	0.03	0.05
390	4.900	0.010	3.119	0.006	0.00	0.00	0.03	0.05	0.05	0.07	0.05	0.09	0.04	0.06
400	5.295	0.011	3.477	0.007	0.00	0.00	0.03	0.05	0.05	0.08	0.06	0.09	0.04	0.06
410	5.689	0.012	3.791	0.007	0.00	0.00	0.04	0.06	0.06	0.09	0.07	0.10	0.04	0.07
420	5.983	0.012	3.958	0.008	0.00	0.00	0.04	0.06	0.06	0.09	0.07	0.11	0.05	0.07
430	6.106	0.012	3.937	0.008	0.00	0.00	0.04	0.06	0.06	0.09	0.07	0.11	0.04	0.07
440	6.176	0.013	3.846	0.008	0.00	0.00	0.04	0.06	0.06	0.09	0.07	0.11	0.04	0.07
450	6.267	0.013	3.789	0.007	0.00	0.00	0.04	0.06	0.06	0.09	0.07	0.11	0.04	0.07
460	6.204	0.013	3.626	0.007	0.00	0.00	0.03	0.06	0.05	0.09	0.06	0.11	0.04	0.07
470	5.813	0.012	3.158	0.006	0.00	0.00	0.03	0.06	0.05	0.09	0.05	0.10	0.04	0.07
480	5.606	0.011	2.896	0.006	0.00	0.00	0.03	0.05	0.04	0.08	0.05	0.10	0.03	0.07
490	5.639	0.011	2.898	0.006	0.00	0.00	0.03	0.06	0.04	0.08	0.05	0.10	0.03	0.07
500	5.667	0.011	2.907	0.006	0.00	0.00	0.03	0.06	0.04	0.09	0.05	0.10	0.03	0.07
510	5.107	0.010	2.536	0.005	0.00	0.00	0.02	0.05	0.04	0.08	0.04	0.09	0.03	0.06
520	4.679	0.009	2.451	0.005	0.00	0.00	0.02	0.05	0.04	0.07	0.04	0.08	0.03	0.05
530	4.560	0.009	2.714	0.005	0.00	0.00	0.03	0.04	0.04	0.07	0.05	0.08	0.03	0.05
540	4.452	0.009	2.862	0.006	0.00	0.00	0.03	0.04	0.04	0.07	0.05	0.08	0.03	0.05
550	4.410	0.009	2.907	0.006	0.00	0.00	0.03	0.04	0.04	0.07	0.05	0.08	0.03	0.05
560	4.676	0.009	3.167	0.006	0.00	0.00	0.03	0.05	0.05	0.07	0.05	0.08	0.04	0.05
570	4.873	0.010	3.349	0.007	0.00	0.00	0.03	0.05	0.05	0.07	0.06	0.09	0.04	0.06
580	4.905	0.010	3.402	0.007	0.00	0.00	0.03	0.05	0.05	0.07	0.06	0.09	0.04	0.06
590	4.919	0.010	3.475	0.007	0.00	0.00	0.03	0.05	0.05	0.07	0.06	0.09	0.04	0.06
600	5.078	0.010	3.709	0.007	0.00	0.00	0.04	0.05	0.05	0.08	0.06	0.09	0.04	0.06
610	5.323	0.011	4.017	0.008	0.00	0.00	0.04	0.05	0.06	0.08	0.07	0.09	0.05	0.06
620	5.558	0.011	4.307	0.008	0.00	0.00	0.04	0.05	0.06	0.08	0.07	0.10	0.05	0.07
630	5.781	0.012	4.596	0.009	0.00	0.00	0.04	0.06	0.07	0.09	0.08	0.10	0.05	0.07
640	5.815	0.012	4.725	0.009	0.00	0.00	0.04	0.06	0.07	0.09	0.08	0.10	0.05	0.07
650	5.434	0.011	4.496	0.009	0.00	0.00	0.04	0.05	0.07	0.08	0.08	0.10	0.05	0.06
660	4.840	0.010	4.119	0.008	0.00	0.00	0.04	0.05	0.06	0.07	0.07	0.09	0.05	0.06
670	4.261	0.009	3.800	0.007	0.00	0.00	0.04	0.04	0.06	0.06	0.07	0.08	0.04	0.05
680	3.908	0.008	3.720	0.007	0.00	0.00	0.04	0.04	0.05	0.06	0.06	0.07	0.04	0.05
690	3.733	0.008	3.832	0.008	0.00	0.00	0.04	0.04	0.06	0.06	0.07	0.07	0.04	0.04
700	3.684	0.007	4.093	0.008	0.00	0.00	0.04	0.04	0.06	0.06	0.07	0.07	0.05	0.04
710	3.366	0.007	4.141	0.008	0.00	0.00	0.04	0.03	0.06	0.05	0.07	0.06	0.05	0.04
720	2.993	0.006	4.096	0.008	0.00	0.00	0.04	0.03	0.06	0.05	0.07	0.05	0.05	0.04
730	2.841	0.006	4.166	0.008	0.00	0.00	0.04	0.03	0.06	0.04	0.07	0.05	0.05	0.03
740	2.745	0.006	4.282	0.008	0.00	0.00	0.04	0.03	0.06	0.04	0.07	0.05	0.05	0.03
750	2.672	0.005	4.404	0.009	0.00	0.00	0.04	0.03	0.06	0.04	0.08	0.05	0.05	0.03
760	2.734	0.006	4.626	0.009	0.00	0.00	0.04	0.03	0.07	0.04	0.08	0.05	0.05	0.03
770	2.857	0.006	4.908	0.010	0.00	0.00	0.05	0.03	0.07	0.04	0.08	0.05	0.06	0.03
780	2.974	0.006	5.187	0.010	0.00	0.00	0.05	0.03	0.08	0.04	0.09	0.05	0.06	0.03
790	3.012	0.006	5.366	0.011	0.00	0.00	0.05	0.03	0.08	0.05	0.09	0.05	0.06	0.04
800	2.917	0.006	5.394	0.011	0.00	0.00	0.05	0.03	0.08	0.04	0.09	0.05	0.06	0.03
810	2.778	0.006	5.344	0.011	0.00	0.00	0.05	0.03	0.08	0.04	0.09	0.05	0.06	0.03
820	2.632	0.005	5.221	0.010	0.00	0.00	0.05	0.03	0.08	0.04	0.09	0.05	0.06	0.03
830	2.438	0.005	5.019	0.010	0.00	0.00	0.05	0.02	0.07	0.04	0.09	0.04	0.06	0.03
840	2.207	0.004	4.792	0.009	0.00	0.00	0.05	0.02	0.07	0.03	0.08	0.04	0.05	0.03
850	1.989	0.004	4.580	0.009	0.00	0.00	0.04	0.02	0.07	0.03	0.08	0.04	0.05	0.02
860	1.897	0.004	4.491	0.009	0.00	0.00	0.04	0.02	0.07	0.03	0.08	0.03	0.05	0.02
870	1.876	0.004	4.468	0.009	0.00	0.00	0.04	0.02	0.07	0.03	0.08	0.03	0.05	0.02
880	1.864	0.004	4.440	0.009	0.00	0.00	0.04	0.02	0.06	0.03	0.08	0.03	0.05	0.02
890	1.885	0.004	4.440	0.009	0.00	0.00	0.04	0.02	0.06	0.03	0.08	0.03	0.05	0.02
900	1.889	0.004	4.427	0.009	0.00	0.00	0.04	0.02	0.06	0.03	0.08	0.03	0.05	0.02
910	1.893	0.004	4.373	0.009	0.00	0.00	0.04	0.02	0.06	0.03	0.08	0.03	0.05	0.02
920	1.879	0.004	4.385	0.009	0.00	0.00	0.04	0.02	0.06	0.03	0.08	0.03	0.05	0.02
930	1.873	0.004	4.471	0.009	0.00	0.00	0.04	0.02	0.07	0.03	0.08	0.03	0.05	0.02
940	1.846	0.004	4.508	0.009	0.00	0.00	0.04	0.02	0.07	0.03	0.08	0.03	0.05	0.02
950	1.824	0.004	4.457	0.009	0.00	0.00	0.04	0.02	0.07	0.03	0.08	0.03	0.05	0.02
960	1.816	0.004	4.377	0.009	0.00	0.00	0.04	0.02	0.06	0.03	0.08	0.03	0.05	0.02
970	1.793	0.004	4.308	0.008	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.03	0.05	0.02
980	1.802	0.004	4.230	0.008	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.03	0.05	0.02
990	1.819	0.004	4.186	0.008	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.03	0.05	0.02
1000	1.811	0.004	4.066	0.008	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.03	0.05	0.02
1010	1.799	0.004	3.914	0.008	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.03	0.04	0.02
1020	1.763	0.004	3.781	0.007	0.00	0.00	0.04	0.02	0.06	0.03	0.06	0.03	0.04	0.02
1030	1.710	0.003	3.647	0.007	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.03	0.04	0.02
1040	1.667	0.003	3.510	0.007	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.03	0.04	0.02
1050	1.654	0.003	3.425	0.007	0.00	0.00	0.03	0.02	0.05	0.02	0.06	0.03	0.04	0.02
1060	1.650	0.003	3.381	0.007	0.00	0.00	0.03	0.02	0.05	0.02	0.06	0.03	0.04	0.02
1070	1.641	0.003	3.335	0.007	0.00	0.00	0.03	0.02	0.05	0.02	0.06	0.03	0.04	0.02
1080	1.631	0.003	3.218	0.006	0.00	0.00	0.03	0.02	0.05	0.02	0.06	0.03	0.04	0.02
1090	1.570	0.003	3.089	0.006	0.00	0.00	0.03	0.02	0.05	0.02	0.05	0.03	0.04	0.02
1100	1.486	0.003	2.971	0.006	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.03	0.03	0.02
1110	1.421	0.003	2.878	0.006	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.03	0.03	0.02
1120	1.369	0.003	2.785	0.005	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.02	0.03	0.02
1130	1.340	0.003	2.716	0.005	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.02	0.03	0.02
1140	1.341	0.003	2.719	0.005	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.02	0.03	0.02
1150	1.350	0.003	2.692	0.005	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.02	0.03	0.02
1160	1.359	0.003	2.651	0.005	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.02	0.03	0.02
1170	1.465	0.003	2.755	0.005	0.00	0.00	0.03	0.01	0.04	0.02	0.05	0.03	0.03	0.02
1180	1.633	0.003	2.935	0.006	0.00	0.00	0.03	0.02	0.04	0.02	0.05	0.03	0.03	0.02
1190	1.788	0.004	3.061	0.006	0.00	0.00	0.03	0.02	0.04	0.03	0.05	0.03	0.03	0.02
1200	1.894	0.004	3.134	0.006	0.00	0.00	0.03	0.02	0.05	0.03	0.05	0.03	0.04	0.02
1210	1.991	0.004	3.166	0.006	0.00	0.00	0.03	0.02	0.05	0.03	0.05	0.04	0.04	0.02
1220	2.073	0.004	3.182	0.006	0.00	0.00	0.03	0.02	0.05	0.03	0.05	0.04	0.04	0.02
1230	2.171	0.004	3.185	0.006	0.00	0.00	0.03	0.02	0.05	0.03	0.05	0.04	0.04	0.03
1240	2.235	0.005	3.188	0.006	0.00	0.00	0.03	0.02	0.05	0.03	0.05	0.04	0.04	0.03
1250	2.307	0.005	3.138	0.006	0.00	0.00	0.03	0.02	0.05	0.03	0.05	0.04	0.04	0.03
1260	2.362	0.005	3.092	0.006	0.00	0.00	0.03	0.02	0.05	0.04	0.05	0.04	0.04	0.03
1270	2.414	0.005	3.031	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1280	2.448	0.005	2.936	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1290	2.465	0.005	2.896	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1300	2.489	0.005	2.910	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1310	2.493	0.005	2.901	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1320	2.495	0.005	2.878	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1330	2.481	0.005	2.858	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1340	2.479	0.005	2.850	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1350	2.499	0.005	2.876	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1360	2.527	0.005	2.960	0.006	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.04	0.03	0.03
1370	2.570	0.005	3.010	0.006	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1380	2.612	0.005	3.016	0.006	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1390	2.655	0.005	3.027	0.006	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1400	2.683	0.005	3.046	0.006	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1410	2.701	0.005	3.104	0.006	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.05	0.04	0.03
1420	2.718	0.006	3.088	0.006	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.05	0.04	0.03
1430	2.707	0.005	3.005	0.006	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1440	2.666	0.005	2.923	0.006	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1450	2.609	0.005	2.825	0.006	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1460	2.560	0.005	2.737	0.005	0.00	0.00	0.03	0.03	0.04	0.04	0.05	0.05	0.03	0.03
1470	2.548	0.005	2.651	0.005	0.00	0.00	0.03	0.02	0.04	0.04	0.05	0.05	0.03	0.03
1480	2.268	0.005	2.361	0.005	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.03	0.03
1490	1.988	0.004	2.071	0.004	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.02	0.02
1500	1.708	0.003	1.781	0.004	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02
1510	1.428	0.003	1.491	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.02	0.02
1520	1.148	0.002	1.201	0.002	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1530	0.868	0.002	0.911	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01
1540	0.588	0.001	0.621	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1550	0.308	0.001	0.331	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1560	0.028	0.000	0.041	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix B
Alternative 2A
Scenario II Calm Wave Condition
Sediment Transport Model Predictions
Spring and Fall
Years 1 to 5, Year 10

DM-0565	South Del Mar	0	0	Avg. Net SL	-0.05	0.47	0.95	1.24	1.45	1.96						
DM-0565	251.646	0	149.46	1770			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	9.672	0.038	3.985	0.027	0.00	0.00	0.15	0.21	0.30	0.44	0.39	0.57	0.46	0.67	0.62	0.90
180	7.710	0.031	2.281	0.015	0.00	0.00	0.09	0.17	0.17	0.35	0.23	0.45	0.26	0.53	0.36	0.71
190	6.092	0.024	1.144	0.008	0.00	0.00	0.04	0.13	0.09	0.27	0.11	0.36	0.13	0.42	0.18	0.56
200	4.460	0.018	1.082	0.007	0.00	0.00	0.04	0.10	0.08	0.20	0.11	0.26	0.13	0.31	0.17	0.41
210	2.848	0.011	1.022	0.007	0.00	0.00	0.04	0.06	0.08	0.13	0.10	0.17	0.12	0.20	0.16	0.26
220	2.565	0.010	1.035	0.007	0.00	0.00	0.04	0.06	0.08	0.12	0.10	0.15	0.12	0.18	0.16	0.24
230	2.598	0.010	1.008	0.007	0.00	0.00	0.04	0.06	0.08	0.12	0.10	0.15	0.12	0.18	0.16	0.24
240	2.670	0.011	1.018	0.007	0.00	0.00	0.04	0.06	0.08	0.12	0.10	0.16	0.12	0.18	0.16	0.25
250	2.768	0.011	1.074	0.007	0.00	0.00	0.04	0.06	0.08	0.12	0.11	0.16	0.12	0.19	0.17	0.26
260	2.711	0.011	1.050	0.007	0.00	0.00	0.04	0.06	0.08	0.12	0.10	0.16	0.12	0.19	0.16	0.25
270	2.576	0.010	0.954	0.006	0.00	0.00	0.04	0.06	0.07	0.12	0.09	0.15	0.11	0.18	0.15	0.24
280	2.502	0.010	0.873	0.006	0.00	0.00	0.03	0.06	0.07	0.11	0.09	0.15	0.10	0.17	0.14	0.23
290	2.538	0.010	0.845	0.006	0.00	0.00	0.03	0.06	0.06	0.11	0.08	0.15	0.10	0.17	0.13	0.24
300	2.600	0.010	0.830	0.006	0.00	0.00	0.03	0.06	0.06	0.12	0.08	0.15	0.10	0.18	0.13	0.24
310	2.662	0.011	0.815	0.005	0.00	0.00	0.03	0.06	0.06	0.12	0.08	0.16	0.09	0.18	0.13	0.25
320	2.752	0.011	0.799	0.005	0.00	0.00	0.03	0.06	0.06	0.12	0.08	0.16	0.09	0.19	0.12	0.26
330	2.871	0.011	0.802	0.005	0.00	0.00	0.03	0.06	0.06	0.13	0.08	0.17	0.09	0.20	0.13	0.27
340	2.961	0.012	0.789	0.005	0.00	0.00	0.03	0.07	0.06	0.13	0.08	0.17	0.09	0.20	0.12	0.27
350	2.951	0.012	0.701	0.005	0.00	0.00	0.03	0.07	0.05	0.13	0.07	0.17	0.08	0.20	0.11	0.27
360	2.950	0.012	0.624	0.004	0.00	0.00	0.02	0.07	0.05	0.13	0.06	0.17	0.07	0.20	0.10	0.27
370	3.017	0.012	0.638	0.004	0.00	0.00	0.02	0.07	0.05	0.14	0.06	0.18	0.07	0.21	0.10	0.28
380	3.254	0.013	0.841	0.006	0.00	0.00	0.03	0.07	0.06	0.15	0.08	0.19	0.10	0.22	0.13	0.30
390	3.521	0.014	1.067	0.007	0.00	0.00	0.04	0.08	0.08	0.16	0.11	0.21	0.12	0.24	0.17	0.33
400	3.772	0.015	1.296	0.009	0.00	0.00	0.05	0.08	0.10	0.17	0.13	0.22	0.15	0.26	0.20	0.35
410	3.990	0.016	1.502	0.010	0.00	0.00	0.06	0.09	0.11	0.18	0.15	0.23	0.17	0.27	0.23	0.37
420	4.080	0.016	1.532	0.010	0.00	0.00	0.06	0.09	0.12	0.18	0.15	0.24	0.18	0.28	0.24	0.38
430	4.011	0.016	1.266	0.008	0.00	0.00	0.05	0.09	0.10	0.18	0.12	0.24	0.15	0.28	0.20	0.37
440	3.928	0.016	0.961	0.006	0.00	0.00	0.04	0.09	0.07	0.18	0.09	0.23	0.11	0.27	0.15	0.36
450	3.961	0.016	0.774	0.005	0.00	0.00	0.03	0.09	0.06	0.18	0.08	0.23	0.09	0.27	0.12	0.37
460	4.328	0.017	0.918	0.006	0.00	0.00	0.03	0.10	0.07	0.19	0.09	0.25	0.11	0.30	0.14	0.40
470	4.576	0.018	0.999	0.007	0.00	0.00	0.04	0.10	0.08	0.21	0.10	0.27	0.12	0.31	0.16	0.42
480	4.487	0.018	0.887	0.006	0.00	0.00	0.03	0.10	0.07	0.20	0.09	0.26	0.10	0.31	0.14	0.42
490	4.383	0.017	0.815	0.005	0.00	0.00	0.03	0.10	0.06	0.20	0.08	0.26	0.09	0.30	0.13	0.41
500	4.111	0.016	0.781	0.005	0.00	0.00	0.03	0.09	0.06	0.18	0.08	0.24	0.09	0.28	0.12	0.38
510	3.578	0.014	0.669	0.004	0.00	0.00	0.02	0.08	0.05	0.16	0.07	0.21	0.08	0.25	0.10	0.33
520	2.882	0.011	0.467	0.003	0.00	0.00	0.02	0.06	0.04	0.13	0.05	0.17	0.05	0.20	0.07	0.27
530	2.369	0.009	0.421	0.003	0.00	0.00	0.02	0.05	0.03	0.11	0.04	0.14	0.05	0.16	0.07	0.22
540	2.264	0.009	0.814	0.005	0.00	0.00	0.03	0.05	0.06	0.10	0.08	0.13	0.09	0.16	0.13	0.21
550	2.167	0.009	1.286	0.009	0.00	0.00	0.05	0.05	0.10	0.10	0.13	0.13	0.15	0.15	0.20	0.20
560	1.959	0.008	1.582	0.011	0.00	0.00	0.06	0.04	0.12	0.09	0.16	0.11	0.18	0.13	0.25	0.18
570	1.844	0.007	1.853	0.012	0.00	0.00	0.07	0.04	0.14	0.08	0.18	0.11	0.21	0.13	0.29	0.17
580	1.676	0.007	1.956	0.013	0.00	0.00	0.07	0.04	0.15	0.08	0.19	0.10	0.23	0.12	0.31	0.16
590	1.262	0.005	1.740	0.012	0.00	0.00	0.06	0.03	0.13	0.06	0.17	0.07	0.20	0.09	0.27	0.12
600	1.019	0.004	1.634	0.011	0.00	0.00	0.06	0.02	0.12	0.05	0.16	0.06	0.19	0.07	0.25	0.09
610	1.091	0.004	1.650	0.011	0.00	0.00	0.06	0.02	0.12	0.05	0.16	0.06	0.19	0.08	0.26	0.10
620	1.034	0.004	1.421	0.010	0.00	0.00	0.05	0.02	0.11	0.05	0.14	0.06	0.16	0.07	0.22	0.10
630	1.044	0.004	1.225	0.008	0.00	0.00	0.05	0.02	0.09	0.05	0.12	0.06	0.14	0.07	0.19	0.10
640	1.114	0.004	1.094	0.007	0.00	0.00	0.04	0.02	0.08	0.05	0.11	0.07	0.13	0.08	0.17	0.10
650	1.135	0.005	0.972	0.007	0.00	0.00	0.04	0.03	0.07	0.05	0.10	0.07	0.11	0.08	0.15	0.11
660	1.091	0.004	0.885	0.006	0.00	0.00	0.03	0.02	0.07	0.05	0.09	0.06	0.10	0.08	0.14	0.10
670	1.078	0.004	0.800	0.005	0.00	0.00	0.03	0.02	0.06	0.05	0.08	0.06	0.09	0.07	0.12	0.10
680	1.043	0.004	0.707	0.005	0.00	0.00	0.03	0.02	0.05	0.05	0.07	0.06	0.08	0.07	0.11	0.10
690	1.125	0.004	0.681	0.005	0.00	0.00	0.03	0.02	0.05	0.05	0.07	0.07	0.08	0.08	0.11	0.10
700	1.493	0.006	0.686	0.005	0.00	0.00	0.03	0.03	0.05	0.07	0.07	0.09	0.08	0.10	0.11	0.14
710	2.125	0.008	0.997	0.007	0.00	0.00	0.04	0.05	0.08	0.10	0.10	0.12	0.12	0.15	0.16	0.20
720	1.804	0.007	0.748	0.005	0.00	0.00	0.03	0.04	0.06	0.08	0.07	0.11	0.09	0.12	0.12	0.17
730	1.711	0.007	0.792	0.005	0.00	0.00	0.03	0.04	0.06	0.08	0.08	0.10	0.09	0.12	0.12	0.16
740	2.098	0.008	1.125	0.008	0.00	0.00	0.04	0.05	0.09	0.09	0.11	0.12	0.13	0.14	0.18	0.19
750	2.131	0.008	1.371	0.009	0.00	0.00	0.05	0.05	0.10	0.10	0.14	0.12	0.16	0.15	0.21	0.20
760	1.930	0.008	1.410	0.009	0.00	0.00	0.05	0.04	0.11	0.09	0.14	0.11	0.16	0.13	0.22	0.18
770	2.055	0.008	1.125	0.008	0.00	0.00	0.04	0.05	0.09	0.09	0.11	0.12	0.13	0.14	0.18	0.19
780	2.077	0.008	0.979	0.007	0.00	0.00	0.04	0.05	0.07	0.09	0.10	0.12	0.11	0.14	0.15	0.19
790	1.912	0.008	0.792	0.005	0.00	0.00	0.03	0.04	0.06	0.09	0.08	0.11	0.09	0.13	0.12	0.18
800	1.617	0.006	0.643	0.004	0.00	0.00	0.02	0.04	0.05	0.07	0.06	0.09	0.07	0.11	0.10	0.15
810	1.671	0.007	0.826	0.006	0.00	0.00	0.03	0.04	0.06	0.08	0.08	0.10	0.10	0.12	0.13	0.15
820	1.692	0.007	1.319	0.009	0.00	0.00	0.05	0.04	0.10	0.08	0.13	0.10	0.15	0.12	0.21	0.16
830	1.416	0.006	1.444	0.010	0.00	0.00	0.05	0.03	0.11	0.06	0.14	0.08	0.17	0.10	0.23	0.13
840	1.406	0.006	1.216	0.008	0.00	0.00	0.05	0.03	0.09	0.06	0.12	0.08	0.14	0.10	0.19	0.13
850	1.565	0.006	1.620	0.011	0.00	0.00	0.06	0.03	0.12	0.07	0.16	0.09	0.19	0.11	0.25	0.15
860	1.029	0.004	1.658	0.011	0.00	0.00	0.06	0.02	0.13	0.05	0.16	0.06	0.19	0.07	0.26	0.10
870	1.348	0.005	1.996	0.013	0.00	0.00	0.07	0.03	0.15	0.06	0.20	0.08	0.23	0.09	0.31	0.12
880	0.781	0.003	1.142	0.008	0.00	0.00	0.04	0.02	0.09	0.04	0.11	0.05	0.13	0.05	0.18	0.07
890	0.784	0.003	0.743	0.005	0.00	0.00	0.03	0.02	0.06	0.04	0.07	0.05	0.09	0.05	0.12	0.07
900	0.748	0.003	0.839	0.006	0.00	0.00	0.03	0.02	0.06	0.03	0.08	0.04	0.10	0.05	0.13	0.07
910	0.976	0.004	0.850	0.006	0.00	0.00	0.03	0.02	0.06	0.04	0.08	0.06	0.10	0.07	0.13	0.09
920	1.687	0.007	1.042	0.007	0.00	0.00	0.04	0.04	0.08	0.08	0.10	0.10	0.12	0.12	0.16	0.16
930	1.070	0.004	1.443	0.010	0.00	0.00	0.05	0.02	0.11	0.05	0.14	0.06	0.17	0.07	0.23	0.10
940	0.687	0.003	1.469	0.010	0.00	0.00	0.05	0.02	0.11	0.03	0.15	0.04	0.17	0.05	0.23	0.06
950	1.787	0.007	2.283	0.015	0.00	0.00	0.09	0.04	0.17	0.08	0.23	0.10	0.26	0.12	0.36	0.17
960	2.892	0.011	2.749	0.018	0.00	0.00	0.10	0.06	0.21	0.13	0.27	0.17	0.32	0.20	0.43	0.27
970	2.983	0.012	2.355	0.016	0.00	0.00	0.09	0.07	0.18	0.13	0.23	0.17	0.27	0.21	0.37	0.28
980	2.332	0.009	2.037	0.014	0.00	0.00	0.08	0.05	0.15	0.10	0.20	0.14	0.24	0.16	0.32	0.22
990	1.943	0.008	1.755	0.012	0.00	0.00	0.07	0.04	0.13	0.09	0.17	0.11	0.20	0.13	0.27	0.18
1000	2.006	0.008	1.437	0.010	0.00	0.00	0.05	0.04	0.11	0.09	0.14	0.12	0.17	0.14	0.22	0.19
1010	2.234	0.009	1.665	0.011	0.00	0.00	0.06	0.05	0.13	0.10	0.16	0.13	0.19	0.15	0.26	0.21
1020	1.840	0.007	1.985	0.013	0.00	0.00	0.07	0.04	0.15	0.08	0.20	0.11	0.23	0.13	0.31	0.17
1030	1.721	0.007	2.162	0.014	0.00	0.00	0.08	0.04	0.16	0.08	0.21	0.10	0.25	0.12	0.34	0.16
1040	1.339	0.005	2.246	0.015	0.00	0.00	0.08	0.03	0.17	0.06	0.22	0.08	0.26	0.09	0.35	0.12
1050	1.036	0.004	1.966	0.013	0.00	0.00	0.07	0.02	0.15	0.05	0.19	0.06	0.23	0.07	0.31	0.10
1060	0.673	0.003	1.930	0.013	0.00	0.00	0.07	0.01	0.15	0.03	0.19	0.04	0.22	0.05	0.30	0.06
1070	0.698	0.003	2.104	0.014	0.00	0.00	0.08	0.02	0.16	0.03	0.21	0.04	0.24	0.05	0.33	0.06
1080	0.997	0.004	2.198	0.015	0.00	0.00	0.08	0.02	0.17	0.04	0.22	0.06	0.25	0.07	0.34	0.09
1090	1.471	0.006	2.303	0.015	0.00	0.00	0.09	0.03	0.17	0.07	0.23	0.09	0.27	0.10	0.36	0.14
1100	2.367	0.009	2.898	0.019	0.00	0.00	0.11	0.05	0.22	0.11	0.29	0.14	0.34	0.16	0.45	0.22
1110	1.931	0.008	2.032	0.014	0.00	0.00	0.08	0.04	0.15	0.09	0.20	0.11	0.24	0.13	0.32	0.18
1120	0.551	0.002	1.363	0.009	0.00	0.00	0.05	0.01	0.10	0.02	0.13	0.03	0.16	0.04	0.21	0.05
1130	0.769	0.003	1.126	0.008	0.00	0.00	0.04	0.02	0.09	0.03	0.11	0.05	0.13	0.05	0.18	0.07
1140	0.483	0.002	0.668	0.004	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.03	0.08	0.03	0.10	0.04
1150	0.693	0.003	0.676	0.005	0.00	0.00	0.03	0.02	0.05	0.03	0.07	0.04	0.08	0.05	0.11	0.06
1160	0.683	0.003	0.666	0.004	0.00	0.00	0.02	0.02	0.05	0.03	0.07	0.04	0.08	0.05	0.10	0.06
1170	0.673	0.003	0.656	0.004	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.08	0.05	0.10	0.06
1180	0.663	0.003	0.646	0.004	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.07	0.05	0.10	0.06
1190	0.653	0.003	0.636	0.004	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.07	0.04	0.10	0.06
1200	0.643	0.003	0.626	0.004	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.07	0.04	0.10	0.06
1210	0.633	0.003	0.616	0.004	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.07	0.04	0.10	0.06
1220	0.623	0.002	0.606	0.004	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.07	0.04	0.09	0.06
1230	0.613	0.002	0.596	0.004	0.00	0.00	0.02	0.01	0.05	0.03	0.06	0.04	0.07	0.04	0.09	0.06
1240	0.603	0.002	0.586	0.004	0.00	0.00	0.02	0.01	0.04	0.03	0.06	0.04	0.07	0.04	0.09	0.06
1250	0.593	0.002	0.576	0.004	0.00	0.00	0.02	0.01	0.04	0.03	0.06	0.03	0.07	0.04	0.09	0.05
1260	0.583	0.002	0.566	0.004	0.00	0.00	0.02	0.01	0.04	0.03	0.06	0.03	0.07	0.04	0.09	0.05
1270	0.573	0.002	0.556	0.004	0.00	0.00	0.02	0.01	0.04	0.03	0.05	0.03	0.06	0.04	0.09	0.05
1280	0.563	0.002	0.546	0.004	0.00	0.00	0.02	0.01	0.04	0.03	0.05	0.03	0.06	0.04	0.09	0.05
1290	0.553	0.002	0.536	0.004	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.08	0.05
1300	0.543	0.002	0.526	0.004	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.08	0.05
1310	0.533	0.002	0.516	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.08	0.05
1320	0.523	0.002	0.506	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.08	0.05
1330	0.513	0.002	0.496	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.08	0.05
1340	0.503	0.002	0.486	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.03	0.08	0.05
1350	0.493	0.002	0.476	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.06	0.03	0.07	0.05
1360	0.483	0.002	0.466	0.003	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.03	0.05	0.03	0.07	0.04
1370	0.473	0.002	0.456	0.003	0.00	0.00	0.02	0.01	0.03	0.02	0.05	0.03	0.05	0.03	0.07	0.04
1380	0.463	0.002	0.446	0.003	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.07	0.04
1390	0.453	0.002	0.436	0.003	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.07	0.04
1400	0.443	0.002	0.426	0.003	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.07	0.04
1410	0.433	0.002	0.416	0.003	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.06	0.04
1420	0.423	0.002	0.406	0.003	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.06	0.04
1430	0.413	0.002	0.396	0.003	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.06	0.04
1440	0.403	0.002	0.386	0.003	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.04	0.03	0.06	0.04
1450	0.393	0.002	0.376	0.003	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.04	0.03	0.06	0.04
1460	0.383	0.002	0.366	0.002	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.04	0.03	0.06	0.04
1470	0.373	0.001	0.356	0.002	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.04	0.03	0.06	0.03
1480	0.363	0.001	0.346	0.002	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.02	0.04	0.02	0.05	0.03
1490	0.353	0.001	0.336	0.002	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.02	0.04	0.02	0.05	0.03
1500	0.343	0.001	0.326	0.002	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.04	0.02	0.05	0.03
1510	0.333	0.001	0.316	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.03
1520	0.323	0.001	0.306	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.03
1530	0.313	0.001	0.296	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.05	0.03
1540	0.303	0.001	0.286	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.03
1550	0.293	0.001	0.276	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.03
1560	0.283	0.001	0.266	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.03
1570	0.273	0.001	0.256	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.03
1580	0.263	0.001	0.246	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02	0.04	0.02
1590	0.253	0.001	0.236	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.04	0.02
1600	0.243	0.001	0.226	0.002	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.04	0.02
1610	0.233	0.001	0.216	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.02
1620	0.223	0.001	0.206	0.001	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1630	0.213	0.001	0.196	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1640	0.203	0.001	0.186	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1650	0.193	0.001	0.176	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1660	0.183	0.001	0.166	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1670	0.173	0.001	0.156	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02
1680	0.163	0.001	0.146	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1690	0.153	0.001	0.136	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1700	0.143	0.001	0.126	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1710	0.133	0.001	0.116	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1720	0.123	0.000	0.106	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1730	0.113	0.000	0.096	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1740	0.103	0.000	0.086	0.001	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1750	0.093	0.000	0.076	0.001	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1760	0.083	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01
1770	0.073	0.000	0.056	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01

DM-560	Del Mar	0	0	Avg. Net SL	-0.01	-0.22	-0.15	0.03	0.28	1.30						
DM-0560	242.943	0	328.557	1800			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.571	0.002	0.553	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.04
10	1.204	0.005	1.921	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.08
20	3.535	0.015	3.567	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.05	0.17	0.23
30	4.270	0.018	4.278	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.06	0.20	0.27
40	3.862	0.016	3.380	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.16	0.25
50	4.049	0.017	2.298	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.11	0.26
60	3.839	0.016	1.639	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.08	0.24
70	3.266	0.013	1.314	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.06	0.21
80	2.918	0.012	1.161	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.05	0.19
90	2.701	0.011	1.114	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.05	0.17
100	2.492	0.010	1.147	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.16
110	2.287	0.009	1.188	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.06	0.15
120	2.151	0.009	1.191	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.06	0.14
130	2.137	0.009	1.235	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.06	0.14
140	2.163	0.009	1.316	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.06	0.14
150	2.185	0.009	1.402	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.07	0.14
160	2.228	0.009	1.516	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.07	0.14
170	2.190	0.009	1.553	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.07	0.14
180	2.024	0.008	1.453	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.07	0.13
190	1.966	0.008	1.428	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.07	0.13
200	2.069	0.009	1.530	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.07	0.13
210	2.276	0.009	1.716	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.08	0.15
220	2.600	0.011	2.009	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.09	0.17
230	2.768	0.011	2.170	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.10	0.18
240	2.598	0.011	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.10	0.17
250	2.355	0.010	1.835	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.09	0.15
260	2.114	0.009	1.644	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.08	0.13
270	1.868	0.008	1.452	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.07	0.12
280	1.626	0.007	1.258	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.10
290	1.399	0.006	1.060	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.09
300	1.286	0.005	0.968	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.08
310	1.312	0.005	0.994	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.08
320	1.283	0.005	0.944	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.08
330	1.204	0.005	0.848	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.08
340	1.091	0.004	0.756	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.07
350	0.954	0.004	0.657	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.06
360	0.829	0.003	0.568	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.05
370	0.814	0.003	0.579	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.05
380	0.932	0.004	0.696	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.06
390	1.121	0.005	0.846	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.07
400	1.408	0.006	1.065	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.09
410	1.688	0.007	1.280	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.11
420	1.938	0.008	1.471	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.07	0.12
430	2.041	0.008	1.552	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.07	0.13
440	1.960	0.008	1.486	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.07	0.12
450	1.696	0.007	1.313	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.11
460	1.553	0.006	1.326	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.10
470	1.716	0.007	1.649	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.11
480	1.769	0.007	1.847	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.11
490	1.769	0.007	1.943	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.11
500	1.779	0.007	1.986	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.11
510	1.812	0.007	2.035	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.10	0.12
520	1.789	0.007	2.045	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.10	0.11
530	1.681	0.007	1.999	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.11
540	1.563	0.006	1.979	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.10
550	1.467	0.006	1.985	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.09
560	1.451	0.006	2.080	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.10	0.09
570	1.624	0.007	2.359	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.11	0.10
580	1.828	0.008	2.666	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.13	0.12
590	1.780	0.007	2.712	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.11
600	1.587	0.007	2.629	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.12	0.10
610	1.487	0.006	2.676	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.09
620	1.412	0.006	2.738	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.09
630	1.311	0.005	2.764	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.08
640	1.231	0.005	2.787	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.08
650	1.155	0.005	2.789	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.07
660	1.184	0.005	2.830	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.08
670	1.163	0.005	2.837	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.07
680	1.043	0.004	2.760	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.13	0.07
690	0.969	0.004	2.746	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.13	0.06
700	0.908	0.004	2.699	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.13	0.06
710	0.796	0.003	2.586	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.12	0.05
720	0.779	0.003	2.600	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.12	0.05
730	0.805	0.003	2.627	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.12	0.05
740	0.809	0.003	2.701	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.13	0.05
750	0.834	0.003	2.826	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.13	0.05
760	0.828	0.003	2.902	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.14	0.05
770	0.796	0.003	2.946	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.14	0.05
780	0.771	0.003	2.993	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.14	0.05
790	0.802	0.003	3.098	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.15	0.05
800	0.820	0.003	3.177	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.15	0.05
810	0.814	0.003	3.227	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.15	0.05
820	0.804	0.003	3.342	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.16	0.05
830	0.813	0.003	3.408	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.16	0.05
840	0.881	0.004	3.525	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.17	0.06
850	0.996	0.004	3.678	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.17	0.06
860	1.111	0.005	3.768	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.18	0.07
870	1.185	0.005	3.773	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.18	0.08
880	1.237	0.005	3.703	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.17	0.08
890	1.195	0.005	3.602	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.17	0.08
900	1.130	0.005	3.425	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.16	0.07
910	1.032	0.004	3.168	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.15	0.07
920	0.986	0.004	2.967	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.14	0.06
930	1.068	0.004	2.923	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.14	0.07
940	1.248	0.005	2.961	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.14	0.08
950	1.432	0.006	3.069	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.14	0.09
960	1.498	0.006	3.047	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.14	0.10
970	1.397	0.006	2.913	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.14	0.09
980	1.266	0.005	2.770	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.08
990	1.163	0.005	2.665	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.13	0.07
1000	1.116	0.005	2.583	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.12	0.07
1010	1.052	0.004	2.466	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.12	0.07
1020	1.014	0.004	2.410	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.11	0.06
1030	0.996	0.004	2.379	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.11	0.06
1040	1.061	0.004	2.443	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.12	0.07
1050	1.206	0.005	2.525	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.12	0.08
1060	1.210	0.005	2.476	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.12	0.08
1070	1.242	0.005	2.444	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.12	0.08
1080	1.338	0.006	2.457	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.12	0.09
1090	1.348	0.006	2.371	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.11	0.09
1100	1.340	0.006	2.260	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.11	0.09
1110	1.347	0.006	2.191	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.10	0.09
1120	1.288	0.005	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.10	0.08
1130	1.190	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.08
1140	1.248	0.005	1.934	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.08
1150	1.284	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.08
1160	1.184	0.005	1.843	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.08
1170	1.113	0.005	1.749	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.07
1180	1.113	0.005	1.787	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.07
1190	1.255	0.005	1.931	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.08
1200	1.342	0.006	2.003	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.09
1210	1.340	0.006	1.984	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.09
1220	1.345	0.006	1.949	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.09
1230	1.378	0.006	1.929	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.09
1240	1.305	0.005	1.820	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.08
1250	1.205	0.005	1.708	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.08
1260	1.205	0.005	1.632	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.08
1270	1.267	0.005	1.668	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.08
1280	1.491	0.006	1.799	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.10
1290	1.617	0.007	1.903	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.10
1300	1.643	0.007	1.900	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.10
1310	1.645	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.10
1320	1.688	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.09	0.11
1330	1.576	0.006	1.719	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.10
1340	1.319	0.005	1.480	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.07	0.08
1350	1.081	0.004	1.289	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07
1360	1.078	0.004	1.274	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07
1370	0.999	0.004	1.222	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.06	0.06
1380	0.889	0.004	1.080	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06
1390	0.820	0.003	0.985	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.05
1400	0.832	0.003	0.913	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.05
1410	0.730	0.003	0.773	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.05
1420	0.984	0.004	1.008	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06
1430	1.140	0.005	1.194	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07
1440	0.821	0.003	0.928	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.05
1450	0.896	0.004	1.009	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06
1460	1.117	0.005	1.175	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07
1470	1.290	0.005	1.329	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.08
1480	1.360	0.006	1.413	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.07	0.09
1490	1.208	0.005	1.308	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.08
1500	1.143	0.005	1.333	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07
1510	1.083	0.004	1.239	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07
1520	1.017	0.004	1.182	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.06	0.06
1530	1.131	0.005	1.306	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.06	0.07
1540	0.904	0.004	1.066	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06
1550	0.819	0.003	1.001	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.05
1560	0.874	0.004	1.073	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06
1570	0.987	0.004	1.120	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06
1580	1.002	0.004	1.139	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.06
1590	0.768	0.003	0.914	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.05
1600	0.681	0.003	0.788	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.04
1610	0.838	0.003	0.873	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.05
1620	1.118	0.005	1.041	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.07
1630	0.982	0.004	0.870	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.06
1640	0.752	0.003	0.658	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.05
1650	0.596	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04
1660	0.524	0.002	0.378	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03
1670	0.500	0.002	0.442	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03
1680	0.453	0.002	0.432	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03
1690	0.390	0.002	0.455	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02
1700	0.525	0.002	0.655	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1710	0.550	0.002	0.706	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.04
1720	0.304	0.001	0.449	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
1730	0.369	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02
1740	0.399	0.002	0.552	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1750	0.409	0.002	0.597	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1760	0.374	0.002	0.567	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02
1770	0.361	0.001	0.525	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1780	0.348	0.001	0.488	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02
1790	0.307	0.001	0.464	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
1800	0.284	0.001	0.456	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02

DM-580	Del Mar	0	0	Avg. Net Sl	-0.148	0.169	0.456	0.614	0.794	1.492						
DM-0580	427.197	0	422.914	1899			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	3.615	0.008	3.265	0.008	0.00	0.00	0.02	0.02	0.04	0.05	0.06	0.06	0.07	0.08	0.14	0.15
20	2.757	0.006	2.138	0.005	0.00	0.00	0.01	0.01	0.03	0.04	0.04	0.05	0.05	0.06	0.09	0.11
30	2.818	0.007	1.975	0.005	0.00	0.00	0.01	0.01	0.03	0.04	0.03	0.05	0.04	0.06	0.08	0.12
40	3.146	0.007	1.892	0.004	0.00	0.00	0.01	0.01	0.02	0.04	0.03	0.05	0.04	0.07	0.08	0.13
50	3.882	0.009	2.057	0.005	0.00	0.00	0.01	0.02	0.03	0.05	0.04	0.07	0.05	0.09	0.09	0.16
60	4.365	0.010	1.994	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.03	0.07	0.04	0.10	0.08	0.18
70	4.912	0.011	1.997	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.03	0.08	0.04	0.11	0.08	0.20
80	5.309	0.012	1.877	0.004	0.00	0.00	0.01	0.03	0.02	0.07	0.03	0.09	0.04	0.12	0.08	0.22
90	5.529	0.013	1.723	0.004	0.00	0.00	0.01	0.03	0.02	0.07	0.03	0.09	0.04	0.12	0.07	0.23
100	5.464	0.013	1.581	0.004	0.00	0.00	0.01	0.03	0.02	0.07	0.03	0.09	0.04	0.12	0.07	0.23
110	5.187	0.012	1.466	0.003	0.00	0.00	0.01	0.02	0.02	0.07	0.03	0.09	0.03	0.11	0.06	0.22
120	4.946	0.012	1.537	0.004	0.00	0.00	0.01	0.02	0.02	0.06	0.03	0.08	0.03	0.11	0.06	0.21
130	5.075	0.012	1.876	0.004	0.00	0.00	0.01	0.02	0.02	0.06	0.03	0.09	0.04	0.11	0.08	0.21
140	5.015	0.012	2.044	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.05	0.11	0.09	0.21
150	4.995	0.012	2.249	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.05	0.11	0.09	0.21
160	4.999	0.012	2.489	0.006	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.06	0.11	0.10	0.21
170	4.877	0.011	2.568	0.006	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.08	0.06	0.11	0.11	0.20
180	4.754	0.011	2.644	0.006	0.00	0.00	0.01	0.02	0.03	0.06	0.05	0.08	0.06	0.11	0.11	0.20
190	4.627	0.011	2.717	0.006	0.00	0.00	0.01	0.02	0.03	0.06	0.05	0.08	0.06	0.10	0.11	0.19
200	4.537	0.011	2.918	0.007	0.00	0.00	0.01	0.02	0.04	0.06	0.05	0.08	0.07	0.10	0.12	0.19
210	4.481	0.010	3.079	0.007	0.00	0.00	0.01	0.02	0.04	0.06	0.05	0.08	0.07	0.10	0.13	0.19
220	4.486	0.011	3.262	0.008	0.00	0.00	0.02	0.02	0.04	0.06	0.06	0.08	0.07	0.10	0.14	0.19
230	4.565	0.011	3.438	0.008	0.00	0.00	0.02	0.02	0.04	0.06	0.06	0.08	0.08	0.10	0.14	0.19
240	4.662	0.011	3.584	0.008	0.00	0.00	0.02	0.02	0.05	0.06	0.06	0.08	0.08	0.10	0.15	0.19
250	4.776	0.011	3.741	0.009	0.00	0.00	0.02	0.02	0.05	0.06	0.06	0.08	0.08	0.11	0.16	0.20
260	4.939	0.012	3.918	0.009	0.00	0.00	0.02	0.02	0.05	0.06	0.07	0.08	0.09	0.11	0.16	0.21
270	5.128	0.012	4.077	0.010	0.00	0.00	0.02	0.02	0.05	0.07	0.07	0.09	0.09	0.11	0.17	0.21
280	5.050	0.012	3.951	0.009	0.00	0.00	0.02	0.02	0.05	0.06	0.07	0.09	0.09	0.11	0.17	0.21
290	4.801	0.011	3.655	0.009	0.00	0.00	0.02	0.02	0.05	0.06	0.06	0.08	0.08	0.11	0.15	0.20
300	4.544	0.011	3.356	0.008	0.00	0.00	0.02	0.02	0.04	0.06	0.06	0.08	0.08	0.10	0.14	0.19
310	4.320	0.010	3.008	0.007	0.00	0.00	0.01	0.02	0.04	0.06	0.05	0.07	0.07	0.10	0.13	0.18
320	4.106	0.010	2.575	0.006	0.00	0.00	0.01	0.02	0.03	0.05	0.04	0.07	0.06	0.09	0.11	0.17
330	3.798	0.009	2.033	0.005	0.00	0.00	0.01	0.02	0.03	0.05	0.04	0.07	0.05	0.08	0.09	0.16
340	3.742	0.009	1.759	0.004	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.06	0.04	0.08	0.07	0.16
350	3.598	0.008	1.496	0.004	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.06	0.03	0.08	0.06	0.15
360	3.251	0.008	1.075	0.003	0.00	0.00	0.01	0.02	0.01	0.04	0.02	0.06	0.02	0.07	0.05	0.14
370	3.671	0.009	1.442	0.003	0.00	0.00	0.01	0.02	0.02	0.05	0.02	0.06	0.03	0.08	0.06	0.15
380	4.175	0.010	1.816	0.004	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.07	0.04	0.09	0.08	0.17
390	4.518	0.011	2.027	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.08	0.05	0.10	0.09	0.19
400	4.547	0.011	2.014	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.03	0.08	0.05	0.10	0.08	0.19
410	4.559	0.011	2.073	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.08	0.05	0.10	0.09	0.19
420	4.558	0.011	2.083	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.08	0.05	0.10	0.09	0.19
430	4.773	0.011	2.315	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.08	0.05	0.11	0.10	0.20
440	5.074	0.012	2.635	0.006	0.00	0.00	0.01	0.02	0.03	0.06	0.05	0.09	0.06	0.11	0.11	0.21
450	5.379	0.013	3.003	0.007	0.00	0.00	0.01	0.03	0.04	0.07	0.05	0.09	0.07	0.12	0.13	0.22
460	5.672	0.013	3.389	0.008	0.00	0.00	0.02	0.03	0.04	0.07	0.06	0.10	0.08	0.13	0.14	0.24
470	5.960	0.014	3.840	0.009	0.00	0.00	0.02	0.03	0.05	0.08	0.07	0.10	0.09	0.13	0.16	0.25
480	6.253	0.015	4.236	0.010	0.00	0.00	0.02	0.03	0.05	0.08	0.07	0.11	0.09	0.14	0.18	0.26
490	6.468	0.015	4.521	0.011	0.00	0.00	0.02	0.03	0.06	0.08	0.08	0.11	0.10	0.14	0.19	0.27
500	6.277	0.015	4.418	0.010	0.00	0.00	0.02	0.03	0.06	0.08	0.08	0.11	0.10	0.14	0.19	0.26
510	6.086	0.014	4.334	0.010	0.00	0.00	0.02	0.03	0.06	0.08	0.07	0.10	0.10	0.13	0.18	0.25
520	5.855	0.014	4.299	0.010	0.00	0.00	0.02	0.03	0.06	0.07	0.07	0.10	0.10	0.13	0.18	0.24
530	5.622	0.013	4.262	0.010	0.00	0.00	0.02	0.03	0.05	0.07	0.07	0.10	0.10	0.12	0.18	0.23
540	5.352	0.013	4.213	0.010	0.00	0.00	0.02	0.03	0.05	0.07	0.07	0.09	0.09	0.12	0.18	0.22
550	5.054	0.012	4.155	0.010	0.00	0.00	0.02	0.02	0.05	0.06	0.07	0.09	0.09	0.11	0.17	0.21
560	4.665	0.011	4.032	0.010	0.00	0.00	0.02	0.02	0.05	0.06	0.07	0.08	0.09	0.10	0.17	0.19
570	4.259	0.010	3.904	0.009	0.00	0.00	0.02	0.02	0.05	0.05	0.07	0.07	0.09	0.09	0.16	0.18
580	3.845	0.009	3.863	0.009	0.00	0.00	0.02	0.02	0.05	0.05	0.07	0.07	0.09	0.09	0.16	0.16
590	3.409	0.008	3.817	0.009	0.00	0.00	0.02	0.02	0.05	0.04	0.07	0.06	0.09	0.08	0.16	0.14
600	3.257	0.008	4.034	0.010	0.00	0.00	0.02	0.02	0.05	0.04	0.07	0.06	0.09	0.07	0.17	0.14
610	3.227	0.008	4.387	0.010	0.00	0.00	0.02	0.02	0.06	0.04	0.08	0.06	0.10	0.07	0.18	0.13
620	3.266	0.008	4.708	0.011	0.00	0.00	0.02	0.02	0.06	0.04	0.08	0.06	0.11	0.07	0.20	0.14
630	3.325	0.008	4.964	0.012	0.00	0.00	0.02	0.02	0.06	0.04	0.09	0.06	0.11	0.07	0.21	0.14
640	3.354	0.008	5.247	0.012	0.00	0.00	0.03	0.02	0.07	0.04	0.09	0.06	0.12	0.07	0.22	0.14
650	3.401	0.008	5.477	0.013	0.00	0.00	0.03	0.02	0.07	0.04	0.09	0.06	0.12	0.08	0.23	0.14
660	3.437	0.008	5.682	0.013	0.00	0.00	0.03	0.02	0.07	0.04	0.10	0.06	0.13	0.08	0.24	0.14
670	3.371	0.008	5.855	0.014	0.00	0.00	0.03	0.02	0.08	0.04	0.10	0.06	0.13	0.07	0.25	0.14
680	3.210	0.008	5.806	0.014	0.00	0.00	0.03	0.02	0.07	0.04	0.10	0.05	0.13	0.07	0.24	0.13
690	3.002	0.007	5.837	0.014	0.00	0.00	0.03	0.01	0.08	0.04	0.10	0.05	0.13	0.07	0.25	0.12
700	2.892	0.007	5.698	0.013	0.00	0.00	0.03	0.01	0.07	0.04	0.10	0.05	0.13	0.06	0.24	0.12
710	2.791	0.007	5.569	0.013	0.00	0.00	0.03	0.01	0.07	0.04	0.10	0.05	0.12	0.06	0.23	0.12
720	2.527	0.006	5.362	0.013	0.00	0.00	0.03	0.01	0.07	0.03	0.09	0.04	0.12	0.06	0.23	0.11
730	2.298	0.005	5.154	0.012	0.00	0.00	0.02	0.01	0.07	0.03	0.09	0.04	0.12	0.05	0.22	0.10
740	2.095	0.005	4.962	0.012	0.00	0.00	0.02	0.01	0.06	0.03	0.09	0.04	0.11	0.05	0.21	0.09
750	1.895	0.004	4.765	0.011	0.00	0.00	0.02	0.01	0.06	0.02	0.08	0.03	0.11	0.04	0.20	0.08
760	1.709	0.004	4.588	0.011	0.00	0.00	0.02	0.01	0.06	0.02	0.08	0.03	0.10	0.04	0.19	0.07
770	1.548	0.004	4.370	0.010	0.00	0.00	0.02	0.01	0.06	0.02	0.08	0.03	0.10	0.03	0.18	0.06
780	1.519	0.004	4.231	0.010	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.03	0.09	0.03	0.18	0.06
790	1.468	0.003	4.137	0.010	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.03	0.09	0.03	0.17	0.06
800	1.378	0.003	3.994	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.02	0.09	0.03	0.17	0.06
810	1.343	0.003	3.877	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.02	0.09	0.03	0.16	0.06
820	1.308	0.003	3.749	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.06	0.02	0.08	0.03	0.16	0.05
830	1.293	0.003	3.633	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.06	0.02	0.08	0.03	0.15	0.05
840	1.281	0.003	3.611	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.06	0.02	0.08	0.03	0.15	0.05
850	1.287	0.003	3.486	0.008	0.00	0.00	0.02	0.01	0.04	0.02	0.06	0.02	0.08	0.03	0.15	0.05
860	1.248	0.003	3.412	0.008	0.00	0.00	0.02	0.01	0.04	0.02	0.06	0.02	0.08	0.03	0.14	0.05
870	1.211	0.003	3.339	0.008	0.00	0.00	0.02	0.01	0.04	0.02	0.06	0.02	0.07	0.03	0.14	0.05
880	1.168	0.003	3.273	0.008	0.00	0.00	0.02	0.01	0.04	0.01	0.06	0.02	0.07	0.03	0.14	0.05
890	1.128	0.003	3.208	0.008	0.00	0.00	0.02	0.01	0.04	0.01	0.06	0.02	0.07	0.02	0.13	0.05
900	1.084	0.003	3.144	0.007	0.00	0.00	0.01	0.01	0.04	0.01	0.05	0.02	0.07	0.02	0.13	0.05
910	1.048	0.002	3.107	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.05	0.02	0.07	0.02	0.13	0.04
920	1.033	0.002	2.903	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.05	0.02	0.06	0.02	0.12	0.04
930	1.033	0.002	2.815	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.05	0.02	0.06	0.02	0.12	0.04
940	1.046	0.002	2.789	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.05	0.02	0.06	0.02	0.12	0.04
950	1.093	0.003	2.674	0.006	0.00	0.00	0.01	0.01	0.03	0.01	0.05	0.02	0.06	0.02	0.11	0.05
960	1.178	0.003	2.603	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.05	0.02	0.06	0.03	0.11	0.05
970	1.292	0.003	2.608	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.05	0.02	0.06	0.03	0.11	0.05
980	1.404	0.003	2.597	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.06	0.03	0.11	0.06
990	1.412	0.003	2.574	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.06	0.03	0.11	0.06
1000	1.477	0.003	2.560	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.06	0.03	0.11	0.06
1010	1.558	0.004	2.537	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.06	0.03	0.11	0.06
1020	1.559	0.004	2.462	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.06	0.03	0.10	0.06
1030	1.448	0.003	2.302	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.10	0.06
1040	1.424	0.003	2.190	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.09	0.06
1050	1.449	0.003	2.184	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.09	0.06
1060	1.450	0.003	2.161	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.09	0.06
1070	1.463	0.003	2.167	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.09	0.06
1080	1.390	0.003	2.095	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.09	0.06
1090	1.291	0.003	1.985	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.02	0.04	0.03	0.08	0.05
1100	1.208	0.003	1.894	0.004	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.04	0.03	0.08	0.05
1110	1.133	0.003	1.840	0.004	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.04	0.03	0.08	0.05
1120	1.048	0.002	1.816	0.004	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.08	0.04
1130	1.011	0.002	1.745	0.004	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.07	0.04
1140	1.005	0.002	1.633	0.004	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.07	0.04
1150	1.025	0.002	1.639	0.004	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.07	0.04
1160	0.979	0.002	1.460	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.06	0.04
1170	0.898	0.002	1.279	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.02	0.03	0.02	0.05	0.04
1180	0.927	0.002	1.306	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.02	0.03	0.02	0.05	0.04
1190	0.885	0.002	1.223	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.02	0.03	0.02	0.05	0.04
1200	0.807	0.002	1.122	0.003	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.05	0.03
1210	0.763	0.002	1.030	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.04	0.03
1220	0.823	0.002	1.000	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.04	0.03
1230	0.830	0.002	1.027	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.04	0.03
1240	0.655	0.002	0.853	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.04	0.03
1250	0.718	0.002	0.902	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.04	0.03
1260	0.586	0.001	0.739	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1270	0.617	0.001	0.721	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1280	0.515	0.001	0.669	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1290	0.573	0.001	0.672	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1300	0.610	0.001	0.657	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03
1310	0.773	0.002	0.839	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.04	0.03
1320	0.725	0.002	0.750	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1330	0.682	0.002	0.745	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1340	0.633	0.001	0.725	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1350	0.626	0.001	0.742	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1360	0.713	0.002	0.817	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1370	0.594	0.001	0.682	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1380	0.551	0.001	0.623	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1390	0.731	0.002	0.750	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1400	0.818	0.002	0.742	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1410	0.680	0.002	0.647	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.03
1420	0.690	0.002	0.657	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.03
1430	0.861	0.002	0.834	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.04	0.04
1440	0.974	0.002	0.971	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.04
1450	0.896	0.002	0.863	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.04	0.04
1460	0.724	0.002	0.651	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.03
1470	0.723	0.002	0.597	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.03
1480	0.739	0.002	0.581	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03
1490	0.644	0.002	0.538	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03
1500	0.491	0.001	0.506	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
1510	0.563	0.001	0.618	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1520	0.546	0.001	0.627	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1530	0.611	0.001	0.644	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03
1540	0.669	0.002	0.659	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03
1550	0.758	0.002	0.738	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1560	0.770	0.002	0.736	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1570	0.824	0.002	0.802	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1580	0.805	0.002	0.768	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1590	0.799	0.002	0.809	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1600	0.817	0.002	0.823	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1610	0.732	0.002	0.818	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1620	0.750	0.002	0.797	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1630	0.757	0.002	0.781	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1640	0.633	0.001	0.718	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1650	0.655	0.002	0.711	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1660	0.605	0.001	0.697	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1670	0.613	0.001	0.748	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1680	0.652	0.002	0.771	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1690	0.657	0.002	0.780	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1700	0.635	0.001	0.750	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1710	0.636	0.001	0.739	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1720	0.670	0.002	0.789	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1730	0.717	0.002	0.812	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1740	0.676	0.002	0.827	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1750	0.588	0.001	0.722	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1760	0.523	0.001	0.699	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1770	0.519	0.001	0.645	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1780	0.520	0.001	0.654	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1790	0.499	0.001	0.642	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1800	0.580	0.001	0.747	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1810	0.620	0.001	0.754	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1820	0.651	0.002	0.742	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1830	0.669	0.002	0.720	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1840	0.663	0.002	0.703	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1850	0.630	0.001	0.663	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03
1860	0.621	0.001	0.677	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.03
1870	0.569	0.001	0.648	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1880	0.571	0.001	0.667	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1890	0.531	0.001	0.595	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02
1900	0.553	0.001	0.610	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02

DM-590	Del Mar	0	0	Avg. Net Sl	0.49	1.52	1.72	1.84	2.01	1.87						
DM-0590	283.419	0	200.363	1900			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.12	0.000	0.130	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
10	0.476	0.002	0.470	0.002	0.01	0.01	0.04	0.03	0.05	0.03	0.05	0.04	0.06	0.04	0.05	0.04
20	0.768	0.003	0.983	0.005	0.03	0.02	0.09	0.05	0.10	0.06	0.11	0.06	0.12	0.06	0.11	0.06
30	1.862	0.007	2.304	0.011	0.07	0.04	0.21	0.12	0.24	0.13	0.25	0.14	0.27	0.16	0.26	0.15
40	2.153	0.008	2.543	0.013	0.07	0.04	0.23	0.14	0.26	0.16	0.28	0.17	0.30	0.18	0.28	0.17
50	2.416	0.009	2.754	0.014	0.08	0.05	0.25	0.15	0.28	0.17	0.30	0.19	0.33	0.20	0.31	0.19
60	2.301	0.008	2.567	0.013	0.07	0.05	0.23	0.15	0.26	0.17	0.28	0.18	0.31	0.19	0.29	0.18
70	2.211	0.008	2.410	0.012	0.07	0.05	0.22	0.14	0.25	0.16	0.26	0.17	0.29	0.19	0.27	0.17
80	2.144	0.008	2.312	0.012	0.07	0.04	0.21	0.14	0.24	0.16	0.25	0.17	0.28	0.18	0.26	0.17
90	2.145	0.008	2.257	0.011	0.07	0.04	0.20	0.14	0.23	0.16	0.25	0.17	0.27	0.18	0.25	0.17
100	2.173	0.008	2.214	0.011	0.06	0.04	0.20	0.14	0.23	0.16	0.24	0.17	0.26	0.18	0.25	0.17
110	2.216	0.008	2.233	0.011	0.06	0.05	0.20	0.14	0.23	0.16	0.24	0.17	0.27	0.19	0.25	0.17
120	2.333	0.008	2.286	0.011	0.07	0.05	0.21	0.15	0.23	0.17	0.25	0.18	0.27	0.20	0.25	0.18
130	2.348	0.008	2.247	0.011	0.07	0.05	0.20	0.15	0.23	0.17	0.25	0.18	0.27	0.20	0.25	0.19
140	2.406	0.008	2.217	0.011	0.06	0.05	0.20	0.15	0.23	0.17	0.24	0.19	0.26	0.20	0.25	0.19
150	2.469	0.009	2.208	0.011	0.06	0.05	0.20	0.16	0.23	0.18	0.24	0.19	0.26	0.21	0.25	0.19
160	2.322	0.008	1.976	0.010	0.06	0.05	0.18	0.15	0.20	0.17	0.22	0.18	0.24	0.20	0.22	0.18
170	2.071	0.007	1.627	0.008	0.05	0.04	0.15	0.13	0.17	0.15	0.18	0.16	0.19	0.17	0.18	0.16
180	1.829	0.006	1.301	0.006	0.04	0.04	0.12	0.12	0.13	0.13	0.14	0.14	0.16	0.15	0.15	0.14
190	1.64	0.006	1.026	0.005	0.03	0.03	0.09	0.11	0.10	0.12	0.11	0.13	0.12	0.14	0.11	0.13
200	1.819	0.006	1.108	0.006	0.03	0.04	0.10	0.12	0.11	0.13	0.12	0.14	0.13	0.15	0.12	0.14
210	1.997	0.007	1.189	0.006	0.03	0.04	0.11	0.13	0.12	0.14	0.13	0.15	0.14	0.17	0.13	0.16
220	1.949	0.007	1.084	0.005	0.03	0.04	0.10	0.12	0.11	0.14	0.12	0.15	0.13	0.16	0.12	0.15
230	1.823	0.006	0.926	0.005	0.03	0.04	0.08	0.12	0.09	0.13	0.10	0.14	0.11	0.15	0.10	0.14
240	1.692	0.006	0.770	0.004	0.02	0.03	0.07	0.11	0.08	0.12	0.08	0.13	0.09	0.14	0.09	0.13
250	1.877	0.007	0.936	0.005	0.03	0.04	0.08	0.12	0.10	0.14	0.10	0.14	0.11	0.16	0.10	0.15
260	2.079	0.007	1.105	0.006	0.03	0.04	0.10	0.13	0.11	0.15	0.12	0.16	0.13	0.18	0.12	0.16
270	2.282	0.008	1.262	0.006	0.04	0.05	0.11	0.15	0.13	0.17	0.14	0.18	0.15	0.19	0.14	0.18
280	2.482	0.009	1.382	0.007	0.04	0.05	0.13	0.16	0.14	0.18	0.15	0.19	0.16	0.21	0.15	0.20
290	2.745	0.010	1.569	0.008	0.05	0.06	0.14	0.18	0.16	0.20	0.17	0.21	0.19	0.23	0.17	0.22
300	3.088	0.011	1.848	0.009	0.05	0.06	0.17	0.20	0.19	0.22	0.20	0.24	0.22	0.26	0.21	0.24
310	3.424	0.012	2.133	0.011	0.06	0.07	0.19	0.22	0.22	0.25	0.23	0.26	0.25	0.29	0.24	0.27
320	3.754	0.013	2.424	0.012	0.07	0.08	0.22	0.24	0.25	0.27	0.26	0.29	0.29	0.32	0.27	0.30
330	4.093	0.014	2.702	0.013	0.08	0.08	0.24	0.26	0.28	0.30	0.30	0.32	0.32	0.35	0.30	0.32
340	4.441	0.016	2.975	0.015	0.09	0.09	0.27	0.28	0.30	0.32	0.32	0.34	0.35	0.37	0.33	0.35
350	4.797	0.017	3.245	0.016	0.09	0.10	0.29	0.31	0.33	0.35	0.35	0.37	0.39	0.40	0.36	0.38
360	5.009	0.018	3.358	0.017	0.10	0.10	0.30	0.32	0.34	0.36	0.37	0.39	0.40	0.42	0.37	0.39
370	4.816	0.017	3.063	0.015	0.09	0.10	0.28	0.31	0.31	0.35	0.33	0.37	0.37	0.41	0.34	0.38
380	4.621	0.016	2.746	0.014	0.08	0.09	0.25	0.30	0.28	0.33	0.30	0.36	0.33	0.39	0.31	0.36
390	4.412	0.016	2.411	0.012	0.07	0.09	0.22	0.28	0.25	0.32	0.26	0.34	0.29	0.37	0.27	0.35
400	4.199	0.015	2.094	0.010	0.06	0.09	0.19	0.27	0.21	0.30	0.23	0.32	0.25	0.35	0.23	0.33
410	4.066	0.014	1.866	0.009	0.05	0.08	0.17	0.26	0.19	0.29	0.20	0.31	0.22	0.34	0.21	0.32
420	4.038	0.014	1.771	0.009	0.05	0.08	0.16	0.26	0.18	0.29	0.19	0.31	0.21	0.34	0.20	0.32
430	4.076	0.014	1.750	0.009	0.05	0.08	0.16	0.26	0.18	0.29	0.19	0.31	0.21	0.34	0.20	0.32
440	4.116	0.015	1.727	0.009	0.05	0.08	0.16	0.26	0.18	0.30	0.19	0.32	0.21	0.35	0.19	0.32
450	4.108	0.014	1.704	0.009	0.05	0.08	0.15	0.26	0.17	0.30	0.19	0.32	0.20	0.35	0.19	0.32
460	4.091	0.014	1.687	0.008	0.05	0.08	0.15	0.26	0.17	0.30	0.18	0.32	0.20	0.35	0.19	0.32
470	4.067	0.014	1.682	0.008	0.05	0.08	0.15	0.26	0.17	0.29	0.18	0.31	0.20	0.34	0.19	0.32
480	4.012	0.014	1.677	0.008	0.05	0.08	0.15	0.26	0.17	0.29	0.18	0.31	0.20	0.34	0.19	0.32
490	4.055	0.014	1.761	0.009	0.05	0.08	0.16	0.26	0.18	0.29	0.19	0.31	0.21	0.34	0.20	0.32
500	4.286	0.015	2.035	0.010	0.06	0.09	0.18	0.27	0.21	0.31	0.22	0.33	0.24	0.36	0.23	0.34
510	4.513	0.016	2.287	0.011	0.07	0.09	0.21	0.29	0.23	0.33	0.25	0.35	0.27	0.38	0.26	0.36
520	4.727	0.017	2.517	0.013	0.07	0.10	0.23	0.30	0.26	0.34	0.27	0.37	0.30	0.40	0.28	0.37
530	4.892	0.017	2.738	0.014	0.08	0.10	0.25	0.31	0.28	0.35	0.30	0.38	0.33	0.41	0.31	0.39
540	5.045	0.018	2.958	0.015	0.09	0.10	0.27	0.32	0.30	0.36	0.32	0.39	0.35	0.43	0.33	0.40
550	5.197	0.018	3.163	0.016	0.09	0.11	0.29	0.33	0.32	0.38	0.35	0.40	0.38	0.44	0.35	0.41
560	5.034	0.018	3.017	0.015	0.09	0.10	0.27	0.32	0.31	0.36	0.33	0.39	0.36	0.42	0.34	0.40
570	4.764	0.017	2.752	0.014	0.08	0.10	0.25	0.31	0.28	0.34	0.30	0.37	0.33	0.40	0.31	0.38
580	4.45	0.016	2.460	0.012	0.07	0.09	0.22	0.28	0.25	0.32	0.27	0.34	0.29	0.38	0.27	0.35
590	4.109	0.014	2.157	0.011	0.06	0.08	0.20	0.26	0.22	0.30	0.24	0.32	0.26	0.35	0.24	0.32
600	3.752	0.013	1.865	0.009	0.05	0.08	0.17	0.24	0.19	0.27	0.20	0.29	0.22	0.32	0.21	0.30
610	3.581	0.013	1.743	0.009	0.05	0.07	0.16	0.23	0.18	0.26	0.19	0.28	0.21	0.30	0.19	0.28
620	3.392	0.012	1.614	0.008	0.05	0.07	0.15	0.22	0.17	0.25	0.18	0.26	0.19	0.29	0.18	0.27
630	3.186	0.011	1.482	0.007	0.04	0.07	0.13	0.20	0.15	0.23	0.16	0.25	0.18	0.27	0.17	0.25
640	2.963	0.010	1.357	0.007	0.04	0.06	0.12	0.19	0.14	0.21	0.15	0.23	0.16	0.25	0.15	0.23
650	2.734	0.010	1.220	0.006	0.04	0.06	0.11	0.18	0.12	0.20	0.13	0.21	0.15	0.23	0.14	0.22
660	2.466	0.009	1.094	0.005	0.03	0.05	0.10	0.16	0.11	0.18	0.12	0.19	0.13	0.21	0.12	0.19
670	2.233	0.008	1.000	0.005	0.03	0.05	0.09	0.14	0.10	0.16	0.11	0.17	0.12	0.19	0.11	0.18
680	2.126	0.008	1.000	0.005	0.03	0.04	0.09	0.14	0.10	0.15	0.11	0.16	0.12	0.18	0.11	0.17
690	2.249	0.008	1.359	0.007	0.04	0.05	0.12	0.14	0.14	0.16	0.15	0.17	0.16	0.19	0.15	0.18
700	2.454	0.009	1.832	0.009	0.05	0.05	0.17	0.16	0.19	0.18	0.20	0.19	0.22	0.21	0.20	0.19
710	1.972	0.007	1.659	0.008	0.05	0.04	0.15	0.13	0.17	0.14	0.18	0.15	0.20	0.17	0.19	0.16
720	1.677	0.006	1.662	0.008	0.05	0.03	0.15	0.11	0.17	0.12	0.18	0.13	0.20	0.14	0.19	0.13
730	1.698	0.006	1.878	0.009	0.05	0.03	0.17	0.11	0.19	0.12	0.21	0.13	0.22	0.14	0.21	0.13
740	1.742	0.006	2.088	0.010	0.06	0.04	0.19	0.11	0.21	0.13	0.23	0.13	0.25	0.15	0.23	0.14
750	1.684	0.006	2.108	0.011	0.06	0.03	0.19	0.11	0.22	0.12	0.23	0.13	0.25	0.14	0.24	0.13
760	1.457	0.005	1.940	0.010	0.06	0.03	0.18	0.09	0.20	0.11	0.21	0.11	0.23	0.12	0.22	0.11
770	1.272	0.004	1.791	0.009	0.05	0.03	0.16	0.08	0.18	0.09	0.20	0.10	0.21	0.11	0.20	0.10
780	1.229	0.004	1.659	0.008	0.05	0.03	0.15	0.08	0.17	0.09	0.18	0.09	0.20	0.10	0.19	0.10
790	1.1	0.004	1.334	0.007	0.04	0.02	0.12	0.07	0.14	0.08	0.15	0.08	0.16	0.09	0.15	0.09
800	1.013	0.004	1.168	0.006	0.03	0.02	0.11	0.06	0.12	0.07	0.13	0.08	0.14	0.09	0.13	0.08
810	1.057	0.004	1.289	0.006	0.04	0.02	0.12	0.07	0.13	0.08	0.14	0.08	0.15	0.09	0.14	0.08
820	1.298	0.005	1.609	0.008	0.05	0.03	0.15	0.08	0.16	0.09	0.18	0.10	0.19	0.11	0.18	0.10
830	1.433	0.005	1.860	0.009	0.05	0.03	0.17	0.09	0.19	0.10	0.20	0.11	0.22	0.12	0.21	0.11
840	1.335	0.005	1.775	0.009	0.05	0.03	0.16	0.09	0.18	0.10	0.19	0.10	0.21	0.11	0.20	0.11
850	1.577	0.006	2.071	0.010	0.06	0.03	0.19	0.10	0.21	0.11	0.23	0.12	0.25	0.13	0.23	0.12
860	1.236	0.004	1.766	0.009	0.05	0.03	0.16	0.08	0.18	0.09	0.19	0.10	0.21	0.10	0.20	0.10
870	0.998	0.004	1.654	0.008	0.05	0.02	0.15	0.06	0.17	0.07	0.18	0.08	0.20	0.08	0.18	0.08
880	0.88	0.003	1.555	0.008	0.05	0.02	0.14	0.06	0.16	0.06	0.17	0.07	0.19	0.07	0.17	0.07
890	1.422	0.005	1.955	0.010	0.06	0.03	0.18	0.09	0.20	0.10	0.21	0.11	0.23	0.12	0.22	0.11
900	1.249	0.004	1.593	0.008	0.05	0.03	0.14	0.08	0.16	0.09	0.17	0.10	0.19	0.11	0.18	0.10
910	0.863	0.003	0.971	0.005	0.03	0.02	0.09	0.06	0.10	0.06	0.11	0.07	0.12	0.07	0.11	0.07
920	0.932	0.003	0.889	0.004	0.03	0.02	0.08	0.06	0.09	0.07	0.10	0.07	0.11	0.08	0.10	0.07
930	0.764	0.003	0.668	0.003	0.02	0.02	0.06	0.05	0.07	0.06	0.07	0.06	0.08	0.06	0.07	0.06
940	0.938	0.003	0.861	0.004	0.02	0.02	0.08	0.06	0.09	0.07	0.09	0.07	0.10	0.08	0.10	0.07
950	0.659	0.002	0.537	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.06	0.06	0.05
960	0.659	0.002	0.550	0.003	0.02	0.01	0.05	0.04	0.06	0.05	0.06	0.05	0.07	0.06	0.06	0.05
970	0.652	0.002	0.544	0.003	0.02	0.01	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05
980	0.645	0.002	0.538	0.003	0.02	0.01	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05
990	0.638	0.002	0.533	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1000	0.631	0.002	0.527	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1010	0.624	0.002	0.521	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1020	0.617	0.002	0.515	0.003	0.01	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1030	0.61	0.002	0.509	0.003	0.01	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1040	0.603	0.002	0.504	0.003	0.01	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1050	0.596	0.002	0.498	0.002	0.01	0.01	0.05	0.04	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05
1060	0.589	0.002	0.492	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.05	0.06	0.05	0.05	0.05
1070	0.582	0.002	0.486	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.05
1080	0.575	0.002	0.480	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.05
1090	0.568	0.002	0.475	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1100	0.561	0.002	0.469	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1110	0.554	0.002	0.463	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1120	0.547	0.002	0.457	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.05	0.05	0.04
1130	0.54	0.002	0.451	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.05	0.05	0.04
1140	0.533	0.002	0.446	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1150	0.526	0.002	0.440	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1160	0.519	0.002	0.434	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1170	0.512	0.002	0.428	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1180	0.505	0.002	0.422	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1190	0.498	0.002	0.417	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1200	0.491	0.002	0.411	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.04	0.04	0.05	0.04	0.05	0.04
1210	0.484	0.002	0.405	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.04	0.04	0.05	0.04	0.05	0.04
1220	0.477	0.002	0.399	0.002	0.01	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1230	0.47	0.002	0.393	0.002	0.01	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1240	0.463	0.002	0.388	0.002	0.01	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1250	0.456	0.002	0.382	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1260	0.449	0.002	0.376	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.04
1270	0.442	0.002	0.370	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1280	0.435	0.002	0.364	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1290	0.428	0.002	0.359	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1300	0.421	0.001	0.353	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1310	0.414	0.001	0.347	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1320	0.407	0.001	0.341	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1330	0.4	0.001	0.335	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1340	0.393	0.001	0.330	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1350	0.386	0.001	0.324	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1360	0.379	0.001	0.318	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03
1370	0.372	0.001	0.312	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1380	0.365	0.001	0.306	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1390	0.358	0.001	0.301	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1400	0.351	0.001	0.295	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1410	0.344	0.001	0.289	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
1420	0.337	0.001	0.283	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
1430	0.33	0.001	0.277	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
1440	0.323	0.001	0.272	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03
1450	0.316	0.001	0.266	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1460	0.309	0.001	0.260	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1470	0.302	0.001	0.254	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1480	0.295	0.001	0.248	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1490	0.288	0.001	0.243	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1500	0.281	0.001	0.237	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1510	0.274	0.001	0.231	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1520	0.267	0.001	0.225	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02
1530	0.26	0.001	0.219	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
1540	0.253	0.001	0.214	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
1550	0.246	0.001	0.208	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1560	0.239	0.001	0.202	0.001	0.01	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1570	0.232	0.001	0.196	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1580	0.225	0.001	0.190	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1590	0.218	0.001	0.185	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1600	0.211	0.001	0.179	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1610	0.204	0.001	0.173	0.001	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1620	0.197	0.001	0.167	0.001	0.00	0.00	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1630	0.19	0.001	0.161	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.01
1640	0.183	0.001	0.156	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.01
1650	0.176	0.001	0.150	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1660	0.169	0.001	0.144	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1670	0.162	0.001	0.138	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1680	0.155	0.001	0.132	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
1690	0.148	0.001	0.127	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
1700	0.141	0.000	0.121	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1710	0.134	0.000	0.115	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1720	0.127	0.000	0.109	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1730	0.12	0.000	0.103	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1740	0.113	0.000	0.098	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1750	0.106	0.000	0.092	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1760	0.099	0.000	0.086	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1770	0.092	0.000	0.080	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1780	0.085	0.000	0.074	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1790	0.078	0.000	0.069	0.000	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1800	0.071	0.000	0.063	0.000	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1810	0.064	0.000	0.057	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01
1820	0.057	0.000	0.051	0.000	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1830	0.05	0.000	0.045	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
1840	0.043	0.000	0.040	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1850	0.036	0.000	0.034	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1860	0.029	0.000	0.028	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1870	0.022	0.000	0.022	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1880	0.015	0.000	0.016	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1890	0.008	0.000	0.011	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1900	0.001	0.000	0.005	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-595	Seascape Surf	0	0	Avg. Net SL Change	4.78	3.68	3.56	3.55	3.39	2.31						
SD-0595	245.066	0	270.779	1900			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.067	0.000	0.087	0.000	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10	0.388	0.002	0.192	0.001	0.04	0.09	0.03	0.07	0.03	0.07	0.03	0.07	0.03	0.06	0.02	0.04
20	0.709	0.003	0.298	0.001	0.06	0.16	0.05	0.13	0.05	0.12	0.05	0.12	0.04	0.12	0.03	0.08
30	1.030	0.004	0.403	0.001	0.08	0.24	0.07	0.18	0.06	0.18	0.06	0.18	0.06	0.17	0.04	0.12
40	1.350	0.006	0.508	0.002	0.11	0.31	0.08	0.24	0.08	0.23	0.08	0.23	0.08	0.22	0.05	0.15
50	1.672	0.007	0.614	0.002	0.13	0.39	0.10	0.30	0.10	0.29	0.10	0.29	0.09	0.28	0.06	0.19
60	1.356	0.006	0.595	0.002	0.13	0.32	0.10	0.24	0.09	0.23	0.09	0.23	0.09	0.22	0.06	0.15
70	1.463	0.006	0.657	0.002	0.14	0.34	0.11	0.26	0.10	0.25	0.10	0.25	0.10	0.24	0.07	0.16
80	1.813	0.007	0.727	0.003	0.15	0.42	0.12	0.32	0.11	0.31	0.11	0.31	0.11	0.30	0.07	0.20
90	1.804	0.007	0.788	0.003	0.17	0.42	0.13	0.32	0.12	0.31	0.12	0.31	0.12	0.30	0.08	0.20
100	1.799	0.007	0.770	0.003	0.16	0.42	0.12	0.32	0.12	0.31	0.12	0.31	0.11	0.30	0.08	0.20
110	1.801	0.007	0.790	0.003	0.17	0.42	0.13	0.32	0.12	0.31	0.12	0.31	0.12	0.30	0.08	0.20
120	1.909	0.008	0.883	0.003	0.19	0.44	0.14	0.34	0.14	0.33	0.14	0.33	0.13	0.31	0.09	0.21
130	1.994	0.008	0.952	0.004	0.20	0.46	0.15	0.36	0.15	0.34	0.15	0.34	0.14	0.33	0.10	0.22
140	1.932	0.008	0.920	0.003	0.19	0.45	0.15	0.35	0.14	0.33	0.14	0.33	0.14	0.32	0.09	0.22
150	1.889	0.008	0.908	0.003	0.19	0.44	0.15	0.34	0.14	0.33	0.14	0.33	0.14	0.31	0.09	0.21
160	1.877	0.008	0.930	0.003	0.20	0.44	0.15	0.34	0.15	0.32	0.15	0.32	0.14	0.31	0.09	0.21
170	1.951	0.008	0.999	0.004	0.21	0.45	0.16	0.35	0.16	0.34	0.16	0.34	0.15	0.32	0.10	0.22
180	2.041	0.008	1.108	0.004	0.23	0.47	0.18	0.37	0.17	0.35	0.17	0.35	0.17	0.34	0.11	0.23
190	1.998	0.008	1.114	0.004	0.23	0.46	0.18	0.36	0.17	0.35	0.17	0.34	0.17	0.33	0.11	0.22
200	1.943	0.008	1.123	0.004	0.24	0.45	0.18	0.35	0.18	0.34	0.18	0.34	0.17	0.32	0.11	0.22
210	1.919	0.008	1.139	0.004	0.24	0.45	0.18	0.34	0.18	0.33	0.18	0.33	0.17	0.32	0.12	0.22
220	1.910	0.008	1.180	0.004	0.25	0.44	0.19	0.34	0.18	0.33	0.18	0.33	0.18	0.31	0.12	0.21
230	1.906	0.008	1.221	0.005	0.26	0.44	0.20	0.34	0.19	0.33	0.19	0.33	0.18	0.31	0.12	0.21
240	1.857	0.008	1.231	0.005	0.26	0.43	0.20	0.33	0.19	0.32	0.19	0.32	0.18	0.31	0.13	0.21
250	1.820	0.007	1.246	0.005	0.26	0.42	0.20	0.33	0.20	0.31	0.19	0.31	0.19	0.30	0.13	0.20
260	1.803	0.007	1.226	0.005	0.26	0.42	0.20	0.32	0.19	0.31	0.19	0.31	0.18	0.30	0.12	0.20
270	1.734	0.007	1.177	0.004	0.25	0.40	0.19	0.31	0.18	0.30	0.18	0.30	0.18	0.29	0.12	0.20
280	1.657	0.007	1.108	0.004	0.23	0.39	0.18	0.30	0.17	0.29	0.17	0.29	0.17	0.27	0.11	0.19
290	1.581	0.006	1.046	0.004	0.22	0.37	0.17	0.28	0.16	0.27	0.16	0.27	0.16	0.26	0.11	0.18
300	1.510	0.006	0.960	0.004	0.20	0.35	0.16	0.27	0.15	0.26	0.15	0.26	0.14	0.25	0.10	0.17
310	1.555	0.006	0.963	0.004	0.20	0.36	0.16	0.28	0.15	0.27	0.15	0.27	0.14	0.26	0.10	0.17
320	1.605	0.007	0.952	0.004	0.20	0.37	0.15	0.29	0.15	0.28	0.15	0.28	0.14	0.26	0.10	0.18
330	1.668	0.007	0.917	0.003	0.19	0.39	0.15	0.30	0.14	0.29	0.14	0.29	0.14	0.27	0.09	0.19
340	1.673	0.007	0.835	0.003	0.18	0.39	0.14	0.30	0.13	0.29	0.13	0.29	0.12	0.28	0.09	0.19
350	1.564	0.006	0.667	0.002	0.14	0.36	0.11	0.28	0.10	0.27	0.10	0.27	0.10	0.26	0.07	0.18
360	1.604	0.007	0.662	0.002	0.14	0.37	0.11	0.29	0.10	0.28	0.10	0.28	0.10	0.26	0.07	0.18
370	1.870	0.008	0.886	0.003	0.19	0.43	0.14	0.33	0.14	0.32	0.14	0.32	0.13	0.31	0.09	0.21
380	2.119	0.009	1.021	0.004	0.21	0.49	0.17	0.38	0.16	0.37	0.16	0.37	0.15	0.35	0.10	0.24
390	2.359	0.010	1.128	0.004	0.24	0.55	0.18	0.42	0.18	0.41	0.18	0.41	0.17	0.39	0.11	0.27
400	2.530	0.010	1.195	0.004	0.25	0.59	0.19	0.45	0.19	0.44	0.19	0.44	0.18	0.42	0.12	0.28
410	2.681	0.011	1.226	0.005	0.26	0.62	0.20	0.48	0.19	0.46	0.19	0.46	0.18	0.44	0.12	0.30
420	2.846	0.012	1.182	0.004	0.25	0.66	0.19	0.51	0.19	0.49	0.18	0.49	0.18	0.47	0.12	0.32
430	3.134	0.013	1.230	0.005	0.26	0.73	0.20	0.56	0.19	0.54	0.19	0.54	0.18	0.52	0.13	0.35
440	3.397	0.014	1.372	0.005	0.29	0.79	0.22	0.61	0.21	0.59	0.21	0.59	0.20	0.56	0.14	0.38
450	3.106	0.013	1.086	0.004	0.23	0.72	0.18	0.56	0.17	0.54	0.17	0.54	0.16	0.51	0.11	0.35
460	3.900	0.016	1.754	0.006	0.37	0.91	0.28	0.70	0.27	0.67	0.27	0.67	0.26	0.64	0.18	0.44
470	4.450	0.018	2.205	0.008	0.46	1.03	0.36	0.80	0.35	0.77	0.34	0.77	0.33	0.73	0.22	0.50
480	3.928	0.016	1.745	0.006	0.37	0.91	0.28	0.70	0.27	0.68	0.27	0.68	0.26	0.65	0.18	0.44
490	3.196	0.013	1.124	0.004	0.24	0.74	0.18	0.57	0.18	0.55	0.18	0.55	0.17	0.53	0.11	0.36
500	2.924	0.012	0.965	0.004	0.20	0.68	0.16	0.52	0.15	0.51	0.15	0.50	0.14	0.48	0.10	0.33
510	2.809	0.011	1.013	0.004	0.21	0.65	0.16	0.50	0.16	0.49	0.16	0.48	0.15	0.46	0.10	0.32
520	2.729	0.011	1.139	0.004	0.24	0.63	0.18	0.49	0.18	0.47	0.18	0.47	0.17	0.45	0.12	0.31
530	2.860	0.012	1.435	0.005	0.30	0.66	0.23	0.51	0.22	0.49	0.22	0.49	0.21	0.47	0.15	0.32
540	2.253	0.009	1.162	0.004	0.24	0.52	0.19	0.40	0.18	0.39	0.18	0.39	0.17	0.37	0.12	0.25
550	1.988	0.008	1.237	0.005	0.26	0.46	0.20	0.36	0.19	0.34	0.19	0.34	0.18	0.33	0.13	0.22
560	1.854	0.008	1.396	0.005	0.29	0.43	0.23	0.33	0.22	0.32	0.22	0.32	0.21	0.31	0.14	0.21
570	1.788	0.007	1.605	0.006	0.34	0.42	0.26	0.32	0.25	0.31	0.25	0.31	0.24	0.29	0.16	0.20
580	1.704	0.007	1.810	0.007	0.38	0.40	0.29	0.31	0.28	0.29	0.28	0.29	0.27	0.28	0.18	0.19
590	1.547	0.006	1.856	0.007	0.39	0.36	0.30	0.28	0.29	0.27	0.29	0.27	0.28	0.25	0.19	0.17
600	1.304	0.005	1.898	0.007	0.40	0.30	0.31	0.23	0.30	0.23	0.30	0.22	0.28	0.21	0.19	0.15
610	1.105	0.005	1.957	0.007	0.41	0.26	0.32	0.20	0.31	0.19	0.31	0.19	0.29	0.18	0.20	0.12
620	1.123	0.005	2.237	0.008	0.47	0.26	0.36	0.20	0.35	0.19	0.35	0.19	0.33	0.19	0.23	0.13
630	1.134	0.005	2.523	0.009	0.53	0.26	0.41	0.20	0.39	0.20	0.39	0.20	0.38	0.19	0.26	0.13
640	1.073	0.004	2.671	0.010	0.56	0.25	0.43	0.19	0.42	0.19	0.42	0.19	0.40	0.18	0.27	0.12
650	0.922	0.004	2.712	0.010	0.57	0.21	0.44	0.17	0.42	0.16	0.42	0.16	0.40	0.15	0.28	0.10
660	0.912	0.004	2.888	0.011	0.61	0.21	0.47	0.16	0.45	0.16	0.45	0.16	0.43	0.15	0.29	0.10
670	0.878	0.004	3.031	0.011	0.64	0.20	0.49	0.16	0.47	0.15	0.47	0.15	0.45	0.14	0.31	0.10
680	0.973	0.004	3.205	0.012	0.67	0.23	0.52	0.17	0.50	0.17	0.50	0.17	0.48	0.16	0.33	0.11
690	1.042	0.004	3.340	0.012	0.70	0.24	0.54	0.19	0.52	0.18	0.52	0.18	0.50	0.17	0.34	0.12
700	1.003	0.004	3.428	0.013	0.72	0.23	0.56	0.18	0.54	0.17	0.54	0.17	0.51	0.17	0.35	0.11
710	0.940	0.004	3.345	0.012	0.70	0.22	0.54	0.17	0.52	0.16	0.52	0.16	0.50	0.15	0.34	0.11
720	0.813	0.003	3.311	0.012	0.70	0.19	0.54	0.15	0.52	0.14	0.52	0.14	0.49	0.13	0.34	0.09
730	0.845	0.003	3.346	0.012	0.70	0.20	0.54	0.15	0.52	0.15	0.52	0.15	0.50	0.14	0.34	0.10
740	0.849	0.003	3.278	0.012	0.69	0.20	0.53	0.15	0.51	0.15	0.51	0.15	0.49	0.14	0.33	0.10
750	0.790	0.003	3.229	0.012	0.68	0.18	0.52	0.14	0.51	0.14	0.50	0.14	0.48	0.13	0.33	0.09
760	0.658	0.003	3.047	0.011	0.64	0.15	0.49	0.12	0.48	0.11	0.48	0.11	0.45	0.11	0.31	0.07
770	0.738	0.003	3.103	0.011	0.65	0.17	0.50	0.13	0.49	0.13	0.48	0.13	0.46	0.12	0.32	0.08
780	0.740	0.003	3.036	0.011	0.64	0.17	0.49	0.13	0.48	0.13	0.47	0.13	0.45	0.12	0.31	0.08
790	0.655	0.003	2.868	0.011	0.60	0.15	0.46	0.12	0.45	0.11	0.45	0.11	0.43	0.11	0.29	0.07
800	0.678	0.003	2.905	0.011	0.61	0.16	0.47	0.12	0.45	0.12	0.45	0.12	0.43	0.11	0.30	0.08
810	0.885	0.004	3.167	0.012	0.67	0.21	0.51	0.16	0.50	0.15	0.49	0.15	0.47	0.15	0.32	0.10
820	0.822	0.003	3.155	0.012	0.66	0.19	0.51	0.15	0.49	0.14	0.49	0.14	0.47	0.14	0.32	0.09
830	1.745	0.007	3.946	0.015	0.83	0.41	0.64	0.31	0.62	0.30	0.62	0.30	0.59	0.29	0.40	0.20
840	1.120	0.005	2.988	0.011	0.63	0.26	0.48	0.20	0.47	0.19	0.47	0.19	0.45	0.18	0.30	0.13
850	0.956	0.004	2.663	0.010	0.56	0.22	0.43	0.17	0.42	0.17	0.42	0.16	0.40	0.16	0.27	0.11
860	0.747	0.003	2.428	0.009	0.51	0.17	0.39	0.13	0.38	0.13	0.38	0.13	0.36	0.12	0.25	0.08
870	0.727	0.003	2.376	0.009	0.50	0.17	0.39	0.13	0.37	0.13	0.37	0.13	0.35	0.12	0.24	0.08
880	0.596	0.002	2.224	0.008	0.47	0.14	0.36	0.11	0.35	0.10	0.35	0.10	0.33	0.10	0.23	0.07
890	0.512	0.002	2.143	0.008	0.45	0.12	0.35	0.09	0.34	0.09	0.33	0.09	0.32	0.08	0.22	0.06
900	0.421	0.002	2.022	0.007	0.43	0.10	0.33	0.08	0.32	0.07	0.32	0.07	0.30	0.07	0.21	0.05
910	0.346	0.001	1.943	0.007	0.41	0.08	0.31	0.06	0.30	0.06	0.30	0.06	0.29	0.06	0.20	0.04
920	0.764	0.003	2.483	0.009	0.52	0.18	0.40	0.14	0.39	0.13	0.39	0.13	0.37	0.13	0.25	0.09
930	0.675	0.003	2.312	0.009	0.49	0.16	0.37	0.12	0.36	0.12	0.36	0.12	0.34	0.11	0.24	0.08
940	0.660	0.003	2.322	0.009	0.49	0.15	0.38	0.12	0.36	0.11	0.36	0.11	0.35	0.11	0.24	0.07
950	0.741	0.003	2.358	0.009	0.50	0.17	0.38	0.13	0.37	0.13	0.37	0.13	0.35	0.12	0.24	0.08
960	0.532	0.002	1.997	0.007	0.42	0.12	0.32	0.10	0.31	0.09	0.31	0.09	0.30	0.09	0.20	0.06
970	0.735	0.003	2.154	0.008	0.45	0.17	0.35	0.13	0.34	0.13	0.34	0.13	0.32	0.12	0.22	0.08
980	0.785	0.003	2.103	0.008	0.44	0.18	0.34	0.14	0.33	0.14	0.33	0.14	0.31	0.13	0.21	0.09
990	0.922	0.004	2.154	0.008	0.45	0.21	0.35	0.17	0.34	0.16	0.34	0.16	0.32	0.15	0.22	0.10
1000	0.807	0.003	1.912	0.007	0.40	0.19	0.31	0.14	0.30	0.14	0.30	0.14	0.29	0.13	0.19	0.09
1010	1.080	0.004	2.208	0.008	0.46	0.25	0.36	0.19	0.35	0.19	0.34	0.19	0.33	0.18	0.22	0.12
1020	1.074	0.004	2.020	0.007	0.42	0.25	0.33	0.19	0.32	0.19	0.32	0.19	0.30	0.18	0.21	0.12
1030	1.500	0.006	2.678	0.010	0.56	0.35	0.43	0.27	0.42	0.26	0.42	0.26	0.40	0.25	0.27	0.17
1040	1.337	0.005	2.109	0.008	0.44	0.31	0.34	0.24	0.33	0.23	0.33	0.23	0.31	0.22	0.21	0.15
1050	1.027	0.004	1.420	0.005	0.30	0.24	0.23	0.18	0.22	0.18	0.22	0.18	0.21	0.17	0.14	0.12
1060	0.607	0.002	1.013	0.004	0.21	0.14	0.16	0.11	0.16	0.11	0.16	0.10	0.15	0.10	0.10	0.07
1070	0.443	0.002	0.953	0.004	0.20	0.10	0.15	0.08	0.15	0.08	0.15	0.08	0.14	0.07	0.10	0.05
1080	0.462	0.002	0.983	0.004	0.21	0.11	0.16	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.10	0.05
1090	0.498	0.002	1.083	0.004	0.23	0.12	0.18	0.09	0.17	0.09	0.17	0.09	0.16	0.08	0.11	0.06
1100	0.525	0.002	1.198	0.004	0.25	0.12	0.19	0.09	0.19	0.09	0.19	0.09	0.18	0.09	0.12	0.06
1110	0.798	0.003	1.241	0.005	0.26	0.19	0.20	0.14	0.19	0.14	0.19	0.14	0.19	0.13	0.13	0.09
1120	0.746	0.003	0.860	0.003	0.18	0.17	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.09	0.08
1130	0.603	0.002	0.605	0.002	0.13	0.14	0.10	0.11	0.09	0.10	0.09	0.10	0.09	0.10	0.06	0.07
1140	0.797	0.003	0.705	0.003	0.15	0.19	0.11	0.14	0.11	0.14	0.11	0.14	0.11	0.13	0.07	0.09
1150	1.351	0.006	1.207	0.004	0.25	0.31	0.20	0.24	0.19	0.23	0.19	0.23	0.18	0.22	0.12	0.15
1160	1.935	0.008	1.796	0.007	0.38	0.45	0.29	0.35	0.28	0.33	0.28	0.33	0.27	0.32	0.18	0.22
1170	2.269	0.009	1.916	0.007	0.40	0.53	0.31	0.41	0.30	0.39	0.30	0.39	0.29	0.37	0.20	0.26
1180	1.185	0.005	1.116	0.004	0.23	0.28	0.18	0.21	0.17	0.20	0.17	0.20	0.17	0.20	0.11	0.13
1190	1.354	0.006	1.373	0.005	0.29	0.31	0.22	0.24	0.21	0.23	0.21	0.23	0.20	0.22	0.14	0.15
1200	1.384	0.006	1.358	0.005	0.29	0.32	0.22	0.25	0.21	0.24	0.21	0.24	0.20	0.23	0.14	0.16
1210	1.734	0.007	1.973	0.007	0.42	0.40	0.32	0.31	0.31	0.30	0.31	0.30	0.29	0.29	0.20	0.20
1220	1.219	0.005	1.571	0.006	0.33	0.28	0.25	0.22	0.25	0.21	0.25	0.21	0.23	0.20	0.16	0.14
1230	1.587	0.006	1.677	0.006	0.35	0.37	0.27	0.28	0.26	0.27	0.26	0.27	0.25	0.26	0.17	0.18
1240	1.818	0.007	1.881	0.007	0.40	0.42	0.30	0.33	0.29	0.31	0.29	0.31	0.28	0.30	0.19	0.20
1250	1.865	0.008	1.926	0.007	0.41	0.43	0.31	0.33	0.30	0.32	0.30	0.32	0.29	0.31	0.20	0.21
1260	2.165	0.009	2.215	0.008	0.47	0.50	0.36	0.39	0.35	0.37	0.35	0.37	0.33	0.36	0.23	0.24
1270	1.655	0.007	1.770	0.007	0.37	0.38	0.29	0.30	0.28	0.29	0.28	0.29	0.26	0.27	0.18	0.19
1280	1.608	0.007	1.740	0.006	0.37	0.37	0.28	0.29	0.27	0.28	0.27	0.28	0.26	0.26	0.18	0.18
1290	1.841	0.008	1.814	0.007	0.38	0.43	0.29	0.33	0.28	0.32	0.28	0.32	0.27	0.30	0.18	0.21
1300	0.926	0.004	0.946	0.003	0.20	0.22	0.15	0.17	0.15	0.16	0.15	0.16	0.14	0.15	0.10	0.10
1310	0.877	0.004	0.976	0.004	0.21	0.20	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.14	0.10	0.10
1320	1.071	0.004	1.209	0.004	0.25	0.25	0.20	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.12	0.12
1330	1.147	0.005	1.336	0.005	0.28	0.27	0.22	0.21	0.21	0.20	0.21	0.20	0.20	0.19	0.14	0.13
1340	1.095	0.004	1.403	0.005	0.30	0.25	0.23	0.20	0.22	0.19	0.22	0.19	0.21	0.18	0.14	0.12
1350	1.119	0.005	1.485	0.005	0.31	0.26	0.24	0.20	0.23	0.19	0.23	0.19	0.22	0.18	0.15	0.13
1360	1.087	0.004	1.506	0.006	0.32	0.25	0.24	0.19	0.24	0.19	0.24	0.19	0.22	0.18	0.15	0.12
1370	1.149	0.005	1.520	0.006	0.32	0.27	0.25	0.21	0.24	0.20	0.24	0.20	0.23	0.19	0.15	0.13
1380	0.917	0.004	1.456	0.005	0.31	0.21	0.24	0.16	0.23	0.16	0.23	0.16	0.22	0.15	0.15	0.10
1390	0.837	0.003	1.265	0.005	0.27	0.19	0.21	0.15	0.20	0.14	0.20	0.14	0.19	0.14	0.13	0.09
1400	0.633	0.003	0.926	0.003	0.19	0.15	0.15	0.11	0.14	0.11	0.14	0.11	0.14	0.10	0.09	0.07
1410	0.632	0.003	0.900	0.003	0.19	0.15	0.15	0.11	0.14	0.11	0.14	0.11	0.13	0.10	0.09	0.07
1420	0.598	0.002	0.827	0.003	0.17	0.14	0.13	0.11	0.13	0.10	0.13	0.10	0.12	0.10	0.08	0.07
1430	0.415	0.002	0.672	0.002	0.14	0.10	0.11	0.07	0.11	0.07	0.10	0.07	0.10	0.07	0.07	0.05
1440	0.527	0.002	0.688	0.003	0.14	0.12	0.11	0.09	0.11	0.09	0.11	0.09	0.10	0.09	0.07	0.06
1450	0.399	0.002	0.583	0.002	0.12	0.09	0.09	0.07	0.09	0.07	0.09	0.07	0.09	0.07	0.06	0.04
1460	0.464	0.002	0.497	0.002	0.10	0.11	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.05	0.05
1470	0.387	0.002	0.364	0.001	0.08	0.09	0.06	0.07	0.06	0.07	0.06	0.07	0.05	0.06	0.04	0.04
1480	0.602	0.002	0.439	0.002	0.09	0.14	0.07	0.11	0.07	0.10	0.07	0.10	0.07	0.10	0.04	0.07
1490	0.779	0.003	0.517	0.002	0.11	0.18	0.08	0.14	0.08	0.13	0.08	0.13	0.08	0.13	0.05	0.09
1500	1.068	0.004	0.830	0.003	0.17	0.25	0.13	0.19	0.13	0.18	0.13	0.18	0.12	0.18	0.08	0.12
1510	1.164	0.005	0.728	0.003	0.15	0.27	0.12	0.21	0.11	0.20	0.11	0.20	0.11	0.19	0.07	0.13
1520	0.893	0.004	0.550	0.002	0.12	0.21	0.09	0.16	0.09	0.15	0.09	0.15	0.08	0.15	0.06	0.10
1530	0.555	0.002	0.378	0.001	0.08	0.13	0.06	0.10	0.06	0.10	0.06	0.10	0.06	0.09	0.04	0.06
1540	0.705	0.003	0.614	0.002	0.13	0.16	0.10	0.13	0.10	0.12	0.10	0.12	0.09	0.12	0.06	0.08
1550	1.002	0.004	0.772	0.003	0.16	0.23	0.13	0.18	0.12	0.17	0.12	0.17	0.12	0.17	0.08	0.11
1560	1.079	0.004	0.782	0.003	0.16	0.25	0.13	0.19	0.12	0.19	0.12	0.19	0.12	0.18	0.08	0.12
1570	0.726	0.003	0.605	0.002	0.13	0.17	0.10	0.13	0.09	0.13	0.09	0.13	0.09	0.12	0.06	0.08
1580	0.887	0.004	0.842	0.003	0.18	0.21	0.14	0.16	0.13	0.15	0.13	0.15	0.13	0.15	0.09	0.10
1590	1.401	0.006	1.216	0.004	0.26	0.33	0.20	0.25	0.19	0.24	0.19	0.24	0.18	0.23	0.12	0.16
1600	1.360	0.006	0.979	0.004	0.21	0.32	0.16	0.24	0.15	0.24	0.15	0.23	0.15	0.22	0.10	0.15
1610	1.133	0.005	0.608	0.002	0.13	0.26	0.10	0.20	0.10	0.20	0.09	0.20	0.09	0.19	0.06	0.13
1620	0.948	0.004	0.449	0.002	0.09	0.22	0.07	0.17	0.07	0.16	0.07	0.16	0.07	0.16	0.05	0.11
1630	1.006	0.004	0.517	0.002	0.11	0.23	0.08	0.18	0.08	0.17	0.08	0.17	0.08	0.17	0.05	0.11
1640	0.979	0.004	0.481	0.002	0.10	0.23	0.08	0.18	0.08	0.17	0.08	0.17	0.07	0.16	0.05	0.11
1650	0.981	0.004	0.580	0.002	0.12	0.23	0.09	0.18	0.09	0.17	0.09	0.17	0.09	0.16	0.06	0.11
1660	0.990	0.004	0.649	0.002	0.14	0.23	0.11	0.18	0.10	0.17	0.10	0.17	0.10	0.16	0.07	0.11
1670	0.868	0.004	0.698	0.003	0.15	0.20	0.11	0.16	0.11	0.15	0.11	0.15	0.10	0.14	0.07	0.10
1680	0.844	0.003	0.954	0.004	0.20	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.10	0.09
1690	0.952	0.004	1.154	0.004	0.24	0.22	0.19	0.17	0.18	0.16	0.18	0.16	0.17	0.16	0.12	0.11
1700	0.883	0.004	0.975	0.004	0.21	0.21	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.10
1710	1.093	0.004	1.267	0.005	0.27	0.25	0.21	0.20	0.20	0.19	0.20	0.19	0.19	0.18	0.13	0.12
1720	1.055	0.004	1.272	0.005	0.27	0.25	0.21	0.19	0.20	0.18	0.20	0.18	0.19	0.17	0.13	0.12
1730	1.084	0.004	1.207	0.004	0.25	0.25	0.20	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.12	0.12
1740	0.932	0.004	1.107	0.004	0.23	0.22	0.18	0.17	0.17	0.16	0.17	0.16	0.17	0.15	0.11	0.10
1750	0.907	0.004	1.072	0.004	0.23	0.21	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.15	0.11	0.10
1760	0.881	0.004	1.024	0.004	0.22	0.20	0.17	0.16	0.16	0.15	0.16	0.15	0.15	0.15	0.10	0.10
1770	0.867	0.004	0.987	0.004	0.21	0.20	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.14	0.10	0.10
1780	0.946	0.004	1.025	0.004	0.22	0.22	0.17	0.17	0.16	0.16	0.16	0.16	0.15	0.16	0.10	0.11
1790	0.945	0.004	1.016	0.004	0.21	0.22	0.16	0.17	0.16	0.16	0.16	0.16	0.15	0.16	0.10	0.11
1800	0.846	0.003	0.877	0.003	0.18	0.20	0.14	0.15	0.14	0.15	0.14	0.15	0.13	0.14	0.09	0.10
1810	0.801	0.003	0.869	0.003	0.18	0.19	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.09	0.09
1820	0.722	0.003	0.848	0.003	0.18	0.17	0.14	0.13	0.13	0.12	0.13	0.12	0.13	0.12	0.09	0.08
1830	0.618	0.003	0.816	0.003	0.17	0.14	0.13	0.11	0.13	0.11	0.13	0.11	0.12	0.10	0.08	0.07
1840	0.592	0.002	0.776	0.003	0.16	0.14	0.13	0.11	0.12	0.10	0.12	0.10	0.12	0.10	0.08	0.07
1850	0.514	0.002	0.727	0.003	0.15	0.12	0.12	0.09	0.11	0.09	0.11	0.09	0.11	0.08	0.07	0.06
1860	0.514	0.002	0.678	0.003	0.14	0.12	0.11	0.09	0.11	0.09	0.11	0.09	0.10	0.08	0.07	0.06
1870	0.478	0.002	0.626	0.002	0.13	0.11	0.10	0.09	0.10	0.08	0.10	0.08	0.09	0.08	0.06	0.05
1880	0.573	0.002	0.751	0.003	0.16	0.13	0.12	0.10	0.12	0.10	0.12	0.10	0.11	0.09	0.08	0.06
1890	0.427	0.002	0.564	0.002	0.12	0.10	0.09	0.08	0.09	0.07	0.09	0.07	0.08	0.07	0.06	0.05
1900	0.922	0.004	1.109	0.004	0.23	0.21	0.18	0.17	0.17	0.16	0.17	0.16	0.17	0.15	0.11	0.10

SD-600	Fletcher Cove	0	0	Avg. Net SL	5.89	4.94	4.81	4.45	3.20	2.58						
SD-600	208.436	0	231.37	1900			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.194	0.001	0.000	0.000	0.00	0.07	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.03
20	0.751	0.004	0.000	0.000	0.00	0.25	0.00	0.21	0.00	0.21	0.00	0.19	0.00	0.14	0.00	0.11
30	1.386	0.007	0.002	0.000	0.00	0.47	0.00	0.39	0.00	0.38	0.00	0.35	0.00	0.25	0.00	0.20
40	1.877	0.009	0.601	0.003	0.18	0.63	0.15	0.53	0.15	0.52	0.14	0.48	0.10	0.34	0.08	0.28
50	1.99	0.010	0.907	0.004	0.28	0.67	0.23	0.56	0.22	0.55	0.21	0.51	0.15	0.36	0.12	0.29
60	2.116	0.010	1.176	0.005	0.36	0.71	0.30	0.60	0.29	0.58	0.27	0.54	0.19	0.39	0.16	0.31
70	2.228	0.011	1.339	0.006	0.41	0.75	0.34	0.63	0.33	0.61	0.31	0.57	0.22	0.41	0.18	0.33
80	2.353	0.011	1.449	0.006	0.44	0.79	0.37	0.66	0.36	0.65	0.33	0.60	0.24	0.43	0.19	0.35
90	2.403	0.012	1.483	0.006	0.45	0.81	0.38	0.68	0.37	0.66	0.34	0.61	0.24	0.44	0.20	0.35
100	2.38	0.011	1.446	0.006	0.44	0.80	0.37	0.67	0.36	0.65	0.33	0.61	0.24	0.43	0.19	0.35
110	2.343	0.011	1.439	0.006	0.44	0.79	0.37	0.66	0.36	0.64	0.33	0.60	0.24	0.43	0.19	0.35
120	2.361	0.011	1.497	0.006	0.45	0.80	0.38	0.67	0.37	0.65	0.34	0.60	0.25	0.43	0.20	0.35
130	2.449	0.012	1.591	0.007	0.48	0.82	0.40	0.69	0.39	0.67	0.36	0.62	0.26	0.45	0.21	0.36
140	2.542	0.012	1.681	0.007	0.51	0.86	0.43	0.72	0.42	0.70	0.39	0.65	0.28	0.46	0.22	0.37
150	2.573	0.012	1.685	0.007	0.51	0.87	0.43	0.73	0.42	0.71	0.39	0.65	0.28	0.47	0.22	0.38
160	2.588	0.012	1.656	0.007	0.50	0.87	0.42	0.73	0.41	0.71	0.38	0.66	0.27	0.47	0.22	0.38
170	2.617	0.013	1.683	0.007	0.51	0.88	0.43	0.74	0.42	0.72	0.39	0.67	0.28	0.48	0.22	0.39
180	2.648	0.013	1.702	0.007	0.52	0.89	0.43	0.75	0.42	0.73	0.39	0.67	0.28	0.48	0.23	0.39
190	2.564	0.012	1.571	0.007	0.48	0.86	0.40	0.72	0.39	0.70	0.36	0.65	0.26	0.47	0.21	0.38
200	2.394	0.011	1.350	0.006	0.41	0.81	0.34	0.68	0.33	0.66	0.31	0.61	0.22	0.44	0.18	0.35
210	2.223	0.011	1.128	0.005	0.34	0.75	0.29	0.63	0.28	0.61	0.26	0.57	0.19	0.41	0.15	0.33
220	2.059	0.010	0.926	0.004	0.28	0.69	0.24	0.58	0.23	0.57	0.21	0.52	0.15	0.38	0.12	0.30
230	2.146	0.010	0.973	0.004	0.30	0.72	0.25	0.61	0.24	0.59	0.22	0.55	0.16	0.39	0.13	0.32
240	2.414	0.012	1.212	0.005	0.37	0.81	0.31	0.68	0.30	0.66	0.28	0.61	0.20	0.44	0.16	0.36
250	2.696	0.013	1.470	0.006	0.45	0.91	0.37	0.76	0.36	0.74	0.34	0.69	0.24	0.49	0.20	0.40
260	2.925	0.014	1.700	0.007	0.52	0.99	0.43	0.83	0.42	0.80	0.39	0.74	0.28	0.53	0.23	0.43
270	3.119	0.015	1.920	0.008	0.58	1.05	0.49	0.88	0.48	0.86	0.44	0.79	0.32	0.57	0.25	0.46
280	3.212	0.015	2.061	0.009	0.63	1.08	0.52	0.91	0.51	0.88	0.47	0.82	0.34	0.59	0.27	0.47
290	3.23	0.015	2.150	0.009	0.65	1.09	0.55	0.91	0.53	0.89	0.49	0.82	0.35	0.59	0.29	0.48
300	3.254	0.016	2.229	0.010	0.68	1.10	0.57	0.92	0.55	0.89	0.51	0.83	0.37	0.59	0.30	0.48
310	3.171	0.015	2.226	0.010	0.68	1.07	0.57	0.90	0.55	0.87	0.51	0.81	0.37	0.58	0.30	0.47
320	3.057	0.015	2.200	0.010	0.67	1.03	0.56	0.86	0.54	0.84	0.50	0.78	0.36	0.56	0.29	0.45
330	3.071	0.015	2.308	0.010	0.70	1.03	0.59	0.87	0.57	0.84	0.53	0.78	0.38	0.56	0.31	0.45
340	2.98	0.014	2.333	0.010	0.71	1.00	0.59	0.84	0.58	0.82	0.53	0.76	0.38	0.54	0.31	0.44
350	2.713	0.013	2.143	0.009	0.65	0.91	0.55	0.77	0.53	0.75	0.49	0.69	0.35	0.50	0.28	0.40
360	2.5	0.012	1.975	0.009	0.60	0.84	0.50	0.71	0.49	0.69	0.45	0.64	0.33	0.46	0.26	0.37
370	2.43	0.012	1.921	0.008	0.58	0.82	0.49	0.69	0.48	0.67	0.44	0.62	0.32	0.44	0.25	0.36
380	2.44	0.012	1.942	0.008	0.59	0.82	0.49	0.69	0.48	0.67	0.44	0.62	0.32	0.45	0.26	0.36
390	2.452	0.012	1.938	0.008	0.59	0.83	0.49	0.69	0.48	0.67	0.44	0.62	0.32	0.45	0.26	0.36
400	2.466	0.012	1.930	0.008	0.59	0.83	0.49	0.70	0.48	0.68	0.44	0.63	0.32	0.45	0.26	0.36
410	2.446	0.012	1.943	0.008	0.59	0.82	0.49	0.69	0.48	0.67	0.45	0.62	0.32	0.45	0.26	0.36
420	2.449	0.012	2.027	0.009	0.62	0.82	0.52	0.69	0.50	0.67	0.46	0.62	0.33	0.45	0.27	0.36
430	2.438	0.012	2.096	0.009	0.64	0.82	0.53	0.69	0.52	0.67	0.48	0.62	0.35	0.45	0.28	0.36
440	2.414	0.012	2.142	0.009	0.65	0.81	0.55	0.68	0.53	0.66	0.49	0.61	0.35	0.44	0.28	0.36
450	2.319	0.011	2.152	0.009	0.65	0.78	0.55	0.66	0.53	0.64	0.49	0.59	0.35	0.42	0.29	0.34
460	2.236	0.011	2.211	0.010	0.67	0.75	0.56	0.63	0.55	0.61	0.51	0.57	0.36	0.41	0.29	0.33
470	2.204	0.011	2.324	0.010	0.71	0.74	0.59	0.62	0.58	0.61	0.53	0.56	0.38	0.40	0.31	0.32
480	2.166	0.010	2.438	0.011	0.74	0.73	0.62	0.61	0.60	0.60	0.56	0.55	0.40	0.40	0.32	0.32
490	2.114	0.010	2.563	0.011	0.78	0.71	0.65	0.60	0.63	0.58	0.59	0.54	0.42	0.39	0.34	0.31
500	2.066	0.010	2.654	0.011	0.81	0.70	0.68	0.58	0.66	0.57	0.61	0.53	0.44	0.38	0.35	0.30
510	1.949	0.009	2.716	0.012	0.82	0.66	0.69	0.55	0.67	0.54	0.62	0.50	0.45	0.36	0.36	0.29
520	1.841	0.009	2.765	0.012	0.84	0.62	0.70	0.52	0.68	0.51	0.63	0.47	0.46	0.34	0.37	0.27
530	1.722	0.008	2.792	0.012	0.85	0.58	0.71	0.49	0.69	0.47	0.64	0.44	0.46	0.31	0.37	0.25
540	1.633	0.008	2.802	0.012	0.85	0.55	0.71	0.46	0.69	0.45	0.64	0.42	0.46	0.30	0.37	0.24
550	1.59	0.008	2.849	0.012	0.86	0.54	0.73	0.45	0.71	0.44	0.65	0.40	0.47	0.29	0.38	0.23
560	1.542	0.007	2.860	0.012	0.87	0.52	0.73	0.44	0.71	0.42	0.66	0.39	0.47	0.28	0.38	0.23
570	1.411	0.007	2.837	0.012	0.86	0.48	0.72	0.40	0.70	0.39	0.65	0.36	0.47	0.26	0.38	0.21
580	1.315	0.006	2.767	0.012	0.84	0.44	0.70	0.37	0.69	0.36	0.63	0.33	0.46	0.24	0.37	0.19
590	1.198	0.006	2.689	0.012	0.82	0.40	0.68	0.34	0.67	0.33	0.62	0.30	0.44	0.22	0.36	0.18
600	1.105	0.005	2.576	0.011	0.78	0.37	0.66	0.31	0.64	0.30	0.59	0.28	0.42	0.20	0.34	0.16
610	0.981	0.005	2.435	0.011	0.74	0.33	0.62	0.28	0.60	0.27	0.56	0.25	0.40	0.18	0.32	0.14
620	0.852	0.004	2.285	0.010	0.69	0.29	0.58	0.24	0.57	0.23	0.52	0.22	0.38	0.16	0.30	0.13
630	0.738	0.004	2.175	0.009	0.66	0.25	0.55	0.21	0.54	0.20	0.50	0.19	0.36	0.13	0.29	0.11
640	0.754	0.004	2.182	0.009	0.66	0.25	0.56	0.21	0.54	0.21	0.50	0.19	0.36	0.14	0.29	0.11
650	0.704	0.003	2.133	0.009	0.65	0.24	0.54	0.20	0.53	0.19	0.49	0.18	0.35	0.13	0.28	0.10
660	0.63	0.003	2.018	0.009	0.61	0.21	0.51	0.18	0.50	0.17	0.46	0.16	0.33	0.12	0.27	0.09
670	0.558	0.003	1.960	0.008	0.59	0.19	0.50	0.16	0.49	0.15	0.45	0.14	0.32	0.10	0.26	0.08
680	0.517	0.002	1.858	0.008	0.56	0.17	0.47	0.15	0.46	0.14	0.43	0.13	0.31	0.09	0.25	0.08
690	0.495	0.002	1.747	0.008	0.53	0.17	0.44	0.14	0.43	0.14	0.40	0.13	0.29	0.09	0.23	0.07
700	0.441	0.002	1.683	0.007	0.51	0.15	0.43	0.12	0.42	0.12	0.39	0.11	0.28	0.08	0.22	0.06
710	0.386	0.002	1.615	0.007	0.49	0.13	0.41	0.11	0.40	0.11	0.37	0.10	0.27	0.07	0.21	0.06
720	0.417	0.002	1.607	0.007	0.49	0.14	0.41	0.12	0.40	0.11	0.37	0.11	0.26	0.08	0.21	0.06
730	0.437	0.002	1.604	0.007	0.49	0.15	0.41	0.12	0.40	0.12	0.37	0.11	0.26	0.08	0.21	0.06
740	0.355	0.002	1.528	0.007	0.46	0.12	0.39	0.10	0.38	0.10	0.35	0.09	0.25	0.06	0.20	0.05
750	0.294	0.001	1.469	0.006	0.45	0.10	0.37	0.08	0.36	0.08	0.34	0.07	0.24	0.05	0.19	0.04
760	0.375	0.002	1.544	0.007	0.47	0.13	0.39	0.11	0.38	0.10	0.35	0.10	0.25	0.07	0.20	0.06
770	0.492	0.002	1.612	0.007	0.49	0.17	0.41	0.14	0.40	0.14	0.37	0.13	0.27	0.09	0.21	0.07
780	0.499	0.002	1.591	0.007	0.48	0.17	0.40	0.14	0.39	0.14	0.36	0.13	0.26	0.09	0.21	0.07
790	0.459	0.002	1.560	0.007	0.47	0.15	0.40	0.13	0.39	0.13	0.36	0.12	0.26	0.08	0.21	0.07
800	0.459	0.002	1.532	0.007	0.46	0.15	0.39	0.13	0.38	0.13	0.35	0.12	0.25	0.08	0.20	0.07
810	0.437	0.002	1.483	0.006	0.45	0.15	0.38	0.12	0.37	0.12	0.34	0.11	0.24	0.08	0.20	0.06
820	0.411	0.002	1.441	0.006	0.44	0.14	0.37	0.12	0.36	0.11	0.33	0.10	0.24	0.08	0.19	0.06
830	0.456	0.002	1.422	0.006	0.43	0.15	0.36	0.13	0.35	0.13	0.33	0.12	0.23	0.08	0.19	0.07
840	0.426	0.002	1.427	0.006	0.43	0.14	0.36	0.12	0.35	0.12	0.33	0.11	0.23	0.08	0.19	0.06
850	0.394	0.002	1.364	0.006	0.41	0.13	0.35	0.11	0.34	0.11	0.31	0.10	0.22	0.07	0.18	0.06
860	0.397	0.002	1.295	0.006	0.39	0.13	0.33	0.11	0.32	0.11	0.30	0.10	0.21	0.07	0.17	0.06
870	0.418	0.002	1.254	0.005	0.38	0.14	0.32	0.12	0.31	0.11	0.29	0.11	0.21	0.08	0.17	0.06
880	0.426	0.002	1.232	0.005	0.37	0.14	0.31	0.12	0.31	0.12	0.28	0.11	0.20	0.08	0.16	0.06
890	0.443	0.002	1.264	0.005	0.38	0.15	0.32	0.13	0.31	0.12	0.29	0.11	0.21	0.08	0.17	0.07
900	0.432	0.002	1.239	0.005	0.38	0.15	0.32	0.12	0.31	0.12	0.28	0.11	0.20	0.08	0.16	0.06
910	0.424	0.002	1.140	0.005	0.35	0.14	0.29	0.12	0.28	0.12	0.26	0.11	0.19	0.08	0.15	0.06
920	0.418	0.002	1.057	0.005	0.32	0.14	0.27	0.12	0.26	0.11	0.24	0.11	0.17	0.08	0.14	0.06
930	0.492	0.002	1.069	0.005	0.32	0.17	0.27	0.14	0.26	0.14	0.24	0.13	0.18	0.09	0.14	0.07
940	0.557	0.003	1.149	0.005	0.35	0.19	0.29	0.16	0.28	0.15	0.26	0.14	0.19	0.10	0.15	0.08
950	0.614	0.003	1.177	0.005	0.36	0.21	0.30	0.17	0.29	0.17	0.27	0.16	0.19	0.11	0.16	0.09
960	0.537	0.003	1.131	0.005	0.34	0.18	0.29	0.15	0.28	0.15	0.26	0.14	0.19	0.10	0.15	0.08
970	0.582	0.003	1.225	0.005	0.37	0.20	0.31	0.16	0.30	0.16	0.28	0.15	0.20	0.11	0.16	0.09
980	0.593	0.003	1.193	0.005	0.36	0.20	0.30	0.17	0.30	0.16	0.27	0.15	0.20	0.11	0.16	0.09
990	0.545	0.003	1.152	0.005	0.35	0.18	0.29	0.15	0.29	0.15	0.26	0.14	0.19	0.10	0.15	0.08
1000	0.449	0.002	1.025	0.004	0.31	0.15	0.26	0.13	0.25	0.12	0.23	0.11	0.17	0.08	0.14	0.07
1010	0.468	0.002	1.033	0.004	0.31	0.16	0.26	0.13	0.26	0.13	0.24	0.12	0.17	0.09	0.14	0.07
1020	0.56	0.003	1.111	0.005	0.34	0.19	0.28	0.16	0.28	0.15	0.25	0.14	0.18	0.10	0.15	0.08
1030	0.665	0.003	1.168	0.005	0.35	0.22	0.30	0.19	0.29	0.18	0.27	0.17	0.19	0.12	0.16	0.10
1040	0.789	0.004	1.212	0.005	0.37	0.27	0.31	0.22	0.30	0.22	0.28	0.20	0.20	0.14	0.16	0.12
1050	0.828	0.004	1.208	0.005	0.37	0.28	0.31	0.23	0.30	0.23	0.28	0.21	0.20	0.15	0.16	0.12
1060	0.926	0.004	1.245	0.005	0.38	0.31	0.32	0.26	0.31	0.25	0.29	0.24	0.20	0.17	0.17	0.14
1070	0.893	0.004	1.154	0.005	0.35	0.30	0.29	0.25	0.29	0.25	0.26	0.23	0.19	0.16	0.15	0.13
1080	0.906	0.004	1.147	0.005	0.35	0.31	0.29	0.26	0.28	0.25	0.26	0.23	0.19	0.17	0.15	0.13
1090	0.893	0.004	1.067	0.005	0.32	0.30	0.27	0.25	0.26	0.25	0.24	0.23	0.18	0.16	0.14	0.13
1100	0.829	0.004	1.025	0.004	0.31	0.28	0.26	0.23	0.25	0.23	0.23	0.21	0.17	0.15	0.14	0.12
1110	0.747	0.004	0.970	0.004	0.29	0.25	0.25	0.21	0.24	0.21	0.22	0.19	0.16	0.14	0.13	0.11
1120	0.666	0.003	0.928	0.004	0.28	0.22	0.24	0.19	0.23	0.18	0.21	0.17	0.15	0.12	0.12	0.10
1130	0.603	0.003	0.853	0.004	0.26	0.20	0.22	0.17	0.21	0.17	0.20	0.15	0.14	0.11	0.11	0.09
1140	0.655	0.003	0.898	0.004	0.27	0.22	0.23	0.19	0.22	0.18	0.21	0.17	0.15	0.12	0.12	0.10
1150	0.7	0.003	0.950	0.004	0.29	0.24	0.24	0.20	0.24	0.19	0.22	0.18	0.16	0.13	0.13	0.10
1160	0.691	0.003	0.940	0.004	0.29	0.23	0.24	0.20	0.23	0.19	0.22	0.18	0.15	0.13	0.12	0.10
1170	0.695	0.003	0.901	0.004	0.27	0.23	0.23	0.20	0.22	0.19	0.21	0.18	0.15	0.13	0.12	0.10
1180	0.706	0.003	0.961	0.004	0.29	0.24	0.24	0.20	0.24	0.19	0.22	0.18	0.16	0.13	0.13	0.10
1190	0.7	0.003	1.016	0.004	0.31	0.24	0.26	0.20	0.25	0.19	0.23	0.18	0.17	0.13	0.13	0.10
1200	0.709	0.003	0.953	0.004	0.29	0.24	0.24	0.20	0.24	0.19	0.22	0.18	0.16	0.13	0.13	0.10
1210	0.753	0.004	1.004	0.004	0.30	0.25	0.26	0.21	0.25	0.21	0.23	0.19	0.17	0.14	0.13	0.11
1220	0.73	0.004	0.932	0.004	0.28	0.25	0.24	0.21	0.23	0.20	0.21	0.19	0.15	0.13	0.12	0.11
1230	0.69	0.003	0.887	0.004	0.27	0.23	0.23	0.19	0.22	0.19	0.20	0.18	0.15	0.13	0.12	0.10
1240	0.691	0.003	0.843	0.004	0.26	0.23	0.21	0.20	0.21	0.19	0.19	0.18	0.14	0.13	0.11	0.10
1250	0.638	0.003	0.810	0.004	0.25	0.21	0.21	0.18	0.20	0.18	0.19	0.16	0.13	0.12	0.11	0.09
1260	0.606	0.003	0.751	0.003	0.23	0.20	0.19	0.17	0.19	0.17	0.17	0.15	0.12	0.11	0.10	0.09
1270	0.583	0.003	0.742	0.003	0.23	0.20	0.19	0.16	0.18	0.16	0.17	0.15	0.12	0.11	0.10	0.09
1280	0.597	0.003	0.753	0.003	0.23	0.20	0.19	0.17	0.19	0.16	0.17	0.15	0.12	0.11	0.10	0.09
1290	0.604	0.003	0.725	0.003	0.22	0.20	0.18	0.17	0.18	0.17	0.17	0.15	0.12	0.11	0.10	0.09
1300	0.575	0.003	0.740	0.003	0.22	0.19	0.19	0.16	0.18	0.16	0.17	0.15	0.12	0.11	0.10	0.08
1310	0.504	0.002	0.647	0.003	0.20	0.17	0.16	0.14	0.16	0.14	0.15	0.13	0.11	0.09	0.09	0.07
1320	0.501	0.002	0.647	0.003	0.20	0.17	0.16	0.14	0.16	0.14	0.15	0.13	0.11	0.09	0.09	0.07
1330	0.492	0.002	0.657	0.003	0.20	0.17	0.17	0.14	0.16	0.14	0.15	0.13	0.11	0.09	0.09	0.07
1340	0.459	0.002	0.579	0.003	0.18	0.15	0.15	0.13	0.14	0.13	0.13	0.12	0.10	0.08	0.08	0.07
1350	0.474	0.002	0.586	0.003	0.18	0.16	0.15	0.13	0.15	0.13	0.13	0.12	0.10	0.09	0.08	0.07
1360	0.466	0.002	0.582	0.003	0.18	0.16	0.15	0.13	0.14	0.13	0.13	0.12	0.10	0.09	0.08	0.07
1370	0.483	0.002	0.574	0.002	0.17	0.16	0.15	0.14	0.14	0.13	0.13	0.12	0.09	0.09	0.08	0.07
1380	0.506	0.002	0.579	0.003	0.18	0.17	0.15	0.14	0.14	0.14	0.13	0.13	0.10	0.09	0.08	0.07
1390	0.515	0.002	0.587	0.003	0.18	0.17	0.15	0.15	0.15	0.14	0.13	0.13	0.10	0.09	0.08	0.08
1400	0.413	0.002	0.527	0.002	0.16	0.14	0.13	0.12	0.13	0.11	0.12	0.11	0.09	0.08	0.07	0.06
1410	0.409	0.002	0.499	0.002	0.15	0.14	0.13	0.12	0.12	0.11	0.11	0.10	0.08	0.07	0.07	0.06
1420	0.37	0.002	0.421	0.002	0.13	0.12	0.11	0.10	0.10	0.10	0.10	0.09	0.07	0.07	0.06	0.05
1430	0.349	0.002	0.447	0.002	0.14	0.12	0.11	0.10	0.11	0.10	0.10	0.09	0.07	0.06	0.06	0.05
1440	0.604	0.003	0.841	0.004	0.26	0.20	0.21	0.17	0.21	0.17	0.19	0.15	0.14	0.11	0.11	0.09
1450	0.699	0.003	0.853	0.004	0.26	0.24	0.22	0.20	0.21	0.19	0.20	0.18	0.14	0.13	0.11	0.10
1460	0.584	0.003	0.665	0.003	0.20	0.20	0.17	0.16	0.16	0.16	0.15	0.15	0.11	0.11	0.09	0.09
1470	0.517	0.002	0.616	0.003	0.19	0.17	0.16	0.15	0.15	0.14	0.14	0.13	0.10	0.09	0.08	0.08
1480	0.448	0.002	0.569	0.002	0.17	0.15	0.14	0.13	0.14	0.12	0.13	0.11	0.09	0.08	0.08	0.07
1490	0.453	0.002	0.591	0.003	0.18	0.15	0.15	0.13	0.15	0.12	0.14	0.12	0.10	0.08	0.08	0.07
1500	0.368	0.002	0.483	0.002	0.15	0.12	0.12	0.10	0.12	0.10	0.11	0.09	0.08	0.07	0.06	0.05
1510	0.314	0.002	0.451	0.002	0.14	0.11	0.11	0.09	0.11	0.09	0.10	0.08	0.07	0.06	0.06	0.05
1520	0.324	0.002	0.475	0.002	0.14	0.11	0.12	0.09	0.12	0.09	0.11	0.08	0.08	0.06	0.06	0.05
1530	0.366	0.002	0.509	0.002	0.15	0.12	0.13	0.10	0.13	0.10	0.12	0.09	0.08	0.07	0.07	0.05
1540	0.428	0.002	0.567	0.002	0.17	0.14	0.14	0.12	0.14	0.12	0.13	0.11	0.09	0.08	0.08	0.06
1550	0.454	0.002	0.584	0.003	0.18	0.15	0.15	0.13	0.14	0.12	0.13	0.12	0.10	0.08	0.08	0.07
1560	0.452	0.002	0.522	0.002	0.16	0.15	0.13	0.13	0.13	0.12	0.12	0.11	0.09	0.08	0.07	0.07
1570	0.456	0.002	0.521	0.002	0.16	0.15	0.13	0.13	0.13	0.13	0.12	0.12	0.09	0.08	0.07	0.07
1580	0.446	0.002	0.527	0.002	0.16	0.15	0.13	0.13	0.13	0.12	0.12	0.11	0.09	0.08	0.07	0.07
1590	0.343	0.002	0.393	0.002	0.12	0.12	0.10	0.10	0.10	0.09	0.09	0.09	0.06	0.06	0.05	0.05
1600	0.351	0.002	0.432	0.002	0.13	0.12	0.11	0.10	0.11	0.10	0.10	0.09	0.07	0.06	0.06	0.05
1610	0.451	0.002	0.466	0.002	0.14	0.15	0.12	0.13	0.12	0.12	0.11	0.11	0.08	0.08	0.06	0.07
1620	0.454	0.002	0.496	0.002	0.15	0.15	0.13	0.13	0.12	0.12	0.11	0.12	0.08	0.08	0.07	0.07
1630	0.467	0.002	0.529	0.002	0.16	0.16	0.13	0.13	0.13	0.13	0.12	0.12	0.09	0.09	0.07	0.07
1640	0.479	0.002	0.535	0.002	0.16	0.16	0.14	0.14	0.13	0.13	0.12	0.12	0.09	0.09	0.07	0.07
1650	0.504	0.002	0.543	0.002	0.16	0.17	0.14	0.14	0.13	0.14	0.12	0.13	0.09	0.09	0.07	0.07
1660	0.477	0.002	0.521	0.002	0.16	0.16	0.13	0.13	0.13	0.13	0.12	0.12	0.09	0.09	0.07	0.07
1670	0.484	0.002	0.494	0.002	0.15	0.16	0.13	0.14	0.12	0.13	0.11	0.12	0.08	0.09	0.07	0.07
1680	0.455	0.002	0.452	0.002	0.14	0.15	0.12	0.13	0.11	0.13	0.10	0.12	0.07	0.08	0.06	0.07
1690	0.465	0.002	0.444	0.002	0.13	0.16	0.11	0.13	0.11	0.13	0.10	0.12	0.07	0.08	0.06	0.07
1700	0.531	0.003	0.481	0.002	0.15	0.18	0.12	0.15	0.12	0.15	0.11	0.14	0.08	0.10	0.06	0.08
1710	0.487	0.002	0.414	0.002	0.13	0.16	0.11	0.14	0.10	0.13	0.09	0.12	0.07	0.09	0.05	0.07
1720	0.382	0.002	0.351	0.002	0.11	0.13	0.09	0.11	0.09	0.11	0.08	0.10	0.06	0.07	0.05	0.06
1730	0.41	0.002	0.319	0.001	0.10	0.14	0.08	0.12	0.08	0.11	0.07	0.10	0.05	0.07	0.04	0.06
1740	0.534	0.003	0.367	0.002	0.11	0.18	0.09	0.15	0.09	0.15	0.08	0.14	0.06	0.10	0.05	0.08
1750	0.555	0.003	0.293	0.001	0.09	0.19	0.07	0.16	0.07	0.15	0.07	0.14	0.05	0.10	0.04	0.08
1760	0.555	0.003	0.257	0.001	0.08	0.19	0.07	0.16	0.06	0.15	0.06	0.14	0.04	0.10	0.03	0.08
1770	0.55	0.003	0.232	0.001	0.07	0.19	0.06	0.16	0.06	0.15	0.05	0.14	0.04	0.10	0.03	0.08
1780	0.602	0.003	0.288	0.001	0.09	0.20	0.07	0.17	0.07	0.17	0.07	0.15	0.05	0.11	0.04	0.09
1790	0.661	0.003	0.299	0.001	0.09	0.22	0.08	0.19	0.07	0.18	0.07	0.17	0.05	0.12	0.04	0.10
1800	0.672	0.003	0.264	0.001	0.08	0.23	0.07	0.19	0.07	0.18	0.06	0.17	0.04	0.12	0.04	0.10
1810	0.731	0.004	0.336	0.001	0.10	0.25	0.09	0.21	0.08	0.20	0.08	0.19	0.06	0.13	0.04	0.11
1820	0.85	0.004	0.484	0.002	0.15	0.29	0.12	0.24	0.12	0.23	0.11	0.22	0.08	0.16	0.06	0.13
1830	0.844	0.004	0.560	0.002	0.17	0.28	0.14	0.24	0.14	0.23	0.13	0.21	0.09	0.15	0.07	0.12
1840	0.769	0.004	0.532	0.002	0.16	0.26	0.14	0.22	0.13	0.21	0.12	0.20	0.09	0.14	0.07	0.11
1850	0.791	0.004	0.566	0.002	0.17	0.27	0.14	0.22	0.14	0.22	0.13	0.20	0.09	0.14	0.08	0.12
1860	0.755	0.004	0.575	0.002	0.17	0.25	0.15	0.21	0.14	0.21	0.13	0.19	0.09	0.14	0.08	0.11
1870	0.718	0.003	0.573	0.002	0.17	0.24	0.15	0.20	0.14	0.20	0.13	0.18	0.09	0.13	0.08	0.11
1880	0.752	0.004	0.563	0.002	0.17	0.25	0.14	0.21	0.14	0.21	0.13	0.19	0.09	0.14	0.07	0.11
1890	0.809	0.004	0.611	0.003	0.19	0.27	0.16	0.23	0.15	0.22	0.14	0.21	0.10	0.15	0.08	0.12
1900	0.831	0.004	0.644	0.003	0.20	0.28	0.16	0.23	0.16	0.23	0.15	0.21	0.11	0.15	0.09	0.12

SD-610	Tide Park	0	0	Avg. Net SL Change	2.78	5.33	4.69	3.45	2.10	1.84						
SD-610	314.556	0	229.886	1900			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
-50	3.421	0.011	0.737	0.003	0.11	0.36	0.20	0.69	0.18	0.61	0.13	0.45	0.08	0.27	0.07	0.24
-40	4.195	0.013	0.898	0.004	0.13	0.44	0.25	0.85	0.22	0.75	0.16	0.55	0.10	0.33	0.09	0.29
-30	4.407	0.014	0.862	0.004	0.12	0.46	0.24	0.89	0.21	0.78	0.15	0.58	0.09	0.35	0.08	0.31
-20	4.396	0.014	0.867	0.004	0.13	0.46	0.24	0.89	0.21	0.78	0.16	0.58	0.09	0.35	0.08	0.31
-10	4.367	0.014	0.877	0.004	0.13	0.46	0.24	0.88	0.21	0.78	0.16	0.57	0.10	0.35	0.08	0.30
0	4.338	0.014	0.885	0.004	0.13	0.46	0.24	0.88	0.22	0.77	0.16	0.57	0.10	0.34	0.08	0.30
10	4.309	0.014	0.894	0.004	0.13	0.45	0.25	0.87	0.22	0.77	0.16	0.56	0.10	0.34	0.09	0.30
20	4.217	0.013	0.904	0.004	0.13	0.44	0.25	0.85	0.22	0.75	0.16	0.55	0.10	0.34	0.09	0.29
30	4.099	0.013	0.943	0.004	0.14	0.43	0.26	0.83	0.23	0.73	0.17	0.54	0.10	0.33	0.09	0.29
40	3.936	0.013	0.991	0.004	0.14	0.42	0.27	0.80	0.24	0.70	0.18	0.52	0.11	0.31	0.09	0.27
50	3.616	0.011	0.948	0.004	0.14	0.38	0.26	0.73	0.23	0.64	0.17	0.47	0.10	0.29	0.09	0.25
60	3.316	0.011	0.920	0.004	0.13	0.35	0.25	0.67	0.22	0.59	0.16	0.43	0.10	0.26	0.09	0.23
70	3.109	0.010	0.907	0.004	0.13	0.33	0.25	0.63	0.22	0.55	0.16	0.41	0.10	0.25	0.09	0.22
80	2.953	0.009	0.877	0.004	0.13	0.31	0.24	0.60	0.21	0.52	0.16	0.39	0.10	0.23	0.08	0.21
90	2.784	0.009	0.827	0.004	0.12	0.29	0.23	0.56	0.20	0.49	0.15	0.36	0.09	0.22	0.08	0.19
100	2.621	0.008	0.784	0.003	0.11	0.28	0.22	0.53	0.19	0.47	0.14	0.34	0.09	0.21	0.07	0.18
110	2.469	0.008	0.734	0.003	0.11	0.26	0.20	0.50	0.18	0.44	0.13	0.32	0.08	0.20	0.07	0.17
120	2.396	0.008	0.675	0.003	0.10	0.25	0.19	0.48	0.16	0.43	0.12	0.31	0.07	0.19	0.06	0.17
130	2.346	0.007	0.644	0.003	0.09	0.25	0.18	0.47	0.16	0.42	0.12	0.31	0.07	0.19	0.06	0.16
140	2.29	0.007	0.618	0.003	0.09	0.24	0.17	0.46	0.15	0.41	0.11	0.30	0.07	0.18	0.06	0.16
150	2.348	0.007	0.645	0.003	0.09	0.25	0.18	0.47	0.16	0.42	0.12	0.31	0.07	0.19	0.06	0.16
160	2.247	0.007	0.594	0.003	0.09	0.24	0.16	0.45	0.14	0.40	0.11	0.29	0.06	0.18	0.06	0.16
170	2.203	0.007	0.652	0.003	0.09	0.23	0.18	0.45	0.16	0.39	0.12	0.29	0.07	0.18	0.06	0.15
180	2.102	0.007	0.599	0.003	0.09	0.22	0.17	0.42	0.15	0.37	0.11	0.28	0.07	0.17	0.06	0.15
190	1.984	0.006	0.537	0.002	0.08	0.21	0.15	0.40	0.13	0.35	0.10	0.26	0.06	0.16	0.05	0.14
200	1.868	0.006	0.483	0.002	0.07	0.20	0.13	0.38	0.12	0.33	0.09	0.24	0.05	0.15	0.05	0.13
210	1.777	0.006	0.460	0.002	0.07	0.19	0.13	0.36	0.11	0.32	0.08	0.23	0.05	0.14	0.04	0.12
220	1.744	0.006	0.479	0.002	0.07	0.18	0.13	0.35	0.12	0.31	0.09	0.23	0.05	0.14	0.05	0.12
230	1.801	0.006	0.566	0.002	0.08	0.19	0.16	0.36	0.14	0.32	0.10	0.24	0.06	0.14	0.05	0.13
240	1.876	0.006	0.664	0.003	0.10	0.20	0.18	0.38	0.16	0.33	0.12	0.25	0.07	0.15	0.06	0.13
250	1.945	0.006	0.745	0.003	0.11	0.21	0.21	0.39	0.18	0.35	0.13	0.25	0.08	0.15	0.07	0.14
260	2.002	0.006	0.811	0.004	0.12	0.21	0.22	0.40	0.20	0.36	0.15	0.26	0.09	0.16	0.08	0.14
270	2.177	0.007	0.988	0.004	0.14	0.23	0.27	0.44	0.24	0.39	0.18	0.28	0.11	0.17	0.09	0.15
280	2.352	0.007	1.169	0.005	0.17	0.25	0.32	0.48	0.28	0.42	0.21	0.31	0.13	0.19	0.11	0.16
290	2.489	0.008	1.344	0.006	0.19	0.26	0.37	0.50	0.33	0.44	0.24	0.33	0.15	0.20	0.13	0.17
300	2.573	0.008	1.471	0.006	0.21	0.27	0.41	0.52	0.36	0.46	0.26	0.34	0.16	0.20	0.14	0.18
310	2.556	0.008	1.470	0.006	0.21	0.27	0.41	0.52	0.36	0.45	0.26	0.33	0.16	0.20	0.14	0.18
320	2.499	0.008	1.444	0.006	0.21	0.26	0.40	0.51	0.35	0.44	0.26	0.33	0.16	0.20	0.14	0.17
330	2.523	0.008	1.539	0.007	0.22	0.27	0.43	0.51	0.37	0.45	0.28	0.33	0.17	0.20	0.15	0.18
340	2.276	0.007	1.414	0.006	0.20	0.24	0.39	0.46	0.34	0.40	0.25	0.30	0.15	0.18	0.13	0.16
350	2.118	0.007	1.374	0.006	0.20	0.22	0.38	0.43	0.33	0.38	0.25	0.28	0.15	0.17	0.13	0.15
360	2.01	0.006	1.295	0.006	0.19	0.21	0.36	0.41	0.31	0.36	0.23	0.26	0.14	0.16	0.12	0.14
370	2.181	0.007	1.460	0.006	0.21	0.23	0.40	0.44	0.35	0.39	0.26	0.29	0.16	0.17	0.14	0.15
380	2.282	0.007	1.529	0.007	0.22	0.24	0.42	0.46	0.37	0.41	0.27	0.30	0.17	0.18	0.15	0.16
390	2.576	0.008	1.885	0.008	0.27	0.27	0.52	0.52	0.46	0.46	0.34	0.34	0.21	0.20	0.18	0.18
400	2.778	0.009	2.073	0.009	0.30	0.29	0.57	0.56	0.50	0.49	0.37	0.36	0.23	0.22	0.20	0.19
410	2.168	0.007	1.602	0.007	0.23	0.23	0.44	0.44	0.39	0.39	0.29	0.28	0.17	0.17	0.15	0.15
420	1.395	0.004	1.055	0.005	0.15	0.15	0.29	0.28	0.26	0.25	0.19	0.18	0.11	0.11	0.10	0.10
430	1.892	0.006	1.556	0.007	0.22	0.20	0.43	0.38	0.38	0.34	0.28	0.25	0.17	0.15	0.15	0.13
440	1.562	0.005	1.113	0.005	0.16	0.16	0.31	0.32	0.27	0.28	0.20	0.20	0.12	0.12	0.11	0.11
450	2.061	0.007	1.524	0.007	0.22	0.22	0.42	0.42	0.37	0.37	0.27	0.27	0.17	0.16	0.15	0.14
460	2.514	0.008	1.886	0.008	0.27	0.27	0.52	0.51	0.46	0.45	0.34	0.33	0.21	0.20	0.18	0.18
470	2.322	0.007	1.717	0.007	0.25	0.24	0.47	0.47	0.42	0.41	0.31	0.30	0.19	0.18	0.16	0.16
480	2.092	0.007	1.496	0.007	0.22	0.22	0.41	0.42	0.36	0.37	0.27	0.27	0.16	0.17	0.14	0.15
490	1.656	0.005	1.154	0.005	0.17	0.17	0.32	0.33	0.28	0.29	0.21	0.22	0.13	0.13	0.11	0.12
500	1.848	0.006	1.531	0.007	0.22	0.19	0.42	0.37	0.37	0.33	0.27	0.24	0.17	0.15	0.15	0.13
510	1.485	0.005	1.397	0.006	0.20	0.16	0.39	0.30	0.34	0.26	0.25	0.19	0.15	0.12	0.13	0.10
520	0.971	0.003	1.077	0.005	0.16	0.10	0.30	0.20	0.26	0.17	0.19	0.13	0.12	0.08	0.10	0.07
530	1.324	0.004	1.389	0.006	0.20	0.14	0.38	0.27	0.34	0.24	0.25	0.17	0.15	0.11	0.13	0.09
540	1.008	0.003	1.020	0.004	0.15	0.11	0.28	0.20	0.25	0.18	0.18	0.13	0.11	0.08	0.10	0.07
550	1.047	0.003	1.002	0.004	0.14	0.11	0.28	0.21	0.24	0.19	0.18	0.14	0.11	0.08	0.10	0.07
560	0.746	0.002	0.722	0.003	0.10	0.08	0.20	0.15	0.18	0.13	0.13	0.10	0.08	0.06	0.07	0.05
570	1.18	0.004	1.290	0.006	0.19	0.12	0.36	0.24	0.31	0.21	0.23	0.15	0.14	0.09	0.12	0.08
580	0.911	0.003	1.072	0.005	0.15	0.10	0.30	0.18	0.26	0.16	0.19	0.12	0.12	0.07	0.10	0.06
590	0.859	0.003	0.966	0.004	0.14	0.09	0.27	0.17	0.23	0.15	0.17	0.11	0.11	0.07	0.09	0.06
600	0.733	0.002	0.933	0.004	0.13	0.08	0.26	0.15	0.23	0.13	0.17	0.10	0.10	0.06	0.09	0.05
610	0.981	0.003	1.248	0.005	0.18	0.10	0.35	0.20	0.30	0.17	0.22	0.13	0.14	0.08	0.12	0.07
620	1.392	0.004	1.575	0.007	0.23	0.15	0.44	0.28	0.38	0.25	0.28	0.18	0.17	0.11	0.15	0.10
630	1.265	0.004	1.115	0.005	0.16	0.13	0.31	0.26	0.27	0.22	0.20	0.17	0.12	0.10	0.11	0.09
640	1.099	0.003	0.786	0.003	0.11	0.12	0.22	0.22	0.19	0.20	0.14	0.14	0.09	0.09	0.07	0.08
650	2.601	0.008	2.434	0.011	0.35	0.27	0.67	0.53	0.59	0.46	0.44	0.34	0.26	0.21	0.23	0.18
660	2.111	0.007	1.977	0.009	0.29	0.22	0.55	0.43	0.48	0.38	0.35	0.28	0.22	0.17	0.19	0.15
670	1.962	0.006	1.784	0.008	0.26	0.21	0.49	0.40	0.43	0.35	0.32	0.26	0.19	0.16	0.17	0.14
680	1.628	0.005	1.691	0.007	0.24	0.17	0.47	0.33	0.41	0.29	0.30	0.21	0.18	0.13	0.16	0.11
690	1.843	0.006	1.763	0.008	0.25	0.19	0.49	0.37	0.43	0.33	0.32	0.24	0.19	0.15	0.17	0.13
700	1.465	0.005	1.539	0.007	0.22	0.15	0.43	0.30	0.37	0.26	0.28	0.19	0.17	0.12	0.15	0.10
710	1.327	0.004	1.402	0.006	0.20	0.14	0.39	0.27	0.34	0.24	0.25	0.17	0.15	0.11	0.13	0.09
720	1.477	0.005	1.497	0.007	0.22	0.16	0.41	0.30	0.36	0.26	0.27	0.19	0.16	0.12	0.14	0.10
730	1.534	0.005	1.515	0.007	0.22	0.16	0.42	0.31	0.37	0.27	0.27	0.20	0.16	0.12	0.14	0.11
740	1.396	0.004	1.368	0.006	0.20	0.15	0.38	0.28	0.33	0.25	0.24	0.18	0.15	0.11	0.13	0.10
750	1.095	0.003	1.174	0.005	0.17	0.12	0.32	0.22	0.29	0.19	0.21	0.14	0.13	0.09	0.11	0.08
760	0.92	0.003	1.080	0.005	0.16	0.10	0.30	0.19	0.26	0.16	0.19	0.12	0.12	0.07	0.10	0.06
770	1.148	0.004	1.022	0.004	0.15	0.12	0.28	0.23	0.25	0.20	0.18	0.15	0.11	0.09	0.10	0.08
780	0.852	0.003	0.862	0.004	0.12	0.09	0.24	0.17	0.21	0.15	0.15	0.11	0.09	0.07	0.08	0.06
790	0.992	0.003	0.943	0.004	0.14	0.10	0.26	0.20	0.23	0.18	0.17	0.13	0.10	0.08	0.09	0.07
800	1.06	0.003	0.950	0.004	0.14	0.11	0.26	0.21	0.23	0.19	0.17	0.14	0.10	0.08	0.09	0.07
810	0.985	0.003	0.835	0.004	0.12	0.10	0.23	0.20	0.20	0.18	0.15	0.13	0.09	0.08	0.08	0.07
820	1.046	0.003	0.874	0.004	0.13	0.11	0.24	0.21	0.21	0.19	0.16	0.14	0.10	0.08	0.08	0.07
830	1.109	0.004	0.907	0.004	0.13	0.12	0.25	0.22	0.22	0.20	0.16	0.15	0.10	0.09	0.09	0.08
840	1.194	0.004	0.989	0.004	0.14	0.13	0.27	0.24	0.24	0.21	0.18	0.16	0.11	0.09	0.09	0.08
850	1.178	0.004	0.992	0.004	0.14	0.12	0.27	0.24	0.24	0.21	0.18	0.15	0.11	0.09	0.09	0.08
860	1.377	0.004	1.230	0.005	0.18	0.15	0.34	0.28	0.30	0.24	0.22	0.18	0.13	0.11	0.12	0.10
870	1.819	0.006	1.669	0.007	0.24	0.19	0.46	0.37	0.41	0.32	0.30	0.24	0.18	0.14	0.16	0.13
880	2.025	0.006	1.841	0.008	0.27	0.21	0.51	0.41	0.45	0.36	0.33	0.27	0.20	0.16	0.18	0.14
890	1.811	0.006	1.696	0.007	0.24	0.19	0.47	0.37	0.41	0.32	0.30	0.24	0.18	0.14	0.16	0.13
900	1.422	0.005	1.485	0.006	0.21	0.15	0.41	0.29	0.36	0.25	0.27	0.19	0.16	0.11	0.14	0.10
910	1.583	0.005	1.676	0.007	0.24	0.17	0.46	0.32	0.41	0.28	0.30	0.21	0.18	0.13	0.16	0.11
920	1.37	0.004	1.536	0.007	0.22	0.14	0.42	0.28	0.37	0.24	0.28	0.18	0.17	0.11	0.15	0.10
930	1.474	0.005	1.587	0.007	0.23	0.16	0.44	0.30	0.39	0.26	0.28	0.19	0.17	0.12	0.15	0.10
940	1.539	0.005	1.569	0.007	0.23	0.16	0.43	0.31	0.38	0.27	0.28	0.20	0.17	0.12	0.15	0.11
950	1.641	0.005	1.579	0.007	0.23	0.17	0.44	0.33	0.38	0.29	0.28	0.21	0.17	0.13	0.15	0.11
960	1.549	0.005	1.458	0.006	0.21	0.16	0.40	0.31	0.35	0.28	0.26	0.20	0.16	0.12	0.14	0.11
970	1.349	0.004	1.220	0.005	0.18	0.14	0.34	0.27	0.30	0.24	0.22	0.18	0.13	0.11	0.12	0.09
980	1.196	0.004	1.009	0.004	0.15	0.13	0.28	0.24	0.25	0.21	0.18	0.16	0.11	0.10	0.10	0.08
990	1.234	0.004	1.064	0.005	0.15	0.13	0.29	0.25	0.26	0.22	0.19	0.16	0.12	0.10	0.10	0.09
1000	1.195	0.004	1.032	0.004	0.15	0.13	0.29	0.24	0.25	0.21	0.18	0.16	0.11	0.10	0.10	0.08
1010	1.181	0.004	1.015	0.004	0.15	0.12	0.28	0.24	0.25	0.21	0.18	0.15	0.11	0.09	0.10	0.08
1020	1.314	0.004	1.133	0.005	0.16	0.14	0.31	0.27	0.28	0.23	0.20	0.17	0.12	0.10	0.11	0.09
1030	1.435	0.005	1.221	0.005	0.18	0.15	0.34	0.29	0.30	0.25	0.22	0.19	0.13	0.11	0.12	0.10
1040	1.559	0.005	1.453	0.006	0.21	0.16	0.40	0.32	0.35	0.28	0.26	0.20	0.16	0.12	0.14	0.11
1050	1.205	0.004	1.184	0.005	0.17	0.13	0.33	0.24	0.29	0.21	0.21	0.16	0.13	0.10	0.11	0.08
1060	1.147	0.004	1.186	0.005	0.17	0.12	0.33	0.23	0.29	0.20	0.21	0.15	0.13	0.09	0.11	0.08
1070	1.169	0.004	1.173	0.005	0.17	0.12	0.32	0.24	0.29	0.21	0.21	0.15	0.13	0.09	0.11	0.08
1080	1.139	0.004	1.089	0.005	0.16	0.12	0.30	0.23	0.26	0.20	0.20	0.15	0.12	0.09	0.10	0.08
1090	1.081	0.003	0.942	0.004	0.14	0.11	0.26	0.22	0.23	0.19	0.17	0.14	0.10	0.09	0.09	0.08
1100	1.04	0.003	1.042	0.005	0.15	0.11	0.29	0.21	0.25	0.18	0.19	0.14	0.11	0.08	0.10	0.07
1110	0.677	0.002	0.852	0.004	0.12	0.07	0.24	0.14	0.21	0.12	0.15	0.09	0.09	0.05	0.08	0.05
1120	0.469	0.001	0.700	0.003	0.10	0.05	0.19	0.09	0.17	0.08	0.13	0.06	0.08	0.04	0.07	0.03
1130	0.557	0.002	0.854	0.004	0.12	0.06	0.24	0.11	0.21	0.10	0.15	0.07	0.09	0.04	0.08	0.04
1140	0.723	0.002	1.068	0.005	0.15	0.08	0.30	0.15	0.26	0.13	0.19	0.09	0.12	0.06	0.10	0.05
1150	0.656	0.002	0.918	0.004	0.13	0.07	0.25	0.13	0.22	0.12	0.16	0.09	0.10	0.05	0.09	0.05
1160	1.106	0.004	1.389	0.006	0.20	0.12	0.38	0.22	0.34	0.20	0.25	0.14	0.15	0.09	0.13	0.08
1170	1.104	0.004	1.435	0.006	0.21	0.12	0.40	0.22	0.35	0.20	0.26	0.14	0.16	0.09	0.14	0.08
1180	1.101	0.004	1.512	0.007	0.22	0.12	0.42	0.22	0.37	0.20	0.27	0.14	0.16	0.09	0.14	0.08
1190	0.96	0.003	1.373	0.006	0.20	0.10	0.38	0.19	0.33	0.17	0.25	0.13	0.15	0.08	0.13	0.07
1200	0.905	0.003	1.216	0.005	0.18	0.10	0.34	0.18	0.30	0.16	0.22	0.12	0.13	0.07	0.12	0.06
1210	0.726	0.002	0.924	0.004	0.13	0.08	0.26	0.15	0.22	0.13	0.17	0.10	0.10	0.06	0.09	0.05
1220	0.834	0.003	0.846	0.004	0.12	0.09	0.23	0.17	0.21	0.15	0.15	0.11	0.09	0.07	0.08	0.06
1230	0.946	0.003	0.903	0.004	0.13	0.10	0.25	0.19	0.22	0.17	0.16	0.12	0.10	0.08	0.09	0.07
1240	0.897	0.003	0.757	0.003	0.11	0.09	0.21	0.18	0.18	0.16	0.14	0.12	0.08	0.07	0.07	0.06
1250	0.875	0.003	0.662	0.003	0.10	0.09	0.18	0.18	0.16	0.16	0.12	0.11	0.07	0.07	0.06	0.06
1260	1.015	0.003	0.844	0.004	0.12	0.11	0.23	0.21	0.21	0.18	0.15	0.13	0.09	0.08	0.08	0.07
1270	0.727	0.002	0.651	0.003	0.09	0.08	0.18	0.15	0.16	0.13	0.12	0.10	0.07	0.06	0.06	0.05
1280	0.896	0.003	0.892	0.004	0.13	0.09	0.25	0.18	0.22	0.16	0.16	0.12	0.10	0.07	0.08	0.06
1290	0.821	0.003	0.822	0.004	0.12	0.09	0.23	0.17	0.20	0.15	0.15	0.11	0.09	0.07	0.08	0.06
1300	0.603	0.002	0.585	0.003	0.08	0.06	0.16	0.12	0.14	0.11	0.10	0.08	0.06	0.05	0.06	0.04
1310	0.548	0.002	0.452	0.002	0.07	0.06	0.12	0.11	0.11	0.10	0.08	0.07	0.05	0.04	0.04	0.04
1320	0.675	0.002	0.481	0.002	0.07	0.07	0.13	0.14	0.12	0.12	0.09	0.09	0.05	0.05	0.05	0.05
1330	0.926	0.003	0.770	0.003	0.11	0.10	0.21	0.19	0.19	0.16	0.14	0.12	0.08	0.07	0.07	0.06
1340	0.918	0.003	0.624	0.003	0.09	0.10	0.17	0.19	0.15	0.16	0.11	0.12	0.07	0.07	0.06	0.06
1350	0.947	0.003	0.635	0.003	0.09	0.10	0.18	0.19	0.15	0.17	0.11	0.12	0.07	0.08	0.06	0.07
1360	1.047	0.003	0.666	0.003	0.10	0.11	0.18	0.21	0.16	0.19	0.12	0.14	0.07	0.08	0.06	0.07
1370	0.831	0.003	0.510	0.002	0.07	0.09	0.14	0.17	0.12	0.15	0.09	0.11	0.06	0.07	0.05	0.06
1380	0.731	0.002	0.441	0.002	0.06	0.08	0.12	0.15	0.11	0.13	0.08	0.10	0.05	0.06	0.04	0.05
1390	0.615	0.002	0.380	0.002	0.05	0.06	0.11	0.12	0.09	0.11	0.07	0.08	0.04	0.05	0.04	0.04
1400	0.85	0.003	0.598	0.003	0.09	0.09	0.17	0.17	0.15	0.15	0.11	0.11	0.07	0.07	0.06	0.06
1410	1.051	0.003	0.833	0.004	0.12	0.11	0.23	0.21	0.20	0.19	0.15	0.14	0.09	0.08	0.08	0.07
1420	1.09	0.003	1.003	0.004	0.14	0.11	0.28	0.22	0.24	0.19	0.18	0.14	0.11	0.09	0.10	0.08
1430	0.917	0.003	0.941	0.004	0.14	0.10	0.26	0.19	0.23	0.16	0.17	0.12	0.10	0.07	0.09	0.06
1440	1.94	0.006	2.130	0.009	0.31	0.20	0.59	0.39	0.52	0.34	0.38	0.25	0.23	0.15	0.20	0.14
1450	2.469	0.008	2.775	0.012	0.40	0.26	0.77	0.50	0.67	0.44	0.50	0.32	0.30	0.20	0.26	0.17
1460	2.753	0.009	3.088	0.013	0.45	0.29	0.85	0.56	0.75	0.49	0.55	0.36	0.34	0.22	0.29	0.19
1470	2.98	0.009	3.254	0.014	0.47	0.31	0.90	0.60	0.79	0.53	0.58	0.39	0.35	0.24	0.31	0.21
1480	2.246	0.007	2.784	0.012	0.40	0.24	0.77	0.45	0.68	0.40	0.50	0.29	0.30	0.18	0.27	0.16
1490	1.104	0.004	1.759	0.008	0.25	0.12	0.49	0.22	0.43	0.20	0.31	0.14	0.19	0.09	0.17	0.08
1500	0.616	0.002	1.045	0.005	0.15	0.06	0.29	0.12	0.25	0.11	0.19	0.08	0.11	0.05	0.10	0.04
1510	0.809	0.003	1.042	0.005	0.15	0.09	0.29	0.16	0.25	0.14	0.19	0.11	0.11	0.06	0.10	0.06
1520	0.736	0.002	0.911	0.004	0.13	0.08	0.25	0.15	0.22	0.13	0.16	0.10	0.10	0.06	0.09	0.05
1530	0.517	0.002	0.563	0.002	0.08	0.05	0.16	0.10	0.14	0.09	0.10	0.07	0.06	0.04	0.05	0.04
1540	0.428	0.001	0.361	0.002	0.05	0.05	0.10	0.09	0.09	0.08	0.06	0.06	0.04	0.03	0.03	0.03
1550	0.748	0.002	0.478	0.002	0.07	0.08	0.13	0.15	0.12	0.13	0.09	0.10	0.05	0.06	0.05	0.05
1560	0.851	0.003	0.432	0.002	0.06	0.09	0.12	0.17	0.11	0.15	0.08	0.11	0.05	0.07	0.04	0.06
1570	1.082	0.003	0.635	0.003	0.09	0.11	0.18	0.22	0.15	0.19	0.11	0.14	0.07	0.09	0.06	0.08
1580	1.411	0.004	0.907	0.004	0.13	0.15	0.25	0.29	0.22	0.25	0.16	0.18	0.10	0.11	0.09	0.10
1590	1.791	0.006	1.840	0.008	0.27	0.19	0.51	0.36	0.45	0.32	0.33	0.23	0.20	0.14	0.18	0.12
1600	2.34	0.007	2.864	0.012	0.41	0.25	0.79	0.47	0.70	0.42	0.51	0.31	0.31	0.19	0.27	0.16
1610	2.256	0.007	2.943	0.013	0.42	0.24	0.81	0.46	0.72	0.40	0.53	0.30	0.32	0.18	0.28	0.16
1620	1.221	0.004	2.446	0.011	0.35	0.13	0.68	0.25	0.59	0.22	0.44	0.16	0.27	0.10	0.23	0.09
1630	0.977	0.003	1.995	0.009	0.29	0.10	0.55	0.20	0.49	0.17	0.36	0.13	0.22	0.08	0.19	0.07
1640	1.147	0.004	1.841	0.008	0.27	0.12	0.51	0.23	0.45	0.20	0.33	0.15	0.20	0.09	0.18	0.08
1650	1.037	0.003	1.755	0.008	0.25	0.11	0.49	0.21	0.43	0.18	0.31	0.14	0.19	0.08	0.17	0.07
1660	0.943	0.003	1.686	0.007	0.24	0.10	0.47	0.19	0.41	0.17	0.30	0.12	0.18	0.07	0.16	0.07
1670	1.049	0.003	1.464	0.006	0.21	0.11	0.40	0.21	0.36	0.19	0.26	0.14	0.16	0.08	0.14	0.07
1680	1.148	0.004	1.245	0.005	0.18	0.12	0.34	0.23	0.30	0.20	0.22	0.15	0.14	0.09	0.12	0.08
1690	0.832	0.003	0.779	0.003	0.11	0.09	0.22	0.17	0.19	0.15	0.14	0.11	0.08	0.07	0.07	0.06
1700	1.219	0.004	1.079	0.005	0.16	0.13	0.30	0.25	0.26	0.22	0.19	0.16	0.12	0.10	0.10	0.08
1710	2.045	0.007	1.975	0.009	0.28	0.22	0.55	0.41	0.48	0.36	0.35	0.27	0.21	0.16	0.19	0.14
1720	1.542	0.005	1.564	0.007	0.23	0.16	0.43	0.31	0.38	0.27	0.28	0.20	0.17	0.12	0.15	0.11
1730	1.368	0.004	1.221	0.005	0.18	0.14	0.34	0.28	0.30	0.24	0.22	0.18	0.13	0.11	0.12	0.10
1740	2.265	0.007	1.904	0.008	0.27	0.24	0.53	0.46	0.46	0.40	0.34	0.30	0.21	0.18	0.18	0.16
1750	1.12	0.004	0.804	0.003	0.12	0.12	0.22	0.23	0.20	0.20	0.14	0.15	0.09	0.09	0.08	0.08
1760	1.237	0.004	0.963	0.004	0.14	0.13	0.27	0.25	0.23	0.22	0.17	0.16	0.10	0.10	0.09	0.09
1770	1.754	0.006	1.557	0.007	0.22	0.18	0.43	0.35	0.38	0.31	0.28	0.23	0.17	0.14	0.15	0.12
1780	1.847	0.006	1.381	0.006	0.20	0.19	0.38	0.37	0.34	0.33	0.25	0.24	0.15	0.15	0.13	0.13
1790	1.946	0.006	1.743	0.008	0.25	0.21	0.48	0.39	0.42	0.35	0.31	0.25	0.19	0.15	0.17	0.14
1800	2.111	0.007	2.135	0.009	0.31	0.22	0.59	0.43	0.52	0.38	0.38	0.28	0.23	0.17	0.20	0.15
1810	1.619	0.005	1.594	0.007	0.23	0.17	0.44	0.33	0.39	0.29	0.29	0.21	0.17	0.13	0.15	0.11
1820	0.9	0.003	0.963	0.004	0.14	0.09	0.27	0.18	0.23	0.16	0.17	0.12	0.10	0.07	0.09	0.06
1830	0.668	0.002	0.686	0.003	0.10	0.07	0.19	0.14	0.17	0.12	0.12	0.09	0.07	0.05	0.07	0.05
1840	0.391	0.001	0.471	0.002	0.07	0.04	0.13	0.08	0.11	0.07	0.08	0.05	0.05	0.03	0.04	0.03
1850	0.514	0.002	0.523	0.002	0.08	0.05	0.14	0.10	0.13	0.09	0.09	0.07	0.06	0.04	0.05	0.04
1860	0.327	0.001	0.376	0.002	0.05	0.03	0.10	0.07	0.09	0.06	0.07	0.04	0.04	0.03	0.04	0.02
1870	0.261	0.001	0.330	0.001	0.05	0.03	0.09	0.05	0.08	0.05	0.06	0.03	0.04	0.02	0.03	0.02
1880	0.729	0.002	0.645	0.003	0.09	0.08	0.18	0.15	0.16	0.13	0.12	0.10	0.07	0.06	0.06	0.05
1890	1.148	0.004	0.948	0.004	0.14	0.12	0.26	0.23	0.23	0.20	0.17	0.15	0.10	0.09	0.09	0.08
1900	1.21	0.004	1.070	0.005	0.15	0.13	0.30	0.24	0.26	0.21	0.19	0.16	0.12	0.10	0.10	0.08

SD-620	Seaside Park	0	0	Avg. Net SL	4.23	5.18	3.31	0.83	2.69	-0.15						
SD-620	189.094	0	325.048	1935			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.089	0.000	0.028	0.000	0.00	0.02	0.01	0.03	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
10	1.827	0.010	2.419	0.007	0.38	0.49	0.46	0.60	0.29	0.38	0.07	0.10	0.24	0.31	0.00	0.00
20	2.564	0.014	3.709	0.011	0.58	0.68	0.70	0.84	0.45	0.53	0.11	0.13	0.37	0.43	0.00	0.00
30	2.032	0.011	2.911	0.009	0.45	0.54	0.55	0.66	0.35	0.42	0.09	0.11	0.29	0.34	0.00	0.00
40	1.262	0.007	1.482	0.005	0.23	0.34	0.28	0.41	0.18	0.26	0.04	0.07	0.15	0.21	0.00	0.00
50	1.173	0.006	0.884	0.003	0.14	0.31	0.17	0.38	0.11	0.24	0.03	0.06	0.09	0.20	0.00	0.00
60	1.447	0.008	1.371	0.004	0.21	0.39	0.26	0.47	0.17	0.30	0.04	0.08	0.14	0.25	0.00	0.00
70	2.315	0.012	2.136	0.007	0.33	0.62	0.41	0.76	0.26	0.48	0.06	0.12	0.21	0.39	0.00	0.00
80	2.205	0.012	1.785	0.005	0.28	0.59	0.34	0.72	0.22	0.46	0.05	0.11	0.18	0.37	0.00	0.00
90	2.725	0.014	2.384	0.007	0.37	0.73	0.45	0.89	0.29	0.57	0.07	0.14	0.23	0.46	0.00	0.00
100	3.193	0.017	2.978	0.009	0.46	0.85	0.57	1.04	0.36	0.67	0.09	0.17	0.29	0.54	0.00	0.00
110	2.709	0.014	2.635	0.008	0.41	0.72	0.50	0.88	0.32	0.57	0.08	0.14	0.26	0.46	0.00	0.00
120	2.446	0.013	2.297	0.007	0.36	0.65	0.44	0.80	0.28	0.51	0.07	0.13	0.23	0.41	0.00	0.00
130	2.217	0.012	2.051	0.006	0.32	0.59	0.39	0.72	0.25	0.46	0.06	0.12	0.20	0.38	0.00	0.00
140	2.079	0.011	1.828	0.006	0.28	0.55	0.35	0.68	0.22	0.43	0.06	0.11	0.18	0.35	0.00	0.00
150	1.997	0.011	1.633	0.005	0.25	0.53	0.31	0.65	0.20	0.42	0.05	0.10	0.16	0.34	0.00	0.00
160	1.931	0.010	1.478	0.005	0.23	0.52	0.28	0.63	0.18	0.40	0.04	0.10	0.15	0.33	0.00	0.00
170	1.869	0.010	1.394	0.004	0.22	0.50	0.26	0.61	0.17	0.39	0.04	0.10	0.14	0.32	0.00	0.00
180	1.810	0.010	1.324	0.004	0.21	0.48	0.25	0.59	0.16	0.38	0.04	0.09	0.13	0.31	0.00	0.00
190	1.785	0.009	1.303	0.004	0.20	0.48	0.25	0.58	0.16	0.37	0.04	0.09	0.13	0.30	0.00	0.00
200	1.766	0.009	1.280	0.004	0.20	0.47	0.24	0.58	0.16	0.37	0.04	0.09	0.13	0.30	0.00	0.00
210	1.751	0.009	1.270	0.004	0.20	0.47	0.24	0.57	0.15	0.37	0.04	0.09	0.13	0.30	0.00	0.00
220	1.741	0.009	1.289	0.004	0.20	0.46	0.24	0.57	0.16	0.36	0.04	0.09	0.13	0.29	0.00	0.00
230	1.734	0.009	1.309	0.004	0.20	0.46	0.25	0.57	0.16	0.36	0.04	0.09	0.13	0.29	0.00	0.00
240	1.747	0.009	1.349	0.004	0.21	0.47	0.26	0.57	0.16	0.36	0.04	0.09	0.13	0.30	0.00	0.00
250	1.772	0.009	1.426	0.004	0.22	0.47	0.27	0.58	0.17	0.37	0.04	0.09	0.14	0.30	0.00	0.00
260	1.827	0.010	1.497	0.005	0.23	0.49	0.28	0.60	0.18	0.38	0.05	0.10	0.15	0.31	0.00	0.00
270	1.896	0.010	1.562	0.005	0.24	0.51	0.30	0.62	0.19	0.40	0.05	0.10	0.15	0.32	0.00	0.00
280	1.953	0.010	1.636	0.005	0.25	0.52	0.31	0.64	0.20	0.41	0.05	0.10	0.16	0.33	0.00	0.00
290	2.005	0.011	1.716	0.005	0.27	0.53	0.33	0.65	0.21	0.42	0.05	0.10	0.17	0.34	0.00	0.00
300	2.055	0.011	1.796	0.006	0.28	0.55	0.34	0.67	0.22	0.43	0.05	0.11	0.18	0.35	0.00	0.00
310	2.098	0.011	1.858	0.006	0.29	0.56	0.35	0.68	0.23	0.44	0.06	0.11	0.18	0.36	0.00	0.00
320	2.144	0.011	1.899	0.006	0.29	0.57	0.36	0.70	0.23	0.45	0.06	0.11	0.19	0.36	0.00	0.00
330	2.188	0.012	1.920	0.006	0.30	0.58	0.36	0.71	0.23	0.46	0.06	0.11	0.19	0.37	0.00	0.00
340	2.227	0.012	1.933	0.006	0.30	0.59	0.37	0.73	0.23	0.46	0.06	0.12	0.19	0.38	0.00	0.00
350	2.273	0.012	1.904	0.006	0.30	0.61	0.36	0.74	0.23	0.47	0.06	0.12	0.19	0.39	0.00	0.00
360	2.322	0.012	1.867	0.006	0.29	0.62	0.35	0.76	0.23	0.48	0.06	0.12	0.18	0.39	0.00	0.00
370	2.369	0.013	1.837	0.006	0.29	0.63	0.35	0.77	0.22	0.49	0.06	0.12	0.18	0.40	0.00	0.00
380	2.427	0.013	1.805	0.006	0.28	0.65	0.34	0.79	0.22	0.51	0.05	0.13	0.18	0.41	0.00	0.00
390	2.483	0.013	1.773	0.005	0.28	0.66	0.34	0.81	0.22	0.52	0.05	0.13	0.17	0.42	0.00	0.00
400	2.533	0.013	1.904	0.006	0.30	0.68	0.36	0.83	0.23	0.53	0.06	0.13	0.19	0.43	0.00	0.00
410	2.581	0.014	2.035	0.006	0.32	0.69	0.39	0.84	0.25	0.54	0.06	0.13	0.20	0.44	0.00	0.00
420	2.624	0.014	2.167	0.007	0.34	0.70	0.41	0.86	0.26	0.55	0.07	0.14	0.21	0.44	0.00	0.00
430	2.648	0.014	2.268	0.007	0.35	0.71	0.43	0.86	0.28	0.55	0.07	0.14	0.22	0.45	0.00	0.00
440	2.605	0.014	2.307	0.007	0.36	0.69	0.44	0.85	0.28	0.54	0.07	0.14	0.23	0.44	0.00	0.00
450	2.547	0.013	2.322	0.007	0.36	0.68	0.44	0.83	0.28	0.53	0.07	0.13	0.23	0.43	0.00	0.00
460	2.492	0.013	2.315	0.007	0.36	0.66	0.44	0.81	0.28	0.52	0.07	0.13	0.23	0.42	0.00	0.00
470	2.439	0.013	2.305	0.007	0.36	0.65	0.44	0.80	0.28	0.51	0.07	0.13	0.23	0.41	0.00	0.00
480	2.369	0.013	2.295	0.007	0.36	0.63	0.44	0.77	0.28	0.49	0.07	0.12	0.23	0.40	0.00	0.00
490	2.287	0.012	2.292	0.007	0.36	0.61	0.44	0.75	0.28	0.48	0.07	0.12	0.23	0.39	0.00	0.00
500	2.204	0.012	2.302	0.007	0.36	0.59	0.44	0.72	0.28	0.46	0.07	0.11	0.23	0.37	0.00	0.00
510	2.125	0.011	2.314	0.007	0.36	0.57	0.44	0.69	0.28	0.44	0.07	0.11	0.23	0.36	0.00	0.00
520	2.046	0.011	2.333	0.007	0.36	0.55	0.44	0.67	0.28	0.43	0.07	0.11	0.23	0.35	0.00	0.00
530	1.991	0.011	2.368	0.007	0.37	0.53	0.45	0.65	0.29	0.42	0.07	0.10	0.23	0.34	0.00	0.00
540	1.935	0.010	2.405	0.007	0.37	0.52	0.46	0.63	0.29	0.40	0.07	0.10	0.24	0.33	0.00	0.00
550	1.867	0.010	2.444	0.008	0.38	0.50	0.46	0.61	0.30	0.39	0.07	0.10	0.24	0.32	0.00	0.00
560	1.775	0.009	2.468	0.008	0.38	0.47	0.47	0.58	0.30	0.37	0.07	0.09	0.24	0.30	0.00	0.00
570	1.672	0.009	2.487	0.008	0.39	0.45	0.47	0.55	0.30	0.35	0.08	0.09	0.25	0.28	0.00	0.00
580	1.573	0.008	2.496	0.008	0.39	0.42	0.47	0.51	0.30	0.33	0.08	0.08	0.25	0.27	0.00	0.00
590	1.476	0.008	2.513	0.008	0.39	0.39	0.48	0.48	0.31	0.31	0.08	0.08	0.25	0.25	0.00	0.00
600	1.350	0.007	2.498	0.008	0.39	0.36	0.47	0.44	0.30	0.28	0.08	0.07	0.25	0.23	0.00	0.00
610	1.205	0.006	2.468	0.008	0.38	0.32	0.47	0.39	0.30	0.25	0.07	0.06	0.24	0.20	0.00	0.00
620	1.079	0.006	2.439	0.008	0.38	0.29	0.46	0.35	0.30	0.23	0.07	0.06	0.24	0.18	0.00	0.00
630	0.998	0.005	2.415	0.007	0.37	0.27	0.46	0.33	0.29	0.21	0.07	0.05	0.24	0.17	0.00	0.00
640	1.032	0.005	2.551	0.008	0.40	0.28	0.48	0.34	0.31	0.22	0.08	0.05	0.25	0.17	0.00	0.00
650	1.058	0.006	2.686	0.008	0.42	0.28	0.51	0.35	0.33	0.22	0.08	0.06	0.26	0.18	0.00	0.00
660	1.039	0.005	2.764	0.009	0.43	0.28	0.52	0.34	0.34	0.22	0.08	0.05	0.27	0.18	0.00	0.00
670	1.007	0.005	2.816	0.009	0.44	0.27	0.53	0.33	0.34	0.21	0.09	0.05	0.28	0.17	0.00	0.00
680	1.009	0.005	2.868	0.009	0.45	0.27	0.54	0.33	0.35	0.21	0.09	0.05	0.28	0.17	0.00	0.00
690	1.076	0.006	3.006	0.009	0.47	0.29	0.57	0.35	0.36	0.22	0.09	0.06	0.30	0.18	0.00	0.00
700	1.204	0.006	3.245	0.010	0.50	0.32	0.62	0.39	0.39	0.25	0.10	0.06	0.32	0.20	0.00	0.00
710	1.429	0.008	3.562	0.011	0.55	0.38	0.68	0.47	0.43	0.30	0.11	0.07	0.35	0.24	0.00	0.00
720	1.614	0.009	3.746	0.012	0.58	0.43	0.71	0.53	0.45	0.34	0.11	0.08	0.37	0.27	0.00	0.00
730	1.635	0.009	3.792	0.012	0.59	0.44	0.72	0.53	0.46	0.34	0.11	0.09	0.37	0.28	0.00	0.00
740	1.595	0.008	3.795	0.012	0.59	0.43	0.72	0.52	0.46	0.33	0.12	0.08	0.37	0.27	0.00	0.00
750	1.388	0.007	3.643	0.011	0.57	0.37	0.69	0.45	0.44	0.29	0.11	0.07	0.36	0.24	0.00	0.00
760	1.249	0.007	3.606	0.011	0.56	0.33	0.68	0.41	0.44	0.26	0.11	0.07	0.36	0.21	0.00	0.00
770	1.142	0.006	3.567	0.011	0.55	0.30	0.68	0.37	0.43	0.24	0.11	0.06	0.35	0.19	0.00	0.00
780	1.113	0.006	3.500	0.011	0.54	0.30	0.66	0.36	0.42	0.23	0.11	0.06	0.34	0.19	0.00	0.00
790	1.069	0.006	3.424	0.011	0.53	0.29	0.65	0.35	0.42	0.22	0.10	0.06	0.34	0.18	0.00	0.00
800	0.982	0.005	3.317	0.010	0.51	0.26	0.63	0.32	0.40	0.20	0.10	0.05	0.33	0.17	0.00	0.00
810	1.024	0.005	3.377	0.010	0.52	0.27	0.64	0.33	0.41	0.21	0.10	0.05	0.33	0.17	0.00	0.00
820	1.091	0.006	3.483	0.011	0.54	0.29	0.66	0.36	0.42	0.23	0.11	0.06	0.34	0.18	0.00	0.00
830	1.142	0.006	3.526	0.011	0.55	0.30	0.67	0.37	0.43	0.24	0.11	0.06	0.35	0.19	0.00	0.00
840	1.120	0.006	3.362	0.010	0.52	0.30	0.64	0.37	0.41	0.23	0.10	0.06	0.33	0.19	0.00	0.00
850	1.089	0.006	3.217	0.010	0.50	0.29	0.61	0.36	0.39	0.23	0.10	0.06	0.32	0.18	0.00	0.00
860	1.033	0.005	3.117	0.010	0.48	0.28	0.59	0.34	0.38	0.22	0.09	0.05	0.31	0.17	0.00	0.00
870	0.943	0.005	2.979	0.009	0.46	0.25	0.57	0.31	0.36	0.20	0.09	0.05	0.29	0.16	0.00	0.00
880	0.875	0.005	2.958	0.009	0.46	0.23	0.56	0.29	0.36	0.18	0.09	0.05	0.29	0.15	0.00	0.00
890	0.727	0.004	2.943	0.009	0.46	0.19	0.56	0.24	0.36	0.15	0.09	0.04	0.29	0.12	0.00	0.00
900	0.613	0.003	2.927	0.009	0.45	0.16	0.56	0.20	0.36	0.13	0.09	0.03	0.29	0.10	0.00	0.00
910	0.673	0.004	3.005	0.009	0.47	0.18	0.57	0.22	0.36	0.14	0.09	0.04	0.30	0.11	0.00	0.00
920	0.676	0.004	3.019	0.009	0.47	0.18	0.57	0.22	0.37	0.14	0.09	0.04	0.30	0.11	0.00	0.00
930	0.694	0.004	3.091	0.010	0.48	0.19	0.59	0.23	0.38	0.14	0.09	0.04	0.30	0.12	0.00	0.00
940	0.638	0.003	3.116	0.010	0.48	0.17	0.59	0.21	0.38	0.13	0.09	0.03	0.31	0.11	0.00	0.00
950	0.558	0.003	3.076	0.009	0.48	0.15	0.58	0.18	0.37	0.12	0.09	0.03	0.30	0.09	0.00	0.00
960	0.513	0.003	2.824	0.009	0.44	0.14	0.54	0.17	0.34	0.11	0.09	0.03	0.28	0.09	0.00	0.00
970	0.465	0.002	2.540	0.008	0.39	0.12	0.48	0.15	0.31	0.10	0.08	0.02	0.25	0.08	0.00	0.00
980	0.433	0.002	2.284	0.007	0.35	0.12	0.43	0.14	0.28	0.09	0.07	0.02	0.23	0.07	0.00	0.00
990	0.430	0.002	2.202	0.007	0.34	0.11	0.42	0.14	0.27	0.09	0.07	0.02	0.22	0.07	0.00	0.00
1000	0.426	0.002	1.888	0.006	0.29	0.11	0.36	0.14	0.23	0.09	0.06	0.02	0.19	0.07	0.00	0.00
1010	0.423	0.002	1.694	0.005	0.26	0.11	0.32	0.14	0.21	0.09	0.05	0.02	0.17	0.07	0.00	0.00
1020	0.419	0.002	1.744	0.005	0.27	0.11	0.33	0.14	0.21	0.09	0.05	0.02	0.17	0.07	0.00	0.00
1030	0.416	0.002	1.685	0.005	0.26	0.11	0.32	0.14	0.20	0.09	0.05	0.02	0.17	0.07	0.00	0.00
1040	0.412	0.002	1.667	0.005	0.26	0.11	0.32	0.13	0.20	0.09	0.05	0.02	0.16	0.07	0.00	0.00
1050	0.409	0.002	1.649	0.005	0.26	0.11	0.31	0.13	0.20	0.09	0.05	0.02	0.16	0.07	0.00	0.00
1060	0.405	0.002	1.631	0.005	0.25	0.11	0.31	0.13	0.20	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1070	0.402	0.002	1.613	0.005	0.25	0.11	0.31	0.13	0.20	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1080	0.398	0.002	1.595	0.005	0.25	0.11	0.30	0.13	0.19	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1090	0.395	0.002	1.577	0.005	0.24	0.11	0.30	0.13	0.19	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1100	0.391	0.002	1.559	0.005	0.24	0.10	0.30	0.13	0.19	0.08	0.05	0.02	0.15	0.07	0.00	0.00
1110	0.388	0.002	1.541	0.005	0.24	0.10	0.29	0.13	0.19	0.08	0.05	0.02	0.15	0.07	0.00	0.00
1120	0.384	0.002	1.523	0.005	0.24	0.10	0.29	0.13	0.18	0.08	0.05	0.02	0.15	0.07	0.00	0.00
1130	0.381	0.002	1.505	0.005	0.23	0.10	0.29	0.12	0.18	0.08	0.05	0.02	0.15	0.06	0.00	0.00
1140	0.377	0.002	1.487	0.005	0.23	0.10	0.28	0.12	0.18	0.08	0.05	0.02	0.15	0.06	0.00	0.00
1150	0.374	0.002	1.469	0.005	0.23	0.10	0.28	0.12	0.18	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1160	0.370	0.002	1.451	0.004	0.23	0.10	0.28	0.12	0.18	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1170	0.367	0.002	1.433	0.004	0.22	0.10	0.27	0.12	0.17	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1180	0.363	0.002	1.415	0.004	0.22	0.10	0.27	0.12	0.17	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1190	0.360	0.002	1.397	0.004	0.22	0.10	0.27	0.12	0.17	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1200	0.356	0.002	1.379	0.004	0.21	0.09	0.26	0.12	0.17	0.07	0.04	0.02	0.14	0.06	0.00	0.00
1210	0.353	0.002	1.361	0.004	0.21	0.09	0.26	0.12	0.17	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1220	0.349	0.002	1.343	0.004	0.21	0.09	0.25	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1230	0.346	0.002	1.325	0.004	0.21	0.09	0.25	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1240	0.342	0.002	1.307	0.004	0.20	0.09	0.25	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1250	0.339	0.002	1.289	0.004	0.20	0.09	0.24	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1260	0.335	0.002	1.271	0.004	0.20	0.09	0.24	0.11	0.15	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1270	0.332	0.002	1.253	0.004	0.19	0.09	0.24	0.11	0.15	0.07	0.04	0.02	0.12	0.06	0.00	0.00
1280	0.328	0.002	1.235	0.004	0.19	0.09	0.23	0.11	0.15	0.07	0.04	0.02	0.12	0.06	0.00	0.00
1290	0.325	0.002	1.217	0.004	0.19	0.09	0.23	0.11	0.15	0.07	0.04	0.02	0.12	0.05	0.00	0.00
1300	0.321	0.002	1.199	0.004	0.19	0.09	0.23	0.10	0.15	0.07	0.04	0.02	0.12	0.05	0.00	0.00
1310	0.318	0.002	1.181	0.004	0.18	0.08	0.22	0.10	0.14	0.07	0.04	0.02	0.12	0.05	0.00	0.00
1320	0.314	0.002	1.163	0.004	0.18	0.08	0.22	0.10	0.14	0.07	0.04	0.02	0.11	0.05	0.00	0.00
1330	0.311	0.002	1.145	0.004	0.18	0.08	0.22	0.10	0.14	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1340	0.307	0.002	1.127	0.003	0.17	0.08	0.21	0.10	0.14	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1350	0.304	0.002	1.109	0.003	0.17	0.08	0.21	0.10	0.13	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1360	0.300	0.002	1.091	0.003	0.17	0.08	0.21	0.10	0.13	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1370	0.297	0.002	1.073	0.003	0.17	0.08	0.20	0.10	0.13	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1380	0.293	0.002	1.055	0.003	0.16	0.08	0.20	0.10	0.13	0.06	0.03	0.02	0.10	0.05	0.00	0.00
1390	0.290	0.002	1.037	0.003	0.16	0.08	0.20	0.09	0.13	0.06	0.03	0.02	0.10	0.05	0.00	0.00
1400	0.286	0.002	1.019	0.003	0.16	0.08	0.19	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1410	0.283	0.001	1.001	0.003	0.16	0.08	0.19	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1420	0.279	0.001	0.983	0.003	0.15	0.07	0.19	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1430	0.276	0.001	0.965	0.003	0.15	0.07	0.18	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1440	0.272	0.001	0.947	0.003	0.15	0.07	0.18	0.09	0.11	0.06	0.03	0.01	0.09	0.05	0.00	0.00
1450	0.269	0.001	0.929	0.003	0.14	0.07	0.18	0.09	0.11	0.06	0.03	0.01	0.09	0.05	0.00	0.00
1460	0.265	0.001	0.911	0.003	0.14	0.07	0.17	0.09	0.11	0.06	0.03	0.01	0.09	0.04	0.00	0.00
1470	0.262	0.001	0.893	0.003	0.14	0.07	0.17	0.09	0.11	0.05	0.03	0.01	0.09	0.04	0.00	0.00
1480	0.258	0.001	0.875	0.003	0.14	0.07	0.17	0.08	0.11	0.05	0.03	0.01	0.09	0.04	0.00	0.00
1490	0.255	0.001	0.857	0.003	0.13	0.07	0.16	0.08	0.10	0.05	0.03	0.01	0.08	0.04	0.00	0.00
1500	0.251	0.001	0.839	0.003	0.13	0.07	0.16	0.08	0.10	0.05	0.03	0.01	0.08	0.04	0.00	0.00
1510	0.248	0.001	0.821	0.003	0.13	0.07	0.16	0.08	0.10	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1520	0.244	0.001	0.803	0.002	0.12	0.07	0.15	0.08	0.10	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1530	0.241	0.001	0.785	0.002	0.12	0.06	0.15	0.08	0.10	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1540	0.237	0.001	0.767	0.002	0.12	0.06	0.15	0.08	0.09	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1550	0.234	0.001	0.749	0.002	0.12	0.06	0.14	0.08	0.09	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1560	0.230	0.001	0.731	0.002	0.11	0.06	0.14	0.08	0.09	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1570	0.227	0.001	0.713	0.002	0.11	0.06	0.14	0.07	0.09	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1580	0.223	0.001	0.695	0.002	0.11	0.06	0.13	0.07	0.08	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1590	0.220	0.001	0.677	0.002	0.11	0.06	0.13	0.07	0.08	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1600	0.216	0.001	0.659	0.002	0.10	0.06	0.13	0.07	0.08	0.05	0.02	0.01	0.06	0.04	0.00	0.00
1610	0.213	0.001	0.641	0.002	0.10	0.06	0.12	0.07	0.08	0.04	0.02	0.01	0.06	0.04	0.00	0.00
1620	0.209	0.001	0.623	0.002	0.10	0.06	0.12	0.07	0.08	0.04	0.02	0.01	0.06	0.04	0.00	0.00
1630	0.206	0.001	0.605	0.002	0.09	0.05	0.11	0.07	0.07	0.04	0.02	0.01	0.06	0.03	0.00	0.00
1640	0.202	0.001	0.587	0.002	0.09	0.05	0.11	0.07	0.07	0.04	0.02	0.01	0.06	0.03	0.00	0.00
1650	0.199	0.001	0.569	0.002	0.09	0.05	0.11	0.06	0.07	0.04	0.02	0.01	0.06	0.03	0.00	0.00
1660	0.195	0.001	0.551	0.002	0.09	0.05	0.10	0.06	0.07	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1670	0.192	0.001	0.533	0.002	0.08	0.05	0.10	0.06	0.06	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1680	0.188	0.001	0.515	0.002	0.08	0.05	0.10	0.06	0.06	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1690	0.185	0.001	0.497	0.002	0.08	0.05	0.09	0.06	0.06	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1700	0.181	0.001	0.479	0.001	0.07	0.05	0.09	0.06	0.06	0.04	0.01	0.01	0.05	0.03	0.00	0.00
1710	0.178	0.001	0.461	0.001	0.07	0.05	0.09	0.06	0.06	0.04	0.01	0.01	0.05	0.03	0.00	0.00
1720	0.174	0.001	0.443	0.001	0.07	0.05	0.08	0.06	0.05	0.04	0.01	0.01	0.04	0.03	0.00	0.00
1730	0.171	0.001	0.425	0.001	0.07	0.05	0.08	0.06	0.05	0.04	0.01	0.01	0.04	0.03	0.00	0.00
1740	0.167	0.001	0.407	0.001	0.06	0.04	0.08	0.05	0.05	0.03	0.01	0.01	0.04	0.03	0.00	0.00
1750	0.164	0.001	0.389	0.001	0.06	0.04	0.07	0.05	0.05	0.03	0.01	0.01	0.04	0.03	0.00	0.00
1760	0.160	0.001	0.371	0.001	0.06	0.04	0.07	0.05	0.05	0.03	0.01	0.01	0.04	0.03	0.00	0.00
1770	0.157	0.001	0.353	0.001	0.05	0.04	0.07	0.05	0.04	0.03	0.01	0.01	0.03	0.03	0.00	0.00
1780	0.153	0.001	0.335	0.001	0.05	0.04	0.06	0.05	0.04	0.03	0.01	0.01	0.03	0.03	0.00	0.00
1790	0.150	0.001	0.317	0.001	0.05	0.04	0.06	0.05	0.04	0.03	0.01	0.01	0.03	0.03	0.00	0.00
1800	0.146	0.001	0.299	0.001	0.05	0.04	0.06	0.05	0.04	0.03	0.01	0.01	0.03	0.02	0.00	0.00
1810	0.143	0.001	0.281	0.001	0.04	0.04	0.05	0.05	0.03	0.03	0.01	0.01	0.03	0.02	0.00	0.00
1820	0.139	0.001	0.263	0.001	0.04	0.04	0.05	0.05	0.03	0.03	0.01	0.01	0.03	0.02	0.00	0.00
1830	0.136	0.001	0.245	0.001	0.04	0.04	0.05	0.04	0.03	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1840	0.132	0.001	0.227	0.001	0.04	0.04	0.04	0.04	0.03	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1850	0.129	0.001	0.209	0.001	0.03	0.03	0.04	0.04	0.03	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1860	0.125	0.001	0.191	0.001	0.03	0.03	0.04	0.04	0.02	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1870	0.122	0.001	0.173	0.001	0.03	0.03	0.03	0.04	0.02	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1880	0.118	0.001	0.155	0.000	0.02	0.03	0.03	0.04	0.02	0.02	0.00	0.01	0.02	0.02	0.00	0.00
1890	0.115	0.001	0.137	0.000	0.02	0.03	0.03	0.04	0.02	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1900	0.111	0.001	0.119	0.000	0.02	0.03	0.02	0.04	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1910	0.108	0.001	0.101	0.000	0.02	0.03	0.02	0.04	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1920	0.104	0.001	0.083	0.000	0.01	0.03	0.02	0.03	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1930	0.101	0.001	0.065	0.000	0.01	0.03	0.01	0.03	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1940	0.097	0.001	0.047	0.000	0.01	0.03	0.01	0.03	0.01	0.02	0.00	0.01	0.00	0.02	0.00	0.00

SD-625	San Elijo	0	0	Avg. Net SL	9.29	4.32	1.05	-2.55	6.71	-2.35						
SD-625	278.039	0	308.566	1800			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.221	0.001	0.316	0.001	0.11	0.09	0.05	0.04	0.01	0.01	0.00	0.00	0.08	0.06	0.00	0.00
10	1.978	0.007	2.904	0.009	1.04	0.79	0.48	0.37	0.12	0.09	0.00	0.00	0.75	0.57	0.00	0.00
20	2.906	0.010	2.985	0.010	1.07	1.16	0.50	0.54	0.12	0.13	0.00	0.00	0.77	0.84	0.00	0.00
30	1.755	0.006	1.517	0.005	0.54	0.70	0.25	0.33	0.06	0.08	0.00	0.00	0.39	0.51	0.00	0.00
40	2.335	0.008	1.527	0.005	0.55	0.93	0.25	0.43	0.06	0.11	0.00	0.00	0.40	0.67	0.00	0.00
50	2.300	0.008	1.113	0.004	0.40	0.92	0.19	0.43	0.05	0.10	0.00	0.00	0.29	0.66	0.00	0.00
60	2.676	0.010	0.825	0.003	0.30	1.07	0.14	0.50	0.03	0.12	0.00	0.00	0.21	0.77	0.00	0.00
70	4.186	0.015	2.188	0.007	0.79	1.67	0.37	0.78	0.09	0.19	0.00	0.00	0.57	1.20	0.00	0.00
80	4.817	0.017	2.734	0.009	0.98	1.92	0.46	0.89	0.11	0.22	0.00	0.00	0.71	1.39	0.00	0.00
90	5.257	0.019	3.058	0.010	1.10	2.09	0.51	0.97	0.12	0.24	0.00	0.00	0.79	1.51	0.00	0.00
100	5.526	0.020	3.406	0.011	1.22	2.20	0.57	1.02	0.14	0.25	0.00	0.00	0.88	1.59	0.00	0.00
110	5.121	0.018	3.220	0.010	1.16	2.04	0.54	0.95	0.13	0.23	0.00	0.00	0.83	1.47	0.00	0.00
120	4.646	0.017	2.872	0.009	1.03	1.85	0.48	0.86	0.12	0.21	0.00	0.00	0.74	1.34	0.00	0.00
130	4.190	0.015	2.558	0.008	0.92	1.67	0.43	0.78	0.10	0.19	0.00	0.00	0.66	1.21	0.00	0.00
140	3.802	0.014	2.384	0.008	0.86	1.51	0.40	0.70	0.10	0.17	0.00	0.00	0.62	1.09	0.00	0.00
150	3.521	0.013	2.245	0.007	0.81	1.40	0.37	0.65	0.09	0.16	0.00	0.00	0.58	1.01	0.00	0.00
160	3.269	0.012	2.132	0.007	0.77	1.30	0.36	0.61	0.09	0.15	0.00	0.00	0.55	0.94	0.00	0.00
170	3.061	0.011	2.058	0.007	0.74	1.22	0.34	0.57	0.08	0.14	0.00	0.00	0.53	0.88	0.00	0.00
180	2.898	0.010	2.030	0.007	0.73	1.15	0.34	0.54	0.08	0.13	0.00	0.00	0.53	0.83	0.00	0.00
190	2.778	0.010	2.018	0.007	0.72	1.11	0.34	0.51	0.08	0.13	0.00	0.00	0.52	0.80	0.00	0.00
200	2.667	0.010	2.006	0.007	0.72	1.06	0.33	0.49	0.08	0.12	0.00	0.00	0.52	0.77	0.00	0.00
210	2.578	0.009	1.991	0.006	0.71	1.03	0.33	0.48	0.08	0.12	0.00	0.00	0.52	0.74	0.00	0.00
220	2.530	0.009	1.954	0.006	0.70	1.01	0.33	0.47	0.08	0.11	0.00	0.00	0.51	0.73	0.00	0.00
230	2.496	0.009	1.917	0.006	0.69	0.99	0.32	0.46	0.08	0.11	0.00	0.00	0.50	0.72	0.00	0.00
240	2.483	0.009	1.874	0.006	0.67	0.99	0.31	0.46	0.08	0.11	0.00	0.00	0.49	0.71	0.00	0.00
250	2.476	0.009	1.797	0.006	0.64	0.99	0.30	0.46	0.07	0.11	0.00	0.00	0.47	0.71	0.00	0.00
260	2.480	0.009	1.678	0.005	0.60	0.99	0.28	0.46	0.07	0.11	0.00	0.00	0.44	0.71	0.00	0.00
270	2.418	0.009	1.483	0.005	0.53	0.96	0.25	0.45	0.06	0.11	0.00	0.00	0.38	0.70	0.00	0.00
280	2.346	0.008	1.276	0.004	0.46	0.93	0.21	0.43	0.05	0.11	0.00	0.00	0.33	0.68	0.00	0.00
290	2.272	0.008	1.129	0.004	0.41	0.90	0.19	0.42	0.05	0.10	0.00	0.00	0.29	0.65	0.00	0.00
300	2.186	0.008	1.117	0.004	0.40	0.87	0.19	0.41	0.05	0.10	0.00	0.00	0.29	0.63	0.00	0.00
310	2.098	0.008	1.078	0.003	0.39	0.84	0.18	0.39	0.04	0.09	0.00	0.00	0.28	0.60	0.00	0.00
320	2.034	0.007	1.061	0.003	0.38	0.81	0.18	0.38	0.04	0.09	0.00	0.00	0.28	0.59	0.00	0.00
330	2.172	0.008	1.247	0.004	0.45	0.86	0.21	0.40	0.05	0.10	0.00	0.00	0.32	0.63	0.00	0.00
340	2.438	0.009	1.554	0.005	0.56	0.97	0.26	0.45	0.06	0.11	0.00	0.00	0.40	0.70	0.00	0.00
350	2.702	0.010	1.764	0.006	0.63	1.08	0.29	0.50	0.07	0.12	0.00	0.00	0.46	0.78	0.00	0.00
360	2.956	0.011	1.867	0.006	0.67	1.18	0.31	0.55	0.08	0.13	0.00	0.00	0.48	0.85	0.00	0.00
370	3.107	0.011	1.854	0.006	0.67	1.24	0.31	0.58	0.08	0.14	0.00	0.00	0.48	0.89	0.00	0.00
380	3.092	0.011	1.709	0.006	0.61	1.23	0.29	0.57	0.07	0.14	0.00	0.00	0.44	0.89	0.00	0.00
390	3.066	0.011	1.633	0.005	0.59	1.22	0.27	0.57	0.07	0.14	0.00	0.00	0.42	0.88	0.00	0.00
400	3.040	0.011	1.585	0.005	0.57	1.21	0.26	0.56	0.06	0.14	0.00	0.00	0.41	0.87	0.00	0.00
410	2.930	0.011	1.558	0.005	0.56	1.17	0.26	0.54	0.06	0.13	0.00	0.00	0.40	0.84	0.00	0.00
420	2.713	0.010	1.472	0.005	0.53	1.08	0.25	0.50	0.06	0.12	0.00	0.00	0.38	0.78	0.00	0.00
430	2.507	0.009	1.458	0.005	0.52	1.00	0.24	0.46	0.06	0.11	0.00	0.00	0.38	0.72	0.00	0.00
440	2.326	0.008	1.484	0.005	0.53	0.93	0.25	0.43	0.06	0.10	0.00	0.00	0.38	0.67	0.00	0.00
450	2.467	0.009	1.870	0.006	0.67	0.98	0.31	0.46	0.08	0.11	0.00	0.00	0.48	0.71	0.00	0.00
460	2.694	0.010	2.354	0.008	0.84	1.07	0.39	0.50	0.10	0.12	0.00	0.00	0.61	0.78	0.00	0.00
470	2.992	0.011	2.903	0.009	1.04	1.19	0.48	0.55	0.12	0.13	0.00	0.00	0.75	0.86	0.00	0.00
480	3.267	0.012	3.411	0.011	1.22	1.30	0.57	0.61	0.14	0.15	0.00	0.00	0.88	0.94	0.00	0.00
490	3.522	0.013	3.886	0.013	1.39	1.40	0.65	0.65	0.16	0.16	0.00	0.00	1.01	1.01	0.00	0.00
500	3.749	0.013	4.302	0.014	1.54	1.49	0.72	0.69	0.17	0.17	0.00	0.00	1.12	1.08	0.00	0.00
510	3.839	0.014	4.637	0.015	1.66	1.53	0.77	0.71	0.19	0.17	0.00	0.00	1.20	1.10	0.00	0.00
520	3.689	0.013	4.695	0.015	1.68	1.47	0.78	0.68	0.19	0.17	0.00	0.00	1.22	1.06	0.00	0.00
530	3.506	0.013	4.732	0.015	1.70	1.40	0.79	0.65	0.19	0.16	0.00	0.00	1.23	1.01	0.00	0.00
540	3.300	0.012	4.737	0.015	1.70	1.31	0.79	0.61	0.19	0.15	0.00	0.00	1.23	0.95	0.00	0.00
550	3.097	0.011	4.719	0.015	1.69	1.23	0.79	0.57	0.19	0.14	0.00	0.00	1.22	0.89	0.00	0.00
560	2.916	0.010	4.702	0.015	1.69	1.16	0.79	0.54	0.19	0.13	0.00	0.00	1.22	0.84	0.00	0.00
570	2.736	0.010	4.695	0.015	1.68	1.09	0.78	0.51	0.19	0.12	0.00	0.00	1.22	0.79	0.00	0.00
580	2.596	0.009	4.605	0.015	1.65	1.03	0.77	0.48	0.19	0.12	0.00	0.00	1.19	0.75	0.00	0.00
590	2.555	0.009	4.516	0.015	1.62	1.02	0.75	0.47	0.18	0.11	0.00	0.00	1.17	0.74	0.00	0.00
600	2.499	0.009	4.440	0.014	1.59	1.00	0.74	0.46	0.18	0.11	0.00	0.00	1.15	0.72	0.00	0.00
610	2.441	0.009	4.373	0.014	1.57	0.97	0.73	0.45	0.18	0.11	0.00	0.00	1.13	0.70	0.00	0.00
620	2.398	0.009	4.280	0.014	1.54	0.95	0.71	0.44	0.17	0.11	0.00	0.00	1.11	0.69	0.00	0.00
630	2.356	0.008	4.254	0.014	1.53	0.94	0.71	0.44	0.17	0.11	0.00	0.00	1.10	0.68	0.00	0.00
640	2.318	0.008	4.236	0.014	1.52	0.92	0.71	0.43	0.17	0.10	0.00	0.00	1.10	0.67	0.00	0.00
650	2.276	0.008	4.223	0.014	1.52	0.91	0.71	0.42	0.17	0.10	0.00	0.00	1.10	0.65	0.00	0.00
660	2.163	0.008	4.140	0.013	1.49	0.86	0.69	0.40	0.17	0.10	0.00	0.00	1.07	0.62	0.00	0.00
670	2.007	0.007	4.017	0.013	1.44	0.80	0.67	0.37	0.16	0.09	0.00	0.00	1.04	0.58	0.00	0.00
680	1.857	0.007	3.918	0.013	1.41	0.74	0.65	0.34	0.16	0.08	0.00	0.00	1.02	0.53	0.00	0.00
690	1.716	0.006	3.845	0.012	1.38	0.68	0.64	0.32	0.16	0.08	0.00	0.00	1.00	0.49	0.00	0.00
700	1.598	0.006	3.778	0.012	1.36	0.64	0.63	0.30	0.15	0.07	0.00	0.00	0.98	0.46	0.00	0.00
710	1.521	0.005	3.633	0.012	1.30	0.61	0.61	0.28	0.15	0.07	0.00	0.00	0.94	0.44	0.00	0.00
720	1.432	0.005	3.521	0.011	1.26	0.57	0.59	0.27	0.14	0.06	0.00	0.00	0.91	0.41	0.00	0.00
730	1.375	0.005	3.399	0.011	1.22	0.55	0.57	0.25	0.14	0.06	0.00	0.00	0.88	0.40	0.00	0.00
740	1.342	0.005	3.311	0.011	1.19	0.53	0.55	0.25	0.13	0.06	0.00	0.00	0.86	0.39	0.00	0.00
750	1.312	0.005	3.304	0.011	1.19	0.52	0.55	0.24	0.13	0.06	0.00	0.00	0.86	0.38	0.00	0.00
760	1.289	0.005	3.236	0.010	1.16	0.51	0.54	0.24	0.13	0.06	0.00	0.00	0.84	0.37	0.00	0.00
770	1.270	0.005	3.152	0.010	1.13	0.51	0.53	0.24	0.13	0.06	0.00	0.00	0.82	0.37	0.00	0.00
780	1.278	0.005	3.050	0.010	1.09	0.51	0.51	0.24	0.12	0.06	0.00	0.00	0.79	0.37	0.00	0.00
790	1.286	0.005	2.971	0.010	1.07	0.51	0.50	0.24	0.12	0.06	0.00	0.00	0.77	0.37	0.00	0.00
800	1.321	0.005	2.955	0.010	1.06	0.53	0.49	0.24	0.12	0.06	0.00	0.00	0.77	0.38	0.00	0.00
810	1.368	0.005	2.895	0.009	1.04	0.54	0.48	0.25	0.12	0.06	0.00	0.00	0.75	0.39	0.00	0.00
820	1.399	0.005	2.813	0.009	1.01	0.56	0.47	0.26	0.11	0.06	0.00	0.00	0.73	0.40	0.00	0.00
830	1.427	0.005	2.733	0.009	0.98	0.57	0.46	0.26	0.11	0.06	0.00	0.00	0.71	0.41	0.00	0.00
840	1.419	0.005	2.633	0.009	0.94	0.57	0.44	0.26	0.11	0.06	0.00	0.00	0.68	0.41	0.00	0.00
850	1.371	0.005	2.529	0.008	0.91	0.55	0.42	0.25	0.10	0.06	0.00	0.00	0.66	0.39	0.00	0.00
860	1.341	0.005	2.459	0.008	0.88	0.53	0.41	0.25	0.10	0.06	0.00	0.00	0.64	0.39	0.00	0.00
870	1.331	0.005	2.366	0.008	0.85	0.53	0.40	0.25	0.10	0.06	0.00	0.00	0.61	0.38	0.00	0.00
880	1.303	0.005	2.323	0.008	0.83	0.52	0.39	0.24	0.09	0.06	0.00	0.00	0.60	0.37	0.00	0.00
890	1.255	0.005	2.265	0.007	0.81	0.50	0.38	0.23	0.09	0.06	0.00	0.00	0.59	0.36	0.00	0.00
900	1.311	0.005	2.228	0.007	0.80	0.52	0.37	0.24	0.09	0.06	0.00	0.00	0.58	0.38	0.00	0.00
910	1.315	0.005	2.228	0.007	0.80	0.52	0.37	0.24	0.09	0.06	0.00	0.00	0.58	0.38	0.00	0.00
920	1.274	0.005	2.265	0.007	0.81	0.51	0.38	0.24	0.09	0.06	0.00	0.00	0.59	0.37	0.00	0.00
930	1.301	0.005	2.266	0.007	0.81	0.52	0.38	0.24	0.09	0.06	0.00	0.00	0.59	0.37	0.00	0.00
940	1.307	0.005	2.178	0.007	0.78	0.52	0.36	0.24	0.09	0.06	0.00	0.00	0.56	0.38	0.00	0.00
950	1.298	0.005	2.030	0.007	0.73	0.52	0.34	0.24	0.08	0.06	0.00	0.00	0.53	0.37	0.00	0.00
960	1.295	0.005	1.904	0.006	0.68	0.52	0.32	0.24	0.08	0.06	0.00	0.00	0.49	0.37	0.00	0.00
970	1.285	0.005	1.817	0.006	0.65	0.51	0.30	0.24	0.07	0.06	0.00	0.00	0.47	0.37	0.00	0.00
980	1.257	0.005	1.739	0.006	0.62	0.50	0.29	0.23	0.07	0.06	0.00	0.00	0.45	0.36	0.00	0.00
990	1.203	0.004	1.670	0.005	0.60	0.48	0.28	0.22	0.07	0.05	0.00	0.00	0.43	0.35	0.00	0.00
1000	1.164	0.004	1.622	0.005	0.58	0.46	0.27	0.22	0.07	0.05	0.00	0.00	0.42	0.33	0.00	0.00
1010	1.156	0.004	1.475	0.005	0.53	0.46	0.25	0.21	0.06	0.05	0.00	0.00	0.38	0.33	0.00	0.00
1020	1.122	0.004	1.318	0.004	0.47	0.45	0.22	0.21	0.05	0.05	0.00	0.00	0.34	0.32	0.00	0.00
1030	1.095	0.004	1.235	0.004	0.44	0.44	0.21	0.20	0.05	0.05	0.00	0.00	0.32	0.32	0.00	0.00
1040	1.091	0.004	1.156	0.004	0.41	0.43	0.19	0.20	0.05	0.05	0.00	0.00	0.30	0.31	0.00	0.00
1050	1.038	0.004	1.096	0.004	0.39	0.41	0.18	0.19	0.04	0.05	0.00	0.00	0.28	0.30	0.00	0.00
1060	0.968	0.003	1.034	0.003	0.37	0.39	0.17	0.18	0.04	0.04	0.00	0.00	0.27	0.28	0.00	0.00
1070	0.943	0.003	0.970	0.003	0.35	0.38	0.16	0.17	0.04	0.04	0.00	0.00	0.25	0.27	0.00	0.00
1080	0.931	0.003	0.940	0.003	0.34	0.37	0.16	0.17	0.04	0.04	0.00	0.00	0.24	0.27	0.00	0.00
1090	0.872	0.003	0.911	0.003	0.33	0.35	0.15	0.16	0.04	0.04	0.00	0.00	0.24	0.25	0.00	0.00
1100	0.827	0.003	0.893	0.003	0.32	0.33	0.15	0.15	0.04	0.04	0.00	0.00	0.23	0.24	0.00	0.00
1110	0.774	0.003	0.884	0.003	0.32	0.31	0.15	0.14	0.04	0.03	0.00	0.00	0.23	0.22	0.00	0.00
1120	0.772	0.003	0.908	0.003	0.33	0.31	0.15	0.14	0.04	0.03	0.00	0.00	0.24	0.22	0.00	0.00
1130	0.725	0.003	0.794	0.003	0.28	0.29	0.13	0.13	0.03	0.03	0.00	0.00	0.21	0.21	0.00	0.00
1140	0.669	0.002	0.724	0.002	0.26	0.27	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.19	0.00	0.00
1150	0.681	0.002	0.764	0.002	0.27	0.27	0.13	0.13	0.03	0.03	0.00	0.00	0.20	0.20	0.00	0.00
1160	0.671	0.002	0.753	0.002	0.27	0.27	0.13	0.12	0.03	0.03	0.00	0.00	0.20	0.19	0.00	0.00
1170	0.661	0.002	0.742	0.002	0.27	0.26	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.19	0.00	0.00
1180	0.651	0.002	0.731	0.002	0.26	0.26	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.19	0.00	0.00
1190	0.641	0.002	0.720	0.002	0.26	0.26	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.18	0.00	0.00
1200	0.631	0.002	0.709	0.002	0.25	0.25	0.12	0.12	0.03	0.03	0.00	0.00	0.18	0.18	0.00	0.00
1210	0.621	0.002	0.698	0.002	0.25	0.25	0.12	0.12	0.03	0.03	0.00	0.00	0.18	0.18	0.00	0.00
1220	0.611	0.002	0.687	0.002	0.25	0.24	0.11	0.11	0.03	0.03	0.00	0.00	0.18	0.18	0.00	0.00
1230	0.601	0.002	0.676	0.002	0.24	0.24	0.11	0.11	0.03	0.03	0.00	0.00	0.18	0.17	0.00	0.00
1240	0.591	0.002	0.665	0.002	0.24	0.24	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.17	0.00	0.00
1250	0.581	0.002	0.654	0.002	0.23	0.23	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.17	0.00	0.00
1260	0.571	0.002	0.643	0.002	0.23	0.23	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.16	0.00	0.00
1270	0.561	0.002	0.632	0.002	0.23	0.22	0.11	0.10	0.03	0.03	0.00	0.00	0.16	0.16	0.00	0.00
1280	0.551	0.002	0.621	0.002	0.22	0.22	0.10	0.10	0.03	0.02	0.00	0.00	0.16	0.16	0.00	0.00
1290	0.541	0.002	0.610	0.002	0.22	0.22	0.10	0.10	0.02	0.02	0.00	0.00	0.16	0.16	0.00	0.00
1300	0.531	0.002	0.599	0.002	0.21	0.21	0.10	0.10	0.02	0.02	0.00	0.00	0.16	0.15	0.00	0.00
1310	0.521	0.002	0.588	0.002	0.21	0.21	0.10	0.10	0.02	0.02	0.00	0.00	0.15	0.15	0.00	0.00
1320	0.511	0.002	0.577	0.002	0.21	0.20	0.10	0.09	0.02	0.02	0.00	0.00	0.15	0.15	0.00	0.00
1330	0.501	0.002	0.566	0.002	0.20	0.20	0.09	0.09	0.02	0.02	0.00	0.00	0.15	0.14	0.00	0.00
1340	0.491	0.002	0.555	0.002	0.20	0.20	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14	0.00	0.00
1350	0.481	0.002	0.544	0.002	0.20	0.19	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14	0.00	0.00
1360	0.471	0.002	0.533	0.002	0.19	0.19	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14	0.00	0.00
1370	0.461	0.002	0.522	0.002	0.19	0.18	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.13	0.00	0.00
1380	0.451	0.002	0.511	0.002	0.18	0.18	0.09	0.08	0.02	0.02	0.00	0.00	0.13	0.13	0.00	0.00
1390	0.441	0.002	0.500	0.002	0.18	0.18	0.08	0.08	0.02	0.02	0.00	0.00	0.13	0.13	0.00	0.00
1400	0.431	0.002	0.489	0.002	0.18	0.17	0.08	0.08	0.02	0.02	0.00	0.00	0.13	0.12	0.00	0.00
1410	0.421	0.002	0.478	0.002	0.17	0.17	0.08	0.08	0.02	0.02	0.00	0.00	0.12	0.12	0.00	0.00
1420	0.411	0.001	0.467	0.002	0.17	0.16	0.08	0.08	0.02	0.02	0.00	0.00	0.12	0.12	0.00	0.00
1430	0.401	0.001	0.456	0.001	0.16	0.16	0.08	0.07	0.02	0.02	0.00	0.00	0.12	0.12	0.00	0.00
1440	0.391	0.001	0.445	0.001	0.16	0.16	0.07	0.07	0.02	0.02	0.00	0.00	0.12	0.11	0.00	0.00
1450	0.381	0.001	0.434	0.001	0.16	0.15	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.11	0.00	0.00
1460	0.371	0.001	0.423	0.001	0.15	0.15	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.11	0.00	0.00
1470	0.361	0.001	0.412	0.001	0.15	0.14	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.10	0.00	0.00
1480	0.351	0.001	0.401	0.001	0.14	0.14	0.07	0.07	0.02	0.02	0.00	0.00	0.10	0.10	0.00	0.00
1490	0.341	0.001	0.390	0.001	0.14	0.14	0.07	0.06	0.02	0.02	0.00	0.00	0.10	0.10	0.00	0.00
1500	0.331	0.001	0.379	0.001	0.14	0.13	0.06	0.06	0.02	0.01	0.00	0.00	0.10	0.10	0.00	0.00
1510	0.321	0.001	0.368	0.001	0.13	0.13	0.06	0.06	0.01	0.01	0.00	0.00	0.10	0.09	0.00	0.00
1520	0.311	0.001	0.357	0.001	0.13	0.12	0.06	0.06	0.01	0.01	0.00	0.00	0.09	0.09	0.00	0.00
1530	0.301	0.001	0.346	0.001	0.12	0.12	0.06	0.06	0.01	0.01	0.00	0.00	0.09	0.09	0.00	0.00
1540	0.291	0.001	0.335	0.001	0.12	0.12	0.06	0.05	0.01	0.01	0.00	0.00	0.09	0.08	0.00	0.00
1550	0.281	0.001	0.324	0.001	0.12	0.11	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08	0.00	0.00
1560	0.271	0.001	0.313	0.001	0.11	0.11	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08	0.00	0.00
1570	0.261	0.001	0.302	0.001	0.11	0.10	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08	0.00	0.00
1580	0.251	0.001	0.291	0.001	0.10	0.10	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.07	0.00	0.00
1590	0.241	0.001	0.280	0.001	0.10	0.10	0.05	0.04	0.01	0.01	0.00	0.00	0.07	0.07	0.00	0.00
1600	0.231	0.001	0.269	0.001	0.10	0.09	0.04	0.04	0.01	0.01	0.00	0.00	0.07	0.07	0.00	0.00
1610	0.221	0.001	0.258	0.001	0.09	0.09	0.04	0.04	0.01	0.01	0.00	0.00	0.07	0.06	0.00	0.00
1620	0.211	0.001	0.247	0.001	0.09	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.06	0.00	0.00
1630	0.201	0.001	0.236	0.001	0.08	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.06	0.00	0.00
1640	0.191	0.001	0.225	0.001	0.08	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.05	0.00	0.00
1650	0.181	0.001	0.214	0.001	0.08	0.07	0.04	0.03	0.01	0.01	0.00	0.00	0.06	0.05	0.00	0.00
1660	0.171	0.001	0.203	0.001	0.07	0.07	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.05	0.00	0.00
1670	0.161	0.001	0.192	0.001	0.07	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.05	0.00	0.00
1680	0.151	0.001	0.181	0.001	0.06	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.04	0.00	0.00
1690	0.141	0.001	0.170	0.001	0.06	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.04	0.04	0.00	0.00
1700	0.131	0.000	0.159	0.001	0.06	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.04	0.04	0.00	0.00
1710	0.121	0.000	0.148	0.000	0.05	0.05	0.02	0.02	0.01	0.01	0.00	0.00	0.04	0.03	0.00	0.00
1720	0.111	0.000	0.137	0.000	0.05	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1730	0.101	0.000	0.126	0.000	0.05	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.03	0.03	0.00	0.00
1740	0.091	0.000	0.115	0.000	0.04	0.04	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00
1750	0.081	0.000	0.104	0.000	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1760	0.071	0.000	0.093	0.000	0.03	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1770	0.061	0.000	0.082	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1780	0.051	0.000	0.071	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1790	0.041	0.000	0.060	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1800	0.031	0.000	0.049	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00

SD-630	Cardiff	0	0	Avg. Net SL	5.40	2.81	0.24	-2.29	6.37	-0.46						
SD-630	513.913	0	488.544	1808			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	1.123	0.002	1.209	0.002	0.16	0.14	0.08	0.07	0.01	0.01	0.00	0.00	0.19	0.17	0.00	0.00
10	1.475	0.003	1.577	0.003	0.21	0.18	0.11	0.10	0.01	0.01	0.00	0.00	0.25	0.22	0.00	0.00
20	3.577	0.007	3.748	0.008	0.49	0.45	0.26	0.23	0.02	0.02	0.00	0.00	0.58	0.53	0.00	0.00
30	5.485	0.011	5.785	0.012	0.76	0.69	0.40	0.36	0.03	0.03	0.00	0.00	0.90	0.81	0.00	0.00
40	6.164	0.012	6.451	0.013	0.85	0.77	0.44	0.40	0.04	0.03	0.00	0.00	1.00	0.91	0.00	0.00
50	6.742	0.013	6.470	0.013	0.85	0.84	0.44	0.44	0.04	0.04	0.00	0.00	1.01	1.00	0.00	0.00
60	7.154	0.014	5.793	0.012	0.76	0.90	0.40	0.47	0.03	0.04	0.00	0.00	0.90	1.06	0.00	0.00
70	7.416	0.014	5.270	0.011	0.69	0.93	0.36	0.48	0.03	0.04	0.00	0.00	0.82	1.10	0.00	0.00
80	7.705	0.015	5.198	0.011	0.68	0.96	0.36	0.50	0.03	0.04	0.00	0.00	0.81	1.14	0.00	0.00
90	7.892	0.015	5.150	0.011	0.68	0.99	0.35	0.51	0.03	0.04	0.00	0.00	0.80	1.17	0.00	0.00
100	8.461	0.016	5.535	0.011	0.73	1.06	0.38	0.55	0.03	0.05	0.00	0.00	0.86	1.25	0.00	0.00
110	9.379	0.018	6.359	0.013	0.84	1.17	0.44	0.61	0.04	0.05	0.00	0.00	0.99	1.39	0.00	0.00
120	9.517	0.019	6.490	0.013	0.85	1.19	0.44	0.62	0.04	0.05	0.00	0.00	1.01	1.41	0.00	0.00
130	9.208	0.018	6.186	0.013	0.81	1.15	0.42	0.60	0.04	0.05	0.00	0.00	0.96	1.36	0.00	0.00
140	8.831	0.017	5.932	0.012	0.78	1.11	0.41	0.58	0.03	0.05	0.00	0.00	0.92	1.30	0.00	0.00
150	8.367	0.016	5.742	0.012	0.76	1.05	0.39	0.55	0.03	0.05	0.00	0.00	0.89	1.24	0.00	0.00
160	7.888	0.015	5.569	0.011	0.73	0.99	0.38	0.51	0.03	0.04	0.00	0.00	0.87	1.17	0.00	0.00
170	7.344	0.014	5.232	0.011	0.69	0.92	0.36	0.48	0.03	0.04	0.00	0.00	0.81	1.08	0.00	0.00
180	6.820	0.013	4.804	0.010	0.63	0.85	0.33	0.44	0.03	0.04	0.00	0.00	0.75	1.01	0.00	0.00
190	6.470	0.013	4.479	0.009	0.59	0.81	0.31	0.42	0.03	0.04	0.00	0.00	0.70	0.96	0.00	0.00
200	6.488	0.013	4.555	0.009	0.60	0.81	0.31	0.42	0.03	0.04	0.00	0.00	0.71	0.96	0.00	0.00
210	6.673	0.013	4.851	0.010	0.64	0.84	0.33	0.43	0.03	0.04	0.00	0.00	0.75	0.99	0.00	0.00
220	6.690	0.013	4.944	0.010	0.65	0.84	0.34	0.44	0.03	0.04	0.00	0.00	0.77	0.99	0.00	0.00
230	6.557	0.013	4.896	0.010	0.64	0.82	0.34	0.43	0.03	0.04	0.00	0.00	0.76	0.97	0.00	0.00
240	6.399	0.012	4.831	0.010	0.64	0.80	0.33	0.42	0.03	0.04	0.00	0.00	0.75	0.95	0.00	0.00
250	6.244	0.012	4.760	0.010	0.63	0.78	0.33	0.41	0.03	0.03	0.00	0.00	0.74	0.92	0.00	0.00
260	5.990	0.012	4.599	0.009	0.61	0.75	0.32	0.39	0.03	0.03	0.00	0.00	0.71	0.88	0.00	0.00
270	5.685	0.011	4.385	0.009	0.58	0.71	0.30	0.37	0.03	0.03	0.00	0.00	0.68	0.84	0.00	0.00
280	5.389	0.010	4.132	0.008	0.54	0.67	0.28	0.35	0.02	0.03	0.00	0.00	0.64	0.80	0.00	0.00
290	5.105	0.010	3.844	0.008	0.51	0.64	0.26	0.33	0.02	0.03	0.00	0.00	0.60	0.75	0.00	0.00
300	4.841	0.009	3.547	0.007	0.47	0.61	0.24	0.32	0.02	0.03	0.00	0.00	0.55	0.72	0.00	0.00
310	4.759	0.009	3.417	0.007	0.45	0.60	0.23	0.31	0.02	0.03	0.00	0.00	0.53	0.70	0.00	0.00
320	4.795	0.009	3.403	0.007	0.45	0.60	0.23	0.31	0.02	0.03	0.00	0.00	0.53	0.71	0.00	0.00
330	4.892	0.010	3.454	0.007	0.45	0.61	0.24	0.32	0.02	0.03	0.00	0.00	0.54	0.72	0.00	0.00
340	5.029	0.010	3.538	0.007	0.47	0.63	0.24	0.33	0.02	0.03	0.00	0.00	0.55	0.74	0.00	0.00
350	5.179	0.010	3.676	0.008	0.48	0.65	0.25	0.34	0.02	0.03	0.00	0.00	0.57	0.77	0.00	0.00
360	5.312	0.010	3.840	0.008	0.51	0.67	0.26	0.35	0.02	0.03	0.00	0.00	0.60	0.78	0.00	0.00
370	5.414	0.011	3.975	0.008	0.52	0.68	0.27	0.35	0.02	0.03	0.00	0.00	0.62	0.80	0.00	0.00
380	5.510	0.011	4.087	0.008	0.54	0.69	0.28	0.36	0.02	0.03	0.00	0.00	0.64	0.81	0.00	0.00
390	5.606	0.011	4.198	0.009	0.55	0.70	0.29	0.37	0.02	0.03	0.00	0.00	0.65	0.83	0.00	0.00
400	5.679	0.011	4.327	0.009	0.57	0.71	0.30	0.37	0.03	0.03	0.00	0.00	0.67	0.84	0.00	0.00
410	5.744	0.011	4.433	0.009	0.58	0.72	0.30	0.37	0.03	0.03	0.00	0.00	0.69	0.85	0.00	0.00
420	5.829	0.011	4.521	0.009	0.60	0.73	0.31	0.38	0.03	0.03	0.00	0.00	0.70	0.86	0.00	0.00
430	5.971	0.012	4.647	0.010	0.61	0.75	0.32	0.39	0.03	0.03	0.00	0.00	0.72	0.88	0.00	0.00
440	6.134	0.012	4.784	0.010	0.63	0.77	0.33	0.40	0.03	0.03	0.00	0.00	0.74	0.91	0.00	0.00
450	6.276	0.012	4.918	0.010	0.65	0.79	0.34	0.41	0.03	0.04	0.00	0.00	0.76	0.93	0.00	0.00
460	6.410	0.012	5.044	0.010	0.66	0.80	0.35	0.42	0.03	0.04	0.00	0.00	0.78	0.95	0.00	0.00
470	6.544	0.013	5.128	0.010	0.68	0.82	0.35	0.43	0.03	0.04	0.00	0.00	0.80	0.97	0.00	0.00
480	6.668	0.013	5.213	0.011	0.69	0.83	0.36	0.43	0.03	0.04	0.00	0.00	0.81	0.98	0.00	0.00
490	6.699	0.013	5.297	0.011	0.70	0.84	0.36	0.44	0.03	0.04	0.00	0.00	0.82	0.99	0.00	0.00
500	6.640	0.013	5.338	0.011	0.70	0.83	0.37	0.43	0.03	0.04	0.00	0.00	0.83	0.98	0.00	0.00
510	6.565	0.013	5.364	0.011	0.71	0.82	0.37	0.43	0.03	0.04	0.00	0.00	0.83	0.97	0.00	0.00
520	6.480	0.013	5.387	0.011	0.71	0.81	0.37	0.42	0.03	0.04	0.00	0.00	0.84	0.96	0.00	0.00
530	5.845	0.011	4.897	0.010	0.64	0.73	0.34	0.38	0.03	0.03	0.00	0.00	0.76	0.86	0.00	0.00
540	5.470	0.011	4.677	0.010	0.62	0.68	0.32	0.36	0.03	0.03	0.00	0.00	0.73	0.81	0.00	0.00
550	5.378	0.010	4.746	0.010	0.63	0.67	0.33	0.35	0.03	0.03	0.00	0.00	0.74	0.79	0.00	0.00
560	5.247	0.010	4.806	0.010	0.63	0.66	0.33	0.34	0.03	0.03	0.00	0.00	0.75	0.78	0.00	0.00
570	5.101	0.010	4.866	0.010	0.64	0.64	0.33	0.33	0.03	0.03	0.00	0.00	0.76	0.75	0.00	0.00
580	4.948	0.010	4.921	0.010	0.65	0.62	0.34	0.32	0.03	0.03	0.00	0.00	0.76	0.73	0.00	0.00
590	4.777	0.009	4.953	0.010	0.65	0.60	0.34	0.31	0.03	0.03	0.00	0.00	0.77	0.71	0.00	0.00
600	4.626	0.009	4.967	0.010	0.65	0.58	0.34	0.30	0.03	0.03	0.00	0.00	0.77	0.68	0.00	0.00
610	4.481	0.009	4.956	0.010	0.65	0.56	0.34	0.29	0.03	0.03	0.00	0.00	0.77	0.66	0.00	0.00
620	4.357	0.008	4.924	0.010	0.65	0.55	0.34	0.28	0.03	0.02	0.00	0.00	0.77	0.64	0.00	0.00
630	4.260	0.008	4.854	0.010	0.64	0.53	0.33	0.28	0.03	0.02	0.00	0.00	0.75	0.63	0.00	0.00
640	4.129	0.008	4.755	0.010	0.63	0.52	0.33	0.27	0.03	0.02	0.00	0.00	0.74	0.61	0.00	0.00
650	3.956	0.008	4.656	0.010	0.61	0.50	0.32	0.26	0.03	0.02	0.00	0.00	0.72	0.58	0.00	0.00
660	3.752	0.007	4.561	0.009	0.60	0.47	0.31	0.24	0.03	0.02	0.00	0.00	0.71	0.55	0.00	0.00
670	3.520	0.007	4.452	0.009	0.59	0.44	0.31	0.23	0.03	0.02	0.00	0.00	0.69	0.52	0.00	0.00
680	3.289	0.006	4.327	0.009	0.57	0.41	0.30	0.21	0.03	0.02	0.00	0.00	0.67	0.49	0.00	0.00
690	3.098	0.006	4.219	0.009	0.56	0.39	0.29	0.20	0.02	0.02	0.00	0.00	0.66	0.46	0.00	0.00
700	2.865	0.006	4.039	0.008	0.53	0.36	0.28	0.19	0.02	0.02	0.00	0.00	0.63	0.42	0.00	0.00
710	2.734	0.005	3.924	0.008	0.52	0.34	0.27	0.18	0.02	0.02	0.00	0.00	0.61	0.40	0.00	0.00
720	2.659	0.005	3.866	0.008	0.51	0.33	0.26	0.17	0.02	0.01	0.00	0.00	0.60	0.39	0.00	0.00
730	2.546	0.005	3.815	0.008	0.50	0.32	0.26	0.17	0.02	0.01	0.00	0.00	0.59	0.38	0.00	0.00
740	2.443	0.005	3.801	0.008	0.50	0.31	0.26	0.16	0.02	0.01	0.00	0.00	0.59	0.36	0.00	0.00
750	2.358	0.005	3.785	0.008	0.50	0.30	0.26	0.15	0.02	0.01	0.00	0.00	0.59	0.35	0.00	0.00
760	2.247	0.004	3.753	0.008	0.49	0.28	0.26	0.15	0.02	0.01	0.00	0.00	0.58	0.33	0.00	0.00
770	2.216	0.004	3.717	0.008	0.49	0.28	0.25	0.14	0.02	0.01	0.00	0.00	0.58	0.33	0.00	0.00
780	2.267	0.004	3.686	0.008	0.49	0.28	0.25	0.15	0.02	0.01	0.00	0.00	0.57	0.33	0.00	0.00
790	2.315	0.005	3.689	0.008	0.49	0.29	0.25	0.15	0.02	0.01	0.00	0.00	0.57	0.34	0.00	0.00
800	2.307	0.004	3.645	0.007	0.48	0.29	0.25	0.15	0.02	0.01	0.00	0.00	0.57	0.34	0.00	0.00
810	2.202	0.004	3.530	0.007	0.46	0.28	0.24	0.14	0.02	0.01	0.00	0.00	0.55	0.33	0.00	0.00
820	2.133	0.004	3.384	0.007	0.45	0.27	0.23	0.14	0.02	0.01	0.00	0.00	0.53	0.32	0.00	0.00
830	2.113	0.004	3.268	0.007	0.43	0.26	0.22	0.14	0.02	0.01	0.00	0.00	0.51	0.31	0.00	0.00
840	2.072	0.004	3.173	0.006	0.42	0.26	0.22	0.13	0.02	0.01	0.00	0.00	0.49	0.31	0.00	0.00
850	2.009	0.004	3.063	0.006	0.40	0.25	0.21	0.13	0.02	0.01	0.00	0.00	0.48	0.30	0.00	0.00
860	1.994	0.004	3.045	0.006	0.40	0.25	0.21	0.13	0.02	0.01	0.00	0.00	0.47	0.29	0.00	0.00
870	2.048	0.004	3.125	0.006	0.41	0.26	0.21	0.13	0.02	0.01	0.00	0.00	0.49	0.30	0.00	0.00
880	2.113	0.004	3.197	0.007	0.42	0.26	0.22	0.14	0.02	0.01	0.00	0.00	0.50	0.31	0.00	0.00
890	2.171	0.004	3.252	0.007	0.43	0.27	0.22	0.14	0.02	0.01	0.00	0.00	0.51	0.32	0.00	0.00
900	2.191	0.004	3.246	0.007	0.43	0.27	0.22	0.14	0.02	0.01	0.00	0.00	0.50	0.32	0.00	0.00
910	2.163	0.004	3.170	0.006	0.42	0.27	0.22	0.14	0.02	0.01	0.00	0.00	0.49	0.32	0.00	0.00
920	2.119	0.004	3.071	0.006	0.40	0.27	0.21	0.14	0.02	0.01	0.00	0.00	0.48	0.31	0.00	0.00
930	2.084	0.004	2.977	0.006	0.39	0.26	0.20	0.14	0.02	0.01	0.00	0.00	0.46	0.31	0.00	0.00
940	2.042	0.004	2.865	0.006	0.38	0.26	0.20	0.13	0.02	0.01	0.00	0.00	0.45	0.30	0.00	0.00
950	1.962	0.004	2.742	0.006	0.36	0.25	0.19	0.13	0.02	0.01	0.00	0.00	0.43	0.29	0.00	0.00
960	1.890	0.004	2.634	0.005	0.35	0.24	0.18	0.12	0.02	0.01	0.00	0.00	0.41	0.28	0.00	0.00
970	1.826	0.004	2.570	0.005	0.34	0.23	0.18	0.12	0.02	0.01	0.00	0.00	0.40	0.27	0.00	0.00
980	1.740	0.003	2.524	0.005	0.33	0.22	0.17	0.11	0.01	0.01	0.00	0.00	0.39	0.26	0.00	0.00
990	1.651	0.003	2.470	0.005	0.33	0.21	0.17	0.11	0.01	0.01	0.00	0.00	0.38	0.24	0.00	0.00
1000	1.575	0.003	2.409	0.005	0.32	0.20	0.17	0.10	0.01	0.01	0.00	0.00	0.37	0.23	0.00	0.00
1010	1.512	0.003	2.346	0.005	0.31	0.19	0.16	0.10	0.01	0.01	0.00	0.00	0.36	0.22	0.00	0.00
1020	1.463	0.003	2.269	0.005	0.30	0.18	0.16	0.10	0.01	0.01	0.00	0.00	0.35	0.22	0.00	0.00
1030	1.413	0.003	2.190	0.004	0.29	0.18	0.15	0.09	0.01	0.01	0.00	0.00	0.34	0.21	0.00	0.00
1040	1.353	0.003	2.125	0.004	0.28	0.17	0.15	0.09	0.01	0.01	0.00	0.00	0.33	0.20	0.00	0.00
1050	1.331	0.003	2.078	0.004	0.27	0.17	0.14	0.09	0.01	0.01	0.00	0.00	0.32	0.20	0.00	0.00
1060	1.287	0.003	2.004	0.004	0.26	0.16	0.14	0.08	0.01	0.01	0.00	0.00	0.31	0.19	0.00	0.00
1070	1.170	0.002	1.893	0.004	0.25	0.15	0.13	0.08	0.01	0.01	0.00	0.00	0.29	0.17	0.00	0.00
1080	1.079	0.002	1.805	0.004	0.24	0.14	0.12	0.07	0.01	0.01	0.00	0.00	0.28	0.16	0.00	0.00
1090	1.053	0.002	1.701	0.003	0.22	0.13	0.12	0.07	0.01	0.01	0.00	0.00	0.26	0.16	0.00	0.00
1100	1.050	0.002	1.609	0.003	0.21	0.13	0.11	0.07	0.01	0.01	0.00	0.00	0.25	0.16	0.00	0.00
1110	1.033	0.002	1.551	0.003	0.20	0.13	0.11	0.07	0.01	0.01	0.00	0.00	0.24	0.15	0.00	0.00
1120	0.963	0.002	1.466	0.003	0.19	0.12	0.10	0.06	0.01	0.01	0.00	0.00	0.23	0.14	0.00	0.00
1130	0.912	0.002	1.385	0.003	0.18	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.22	0.13	0.00	0.00
1140	0.907	0.002	1.305	0.003	0.17	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.20	0.13	0.00	0.00
1150	0.856	0.002	1.255	0.003	0.17	0.11	0.09	0.06	0.01	0.00	0.00	0.00	0.20	0.13	0.00	0.00
1160	0.795	0.002	1.234	0.003	0.16	0.10	0.08	0.05	0.01	0.00	0.00	0.00	0.19	0.12	0.00	0.00
1170	0.734	0.001	1.189	0.002	0.16	0.09	0.08	0.05	0.01	0.00	0.00	0.00	0.18	0.11	0.00	0.00
1180	0.674	0.001	1.078	0.002	0.14	0.08	0.07	0.04	0.01	0.00	0.00	0.00	0.17	0.10	0.00	0.00
1190	0.638	0.001	0.965	0.002	0.13	0.08	0.07	0.04	0.01	0.00	0.00	0.00	0.15	0.09	0.00	0.00
1200	0.614	0.001	0.905	0.002	0.12	0.08	0.06	0.04	0.01	0.00	0.00	0.00	0.14	0.09	0.00	0.00
1210	0.595	0.001	0.858	0.002	0.11	0.07	0.06	0.04	0.01	0.00	0.00	0.00	0.13	0.09	0.00	0.00
1220	0.603	0.001	0.800	0.002	0.11	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.12	0.09	0.00	0.00
1230	0.695	0.001	0.825	0.002	0.11	0.09	0.06	0.05	0.00	0.00	0.00	0.00	0.13	0.10	0.00	0.00
1240	0.688	0.001	0.793	0.002	0.10	0.09	0.05	0.04	0.00	0.00	0.00	0.00	0.12	0.10	0.00	0.00
1250	0.648	0.001	0.709	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.10	0.00	0.00
1260	0.638	0.001	0.699	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.00
1270	0.692	0.001	0.751	0.002	0.10	0.09	0.05	0.05	0.00	0.00	0.00	0.00	0.12	0.10	0.00	0.00
1280	0.657	0.001	0.701	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.10	0.00	0.00
1290	0.640	0.001	0.695	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.00
1300	0.600	0.001	0.673	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1310	0.549	0.001	0.640	0.001	0.08	0.07	0.04	0.04	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1320	0.522	0.001	0.617	0.001	0.08	0.07	0.04	0.03	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1330	0.576	0.001	0.658	0.001	0.09	0.07	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1340	0.581	0.001	0.652	0.001	0.09	0.07	0.04	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1350	0.517	0.001	0.624	0.001	0.08	0.06	0.04	0.03	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1360	0.433	0.001	0.588	0.001	0.08	0.05	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00
1370	0.376	0.001	0.578	0.001	0.08	0.05	0.04	0.02	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00
1380	0.350	0.001	0.563	0.001	0.07	0.04	0.04	0.02	0.00	0.00	0.00	0.00	0.09	0.05	0.00	0.00
1390	0.338	0.001	0.500	0.001	0.07	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
1400	0.331	0.001	0.487	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
1410	0.324	0.001	0.476	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1420	0.317	0.001	0.465	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1430	0.310	0.001	0.454	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1440	0.303	0.001	0.443	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1450	0.296	0.001	0.432	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1460	0.289	0.001	0.421	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1470	0.282	0.001	0.410	0.001	0.05	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1480	0.275	0.001	0.399	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1490	0.268	0.001	0.388	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1500	0.261	0.001	0.377	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1510	0.254	0.000	0.366	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1520	0.247	0.000	0.355	0.001	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1530	0.240	0.000	0.344	0.001	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00
1540	0.233	0.000	0.333	0.001	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1550	0.226	0.000	0.322	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1560	0.219	0.000	0.311	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1570	0.212	0.000	0.300	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1580	0.205	0.000	0.289	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1590	0.198	0.000	0.278	0.001	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1600	0.191	0.000	0.267	0.001	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1610	0.184	0.000	0.256	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1620	0.177	0.000	0.245	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1630	0.170	0.000	0.234	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1640	0.163	0.000	0.223	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1650	0.156	0.000	0.212	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1660	0.149	0.000	0.201	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1670	0.142	0.000	0.190	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1680	0.135	0.000	0.179	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1690	0.128	0.000	0.168	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1700	0.121	0.000	0.157	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1710	0.114	0.000	0.146	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1720	0.107	0.000	0.135	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1730	0.100	0.000	0.124	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1740	0.093	0.000	0.113	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1750	0.086	0.000	0.102	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1760	0.079	0.000	0.091	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1770	0.072	0.000	0.080	0.000	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1780	0.065	0.000	0.069	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1790	0.058	0.000	0.058	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1800	0.051	0.000	0.047	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1810	0.044	0.000	0.036	0.000	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00

SD-650	San Elijo Park	0	0	Avg. Net SL	-0.025	0.860	1.357	1.277	0.403	2.220						
SD-650	93.595	0	109.041	1590			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	1.541	0.016	1.133	0.010	0.00	0.00	0.11	0.17	0.17	0.27	0.16	0.25	0.05	0.08	0.27	0.44
40	1.643	0.018	1.061	0.010	0.00	0.00	0.10	0.18	0.16	0.28	0.15	0.27	0.05	0.08	0.26	0.46
50	2.469	0.026	1.874	0.017	0.00	0.00	0.18	0.27	0.28	0.43	0.26	0.40	0.08	0.13	0.45	0.70
60	2.150	0.023	1.612	0.015	0.00	0.00	0.15	0.24	0.24	0.37	0.22	0.35	0.07	0.11	0.39	0.61
70	1.846	0.020	1.415	0.013	0.00	0.00	0.13	0.20	0.21	0.32	0.20	0.30	0.06	0.09	0.34	0.52
80	1.674	0.018	1.327	0.012	0.00	0.00	0.12	0.18	0.20	0.29	0.19	0.27	0.06	0.09	0.32	0.47
90	1.505	0.016	1.169	0.011	0.00	0.00	0.11	0.16	0.17	0.26	0.16	0.24	0.05	0.08	0.28	0.43
100	1.258	0.013	0.944	0.009	0.00	0.00	0.09	0.14	0.14	0.22	0.13	0.20	0.04	0.06	0.23	0.36
110	1.088	0.012	0.804	0.007	0.00	0.00	0.08	0.12	0.12	0.19	0.11	0.18	0.04	0.06	0.20	0.31
120	1.046	0.011	0.718	0.007	0.00	0.00	0.07	0.11	0.11	0.18	0.10	0.17	0.03	0.05	0.17	0.30
130	1.001	0.011	0.646	0.006	0.00	0.00	0.06	0.11	0.10	0.17	0.09	0.16	0.03	0.05	0.16	0.28
140	0.890	0.010	0.537	0.005	0.00	0.00	0.05	0.10	0.08	0.15	0.07	0.14	0.02	0.05	0.13	0.25
150	0.835	0.009	0.502	0.005	0.00	0.00	0.05	0.09	0.07	0.14	0.07	0.14	0.02	0.04	0.12	0.24
160	0.837	0.009	0.545	0.005	0.00	0.00	0.05	0.09	0.08	0.14	0.08	0.14	0.02	0.04	0.13	0.24
170	0.751	0.008	0.476	0.004	0.00	0.00	0.04	0.08	0.07	0.13	0.07	0.12	0.02	0.04	0.12	0.21
180	0.745	0.008	0.487	0.004	0.00	0.00	0.05	0.08	0.07	0.13	0.07	0.12	0.02	0.04	0.12	0.21
190	0.769	0.008	0.560	0.005	0.00	0.00	0.05	0.08	0.08	0.13	0.08	0.13	0.02	0.04	0.14	0.22
200	0.860	0.009	0.700	0.006	0.00	0.00	0.07	0.09	0.10	0.15	0.10	0.14	0.03	0.04	0.17	0.24
210	1.045	0.011	0.912	0.008	0.00	0.00	0.09	0.11	0.14	0.18	0.13	0.17	0.04	0.05	0.22	0.30
220	1.224	0.013	1.064	0.010	0.00	0.00	0.10	0.13	0.16	0.21	0.15	0.20	0.05	0.06	0.26	0.35
230	1.276	0.014	1.116	0.010	0.00	0.00	0.10	0.14	0.17	0.22	0.16	0.21	0.05	0.07	0.27	0.36
240	1.574	0.017	1.359	0.012	0.00	0.00	0.13	0.17	0.20	0.27	0.19	0.26	0.06	0.08	0.33	0.44
250	1.963	0.021	1.670	0.015	0.00	0.00	0.16	0.21	0.25	0.34	0.23	0.32	0.07	0.10	0.41	0.55
260	1.722	0.018	1.480	0.014	0.00	0.00	0.14	0.19	0.22	0.30	0.21	0.28	0.07	0.09	0.36	0.49
270	1.304	0.014	1.150	0.011	0.00	0.00	0.11	0.14	0.17	0.23	0.16	0.21	0.05	0.07	0.28	0.37
280	0.867	0.009	0.844	0.008	0.00	0.00	0.08	0.09	0.13	0.15	0.12	0.14	0.04	0.04	0.20	0.25
290	0.935	0.010	1.017	0.009	0.00	0.00	0.10	0.10	0.15	0.16	0.14	0.15	0.04	0.05	0.25	0.26
300	1.113	0.012	1.250	0.011	0.00	0.00	0.12	0.12	0.19	0.19	0.17	0.18	0.06	0.06	0.30	0.31
310	1.296	0.014	1.460	0.013	0.00	0.00	0.14	0.14	0.22	0.22	0.20	0.21	0.06	0.07	0.35	0.37
320	1.469	0.016	1.637	0.015	0.00	0.00	0.15	0.16	0.24	0.25	0.23	0.24	0.07	0.08	0.40	0.42
330	1.564	0.017	1.795	0.016	0.00	0.00	0.17	0.17	0.27	0.27	0.25	0.25	0.08	0.08	0.44	0.44
340	1.648	0.018	1.946	0.018	0.00	0.00	0.18	0.18	0.29	0.28	0.27	0.27	0.09	0.08	0.47	0.47
350	1.696	0.018	2.077	0.019	0.00	0.00	0.20	0.19	0.31	0.29	0.29	0.28	0.09	0.09	0.50	0.48
360	1.518	0.016	1.956	0.018	0.00	0.00	0.18	0.17	0.29	0.26	0.27	0.25	0.09	0.08	0.47	0.43
370	1.374	0.015	1.836	0.017	0.00	0.00	0.17	0.15	0.27	0.24	0.26	0.22	0.08	0.07	0.45	0.39
380	1.221	0.013	1.713	0.016	0.00	0.00	0.16	0.13	0.25	0.21	0.24	0.20	0.08	0.06	0.42	0.35
390	1.192	0.013	1.720	0.016	0.00	0.00	0.16	0.13	0.26	0.21	0.24	0.19	0.08	0.06	0.42	0.34
400	1.168	0.012	1.742	0.016	0.00	0.00	0.16	0.13	0.26	0.20	0.24	0.19	0.08	0.06	0.42	0.33
410	1.111	0.012	1.757	0.016	0.00	0.00	0.17	0.12	0.26	0.19	0.25	0.18	0.08	0.06	0.43	0.31
420	1.017	0.011	1.751	0.016	0.00	0.00	0.16	0.11	0.26	0.18	0.24	0.17	0.08	0.05	0.42	0.29
430	0.820	0.009	1.653	0.015	0.00	0.00	0.16	0.09	0.25	0.14	0.23	0.13	0.07	0.04	0.40	0.23
440	0.561	0.006	1.545	0.014	0.00	0.00	0.15	0.06	0.23	0.10	0.22	0.09	0.07	0.03	0.37	0.16
450	0.388	0.004	1.557	0.014	0.00	0.00	0.15	0.04	0.23	0.07	0.22	0.06	0.07	0.02	0.38	0.11
460	0.865	0.009	2.181	0.020	0.00	0.00	0.21	0.09	0.32	0.15	0.30	0.14	0.10	0.04	0.53	0.24
470	1.222	0.013	2.518	0.023	0.00	0.00	0.24	0.13	0.37	0.21	0.35	0.20	0.11	0.06	0.61	0.35
480	0.833	0.009	1.905	0.017	0.00	0.00	0.18	0.09	0.28	0.14	0.27	0.14	0.08	0.04	0.46	0.24
490	0.429	0.005	1.286	0.012	0.00	0.00	0.12	0.05	0.19	0.07	0.18	0.07	0.06	0.02	0.31	0.12
500	0.707	0.008	1.362	0.012	0.00	0.00	0.13	0.08	0.20	0.12	0.19	0.11	0.06	0.04	0.33	0.20
510	1.108	0.012	1.599	0.015	0.00	0.00	0.15	0.12	0.24	0.19	0.22	0.18	0.07	0.06	0.39	0.31
520	1.457	0.016	1.828	0.017	0.00	0.00	0.17	0.16	0.27	0.25	0.26	0.24	0.08	0.07	0.44	0.41
530	1.282	0.014	1.383	0.013	0.00	0.00	0.13	0.14	0.21	0.22	0.19	0.21	0.06	0.07	0.34	0.36
540	0.981	0.010	0.942	0.009	0.00	0.00	0.09	0.11	0.14	0.17	0.13	0.16	0.04	0.05	0.23	0.28
550	0.875	0.009	0.782	0.007	0.00	0.00	0.07	0.10	0.12	0.15	0.11	0.14	0.03	0.04	0.19	0.25
560	1.112	0.012	1.209	0.011	0.00	0.00	0.11	0.12	0.18	0.19	0.17	0.18	0.05	0.06	0.29	0.31
570	0.862	0.009	1.011	0.009	0.00	0.00	0.10	0.09	0.15	0.15	0.14	0.14	0.04	0.04	0.25	0.24
580	0.719	0.008	0.764	0.007	0.00	0.00	0.07	0.08	0.11	0.12	0.11	0.12	0.03	0.04	0.19	0.20
590	0.519	0.006	0.654	0.006	0.00	0.00	0.06	0.06	0.10	0.09	0.09	0.08	0.03	0.03	0.16	0.15
600	0.514	0.005	0.648	0.006	0.00	0.00	0.06	0.06	0.10	0.09	0.09	0.08	0.03	0.03	0.16	0.15
610	0.509	0.005	0.642	0.006	0.00	0.00	0.06	0.06	0.10	0.09	0.09	0.08	0.03	0.03	0.16	0.14
620	0.504	0.005	0.636	0.006	0.00	0.00	0.06	0.06	0.09	0.09	0.09	0.08	0.03	0.03	0.15	0.14
630	0.499	0.005	0.630	0.006	0.00	0.00	0.06	0.05	0.09	0.09	0.09	0.08	0.03	0.03	0.15	0.14
640	0.494	0.005	0.624	0.006	0.00	0.00	0.06	0.05	0.09	0.09	0.09	0.08	0.03	0.03	0.15	0.14
650	0.489	0.005	0.618	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.09	0.08	0.03	0.03	0.15	0.14
660	0.484	0.005	0.612	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.09	0.08	0.03	0.02	0.15	0.14
670	0.479	0.005	0.606	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.08	0.08	0.03	0.02	0.15	0.14
680	0.474	0.005	0.600	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.08	0.08	0.03	0.02	0.15	0.13
690	0.469	0.005	0.594	0.005	0.00	0.00	0.06	0.05	0.09	0.08	0.08	0.08	0.03	0.02	0.14	0.13
700	0.464	0.005	0.588	0.005	0.00	0.00	0.06	0.05	0.09	0.08	0.08	0.08	0.03	0.02	0.14	0.13
710	0.459	0.005	0.582	0.005	0.00	0.00	0.05	0.05	0.09	0.08	0.08	0.07	0.03	0.02	0.14	0.13
720	0.454	0.005	0.576	0.005	0.00	0.00	0.05	0.05	0.09	0.08	0.08	0.07	0.03	0.02	0.14	0.13
730	0.449	0.005	0.570	0.005	0.00	0.00	0.05	0.05	0.08	0.08	0.08	0.07	0.03	0.02	0.14	0.13
740	0.444	0.005	0.564	0.005	0.00	0.00	0.05	0.05	0.08	0.08	0.08	0.07	0.02	0.02	0.14	0.13
750	0.439	0.005	0.558	0.005	0.00	0.00	0.05	0.05	0.08	0.08	0.08	0.07	0.02	0.02	0.14	0.12
760	0.434	0.005	0.552	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.08	0.07	0.02	0.02	0.13	0.12
770	0.429	0.005	0.546	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.08	0.07	0.02	0.02	0.13	0.12
780	0.424	0.005	0.540	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.08	0.07	0.02	0.02	0.13	0.12
790	0.419	0.004	0.534	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.07	0.07	0.02	0.02	0.13	0.12
800	0.414	0.004	0.528	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.07	0.07	0.02	0.02	0.13	0.12
810	0.409	0.004	0.522	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.07	0.07	0.02	0.02	0.13	0.12
820	0.404	0.004	0.516	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.07	0.07	0.02	0.02	0.13	0.11
830	0.399	0.004	0.510	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.07	0.06	0.02	0.02	0.12	0.11
840	0.394	0.004	0.504	0.005	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
850	0.389	0.004	0.498	0.005	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
860	0.384	0.004	0.492	0.005	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
870	0.379	0.004	0.486	0.004	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
880	0.374	0.004	0.480	0.004	0.00	0.00	0.05	0.04	0.07	0.06	0.07	0.06	0.02	0.02	0.12	0.11
890	0.369	0.004	0.474	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.07	0.06	0.02	0.02	0.12	0.10
900	0.364	0.004	0.468	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.07	0.06	0.02	0.02	0.11	0.10
910	0.359	0.004	0.462	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.06	0.06	0.02	0.02	0.11	0.10
920	0.354	0.004	0.456	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.06	0.06	0.02	0.02	0.11	0.10
930	0.349	0.004	0.450	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.06	0.06	0.02	0.02	0.11	0.10
940	0.344	0.004	0.444	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.06	0.06	0.02	0.02	0.11	0.10
950	0.339	0.004	0.438	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.06	0.02	0.02	0.11	0.10
960	0.334	0.004	0.432	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
970	0.329	0.004	0.426	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
980	0.324	0.003	0.420	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
990	0.319	0.003	0.414	0.004	0.00	0.00	0.04	0.03	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
1000	0.314	0.003	0.408	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.02	0.02	0.10	0.09
1010	0.309	0.003	0.402	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.02	0.02	0.10	0.09
1020	0.304	0.003	0.396	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.02	0.02	0.10	0.09
1030	0.299	0.003	0.390	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.05	0.05	0.02	0.02	0.09	0.08
1040	0.294	0.003	0.384	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.05	0.05	0.02	0.02	0.09	0.08
1050	0.289	0.003	0.378	0.003	0.00	0.00	0.04	0.03	0.06	0.05	0.05	0.05	0.02	0.01	0.09	0.08
1060	0.284	0.003	0.372	0.003	0.00	0.00	0.03	0.03	0.06	0.05	0.05	0.05	0.02	0.01	0.09	0.08
1070	0.279	0.003	0.366	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.02	0.01	0.09	0.08
1080	0.274	0.003	0.360	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.04	0.02	0.01	0.09	0.08
1090	0.269	0.003	0.354	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.04	0.02	0.01	0.09	0.08
1100	0.264	0.003	0.348	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.04	0.02	0.01	0.08	0.07
1110	0.259	0.003	0.342	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.02	0.01	0.08	0.07
1120	0.254	0.003	0.336	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.01	0.01	0.08	0.07
1130	0.249	0.003	0.330	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.01	0.01	0.08	0.07
1140	0.244	0.003	0.324	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.01	0.01	0.08	0.07
1150	0.239	0.003	0.318	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.04	0.01	0.01	0.08	0.07
1160	0.234	0.003	0.312	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.04	0.01	0.01	0.08	0.07
1170	0.229	0.002	0.306	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.04	0.01	0.01	0.07	0.06
1180	0.224	0.002	0.300	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.07	0.06
1190	0.219	0.002	0.294	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.07	0.06
1200	0.214	0.002	0.288	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.03	0.01	0.01	0.07	0.06
1210	0.209	0.002	0.282	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.03	0.01	0.01	0.07	0.06
1220	0.204	0.002	0.276	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.03	0.01	0.01	0.07	0.06
1230	0.199	0.002	0.270	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.07	0.06
1240	0.194	0.002	0.264	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.06	0.05
1250	0.189	0.002	0.258	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.06	0.05
1260	0.184	0.002	0.252	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.06	0.05
1270	0.179	0.002	0.246	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1280	0.174	0.002	0.240	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1290	0.169	0.002	0.234	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1300	0.164	0.002	0.228	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1310	0.159	0.002	0.222	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.05	0.04
1320	0.154	0.002	0.216	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.05	0.04
1330	0.149	0.002	0.210	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.02	0.01	0.01	0.05	0.04
1340	0.144	0.002	0.204	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.02	0.01	0.01	0.05	0.04
1350	0.139	0.001	0.198	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.02	0.01	0.01	0.05	0.04
1360	0.134	0.001	0.192	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.01	0.01	0.05	0.04
1370	0.129	0.001	0.186	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.01	0.01	0.05	0.04
1380	0.124	0.001	0.180	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.01	0.01	0.04	0.04
1390	0.119	0.001	0.174	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1400	0.114	0.001	0.168	0.002	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1410	0.109	0.001	0.162	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1420	0.104	0.001	0.156	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1430	0.099	0.001	0.150	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1440	0.094	0.001	0.144	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.00	0.03	0.03
1450	0.089	0.001	0.138	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.00	0.03	0.03
1460	0.084	0.001	0.132	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1470	0.079	0.001	0.126	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1480	0.074	0.001	0.120	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1490	0.069	0.001	0.114	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1500	0.064	0.001	0.108	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.00	0.00	0.03	0.02
1510	0.059	0.001	0.102	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.02	0.02
1520	0.054	0.001	0.096	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.02
1530	0.049	0.001	0.090	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1540	0.044	0.000	0.084	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1550	0.039	0.000	0.078	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1560	0.034	0.000	0.072	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1570	0.029	0.000	0.066	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.01
1580	0.024	0.000	0.060	0.001	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01
1590	0.019	0.000	0.054	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01

SD-660	Swami's	0	0	Avg. Net SL	0.65	2.09	2.58	2.85	2.85	2.63						
SD-660	123.382	0	130.419	1650			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.020	0.000	0.018	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
10	1.817	0.015	1.191	0.009	0.07	0.11	0.23	0.37	0.28	0.45	0.31	0.50	0.31	0.50	0.29	0.46
20	1.657	0.013	0.985	0.008	0.06	0.10	0.19	0.34	0.23	0.41	0.26	0.46	0.26	0.46	0.24	0.42
30	1.733	0.014	0.955	0.007	0.06	0.11	0.18	0.35	0.23	0.43	0.25	0.48	0.25	0.48	0.23	0.44
40	2.067	0.017	1.046	0.008	0.06	0.13	0.20	0.42	0.25	0.52	0.27	0.57	0.27	0.57	0.25	0.53
50	2.331	0.019	1.025	0.008	0.06	0.15	0.20	0.47	0.24	0.58	0.27	0.64	0.27	0.64	0.25	0.59
60	2.459	0.020	0.958	0.007	0.06	0.15	0.18	0.50	0.23	0.61	0.25	0.68	0.25	0.68	0.23	0.63
70	2.523	0.020	0.954	0.007	0.06	0.16	0.18	0.51	0.22	0.63	0.25	0.69	0.25	0.70	0.23	0.64
80	2.615	0.021	1.005	0.008	0.06	0.16	0.19	0.53	0.24	0.65	0.26	0.72	0.26	0.72	0.24	0.66
90	2.572	0.021	1.067	0.008	0.06	0.16	0.20	0.52	0.25	0.64	0.28	0.71	0.28	0.71	0.26	0.65
100	2.285	0.019	0.960	0.007	0.06	0.14	0.18	0.46	0.23	0.57	0.25	0.63	0.25	0.63	0.23	0.58
110	2.142	0.017	0.888	0.007	0.05	0.13	0.17	0.43	0.21	0.53	0.23	0.59	0.23	0.59	0.21	0.54
120	2.067	0.017	0.871	0.007	0.05	0.13	0.17	0.42	0.21	0.52	0.23	0.57	0.23	0.57	0.21	0.53
130	2.017	0.016	0.879	0.007	0.05	0.13	0.17	0.41	0.21	0.50	0.23	0.56	0.23	0.56	0.21	0.51
140	1.977	0.016	0.855	0.007	0.05	0.12	0.16	0.40	0.20	0.49	0.22	0.54	0.22	0.54	0.21	0.50
150	1.811	0.015	0.798	0.006	0.05	0.11	0.15	0.37	0.19	0.45	0.21	0.50	0.21	0.50	0.19	0.46
160	1.683	0.014	0.804	0.006	0.05	0.11	0.15	0.34	0.19	0.42	0.21	0.46	0.21	0.46	0.19	0.43
170	1.539	0.012	0.804	0.006	0.05	0.10	0.15	0.31	0.19	0.38	0.21	0.42	0.21	0.42	0.19	0.39
180	1.398	0.011	0.803	0.006	0.05	0.09	0.15	0.28	0.19	0.35	0.21	0.39	0.21	0.39	0.19	0.36
190	1.272	0.010	0.786	0.006	0.05	0.08	0.15	0.26	0.19	0.32	0.20	0.35	0.20	0.35	0.19	0.32
200	1.152	0.009	0.761	0.006	0.05	0.07	0.15	0.23	0.18	0.29	0.20	0.32	0.20	0.32	0.18	0.29
210	0.984	0.008	0.673	0.005	0.04	0.06	0.13	0.20	0.16	0.25	0.18	0.27	0.18	0.27	0.16	0.25
220	0.893	0.007	0.661	0.005	0.04	0.06	0.13	0.18	0.16	0.22	0.17	0.25	0.17	0.25	0.16	0.23
230	0.855	0.007	0.703	0.005	0.04	0.05	0.13	0.17	0.17	0.21	0.18	0.24	0.18	0.24	0.17	0.22
240	0.947	0.008	0.855	0.007	0.05	0.06	0.16	0.19	0.20	0.24	0.22	0.26	0.22	0.26	0.21	0.24
250	1.048	0.008	1.007	0.008	0.06	0.07	0.19	0.21	0.24	0.26	0.26	0.29	0.26	0.29	0.24	0.27
260	1.285	0.010	1.248	0.010	0.07	0.08	0.24	0.26	0.29	0.32	0.33	0.35	0.33	0.35	0.30	0.33
270	1.684	0.014	1.676	0.013	0.10	0.11	0.32	0.34	0.40	0.42	0.44	0.46	0.44	0.46	0.40	0.43
280	1.980	0.016	2.106	0.016	0.13	0.12	0.40	0.40	0.50	0.49	0.55	0.55	0.55	0.55	0.51	0.50
290	2.248	0.018	2.535	0.019	0.15	0.14	0.49	0.45	0.60	0.56	0.66	0.62	0.66	0.62	0.61	0.57
300	2.678	0.022	3.141	0.024	0.19	0.17	0.60	0.54	0.74	0.67	0.82	0.74	0.82	0.74	0.76	0.68
310	2.115	0.017	2.742	0.021	0.16	0.13	0.52	0.43	0.65	0.53	0.71	0.58	0.71	0.58	0.66	0.54
320	1.577	0.013	2.387	0.018	0.14	0.10	0.46	0.32	0.56	0.39	0.62	0.43	0.62	0.43	0.57	0.40
330	1.620	0.013	2.592	0.020	0.15	0.10	0.50	0.33	0.61	0.40	0.68	0.45	0.68	0.45	0.62	0.41
340	1.512	0.012	2.578	0.020	0.15	0.10	0.49	0.31	0.61	0.38	0.67	0.42	0.67	0.42	0.62	0.38
350	1.542	0.012	2.476	0.019	0.15	0.10	0.47	0.31	0.58	0.38	0.65	0.42	0.65	0.42	0.60	0.39
360	1.539	0.012	2.395	0.018	0.14	0.10	0.46	0.31	0.56	0.38	0.62	0.42	0.62	0.42	0.58	0.39
370	1.464	0.012	2.361	0.018	0.14	0.09	0.45	0.30	0.56	0.36	0.62	0.40	0.62	0.40	0.57	0.37
380	1.337	0.011	2.569	0.020	0.15	0.08	0.49	0.27	0.61	0.33	0.67	0.37	0.67	0.37	0.62	0.34
390	1.212	0.010	2.461	0.019	0.15	0.08	0.47	0.25	0.58	0.30	0.64	0.33	0.64	0.33	0.59	0.31
400	1.269	0.010	2.614	0.020	0.16	0.08	0.50	0.26	0.62	0.32	0.68	0.35	0.68	0.35	0.63	0.32
410	1.648	0.013	2.532	0.019	0.15	0.10	0.48	0.33	0.60	0.41	0.66	0.45	0.66	0.45	0.61	0.42
420	1.024	0.008	2.038	0.016	0.12	0.06	0.39	0.21	0.48	0.26	0.53	0.28	0.53	0.28	0.49	0.26
430	0.716	0.006	1.695	0.013	0.10	0.05	0.32	0.14	0.40	0.18	0.44	0.20	0.44	0.20	0.41	0.18
440	0.644	0.005	1.468	0.011	0.09	0.04	0.28	0.13	0.35	0.16	0.38	0.18	0.38	0.18	0.35	0.16
450	1.158	0.009	1.615	0.012	0.10	0.07	0.31	0.23	0.38	0.29	0.42	0.32	0.42	0.32	0.39	0.29
460	0.842	0.007	1.335	0.010	0.08	0.05	0.26	0.17	0.31	0.21	0.35	0.23	0.35	0.23	0.32	0.21
470	1.413	0.011	1.602	0.012	0.10	0.09	0.31	0.29	0.38	0.35	0.42	0.39	0.42	0.39	0.39	0.36
480	1.711	0.014	1.716	0.013	0.10	0.11	0.33	0.35	0.40	0.43	0.45	0.47	0.45	0.47	0.41	0.43
490	1.088	0.009	1.476	0.011	0.09	0.07	0.28	0.22	0.35	0.27	0.38	0.30	0.38	0.30	0.35	0.28
500	0.696	0.006	0.574	0.004	0.03	0.04	0.11	0.14	0.14	0.17	0.15	0.19	0.15	0.19	0.14	0.18
510	0.949	0.008	0.447	0.003	0.03	0.06	0.09	0.19	0.11	0.24	0.12	0.26	0.12	0.26	0.11	0.24
520	1.179	0.010	0.361	0.003	0.02	0.07	0.07	0.24	0.09	0.29	0.09	0.32	0.09	0.32	0.09	0.30
530	1.068	0.009	0.332	0.003	0.02	0.07	0.06	0.22	0.08	0.27	0.09	0.29	0.09	0.29	0.08	0.27
540	1.501	0.012	0.665	0.005	0.04	0.09	0.13	0.30	0.16	0.37	0.17	0.41	0.17	0.41	0.16	0.38
550	1.490	0.012	0.504	0.004	0.03	0.09	0.10	0.30	0.12	0.37	0.13	0.41	0.13	0.41	0.12	0.38
560	1.946	0.016	1.877	0.014	0.11	0.12	0.36	0.39	0.44	0.49	0.49	0.54	0.49	0.54	0.45	0.49
570	2.474	0.020	2.860	0.022	0.17	0.16	0.55	0.50	0.67	0.62	0.75	0.68	0.75	0.68	0.69	0.63
580	2.059	0.017	1.870	0.014	0.11	0.13	0.36	0.42	0.44	0.51	0.49	0.57	0.49	0.57	0.45	0.52
590	0.587	0.005	0.831	0.006	0.05	0.04	0.16	0.12	0.20	0.15	0.22	0.16	0.22	0.16	0.20	0.15
600	0.548	0.004	0.858	0.007	0.05	0.03	0.16	0.11	0.20	0.14	0.22	0.15	0.22	0.15	0.21	0.14
610	0.543	0.004	0.850	0.007	0.05	0.03	0.16	0.11	0.20	0.14	0.22	0.15	0.22	0.15	0.20	0.14
620	0.538	0.004	0.842	0.006	0.05	0.03	0.16	0.11	0.20	0.13	0.22	0.15	0.22	0.15	0.20	0.14
630	0.533	0.004	0.834	0.006	0.05	0.03	0.16	0.11	0.20	0.13	0.22	0.15	0.22	0.15	0.20	0.14
640	0.528	0.004	0.826	0.006	0.05	0.03	0.16	0.11	0.19	0.13	0.22	0.15	0.22	0.15	0.20	0.13
650	0.523	0.004	0.818	0.006	0.05	0.03	0.16	0.11	0.19	0.13	0.21	0.14	0.21	0.14	0.20	0.13
660	0.518	0.004	0.810	0.006	0.05	0.03	0.16	0.10	0.19	0.13	0.21	0.14	0.21	0.14	0.19	0.13
670	0.513	0.004	0.802	0.006	0.05	0.03	0.15	0.10	0.19	0.13	0.21	0.14	0.21	0.14	0.19	0.13
680	0.508	0.004	0.794	0.006	0.05	0.03	0.15	0.10	0.19	0.13	0.21	0.14	0.21	0.14	0.19	0.13
690	0.503	0.004	0.786	0.006	0.05	0.03	0.15	0.10	0.19	0.13	0.20	0.14	0.20	0.14	0.19	0.13
700	0.498	0.004	0.778	0.006	0.05	0.03	0.15	0.10	0.18	0.12	0.20	0.14	0.20	0.14	0.19	0.13
710	0.493	0.004	0.770	0.006	0.05	0.03	0.15	0.10	0.18	0.12	0.20	0.14	0.20	0.14	0.19	0.13
720	0.488	0.004	0.762	0.006	0.05	0.03	0.15	0.10	0.18	0.12	0.20	0.13	0.20	0.13	0.18	0.12
730	0.483	0.004	0.754	0.006	0.04	0.03	0.14	0.10	0.18	0.12	0.20	0.13	0.20	0.13	0.18	0.12
740	0.478	0.004	0.746	0.006	0.04	0.03	0.14	0.10	0.18	0.12	0.19	0.13	0.19	0.13	0.18	0.12
750	0.473	0.004	0.738	0.006	0.04	0.03	0.14	0.10	0.17	0.12	0.19	0.13	0.19	0.13	0.18	0.12
760	0.468	0.004	0.730	0.006	0.04	0.03	0.14	0.09	0.17	0.12	0.19	0.13	0.19	0.13	0.18	0.12
770	0.463	0.004	0.722	0.006	0.04	0.03	0.14	0.09	0.17	0.12	0.19	0.13	0.19	0.13	0.17	0.12
780	0.458	0.004	0.714	0.005	0.04	0.03	0.14	0.09	0.17	0.11	0.19	0.13	0.19	0.13	0.17	0.12
790	0.453	0.004	0.706	0.005	0.04	0.03	0.14	0.09	0.17	0.11	0.18	0.12	0.18	0.12	0.17	0.12
800	0.448	0.004	0.698	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.18	0.12	0.18	0.12	0.17	0.11
810	0.443	0.004	0.690	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.18	0.12	0.18	0.12	0.17	0.11
820	0.438	0.004	0.682	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.18	0.12	0.18	0.12	0.16	0.11
830	0.433	0.004	0.674	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.18	0.12	0.18	0.12	0.16	0.11
840	0.428	0.003	0.666	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.17	0.12	0.17	0.12	0.16	0.11
850	0.423	0.003	0.658	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.17	0.12	0.17	0.12	0.16	0.11
860	0.418	0.003	0.650	0.005	0.04	0.03	0.12	0.08	0.15	0.10	0.17	0.12	0.17	0.12	0.16	0.11
870	0.413	0.003	0.642	0.005	0.04	0.03	0.12	0.08	0.15	0.10	0.17	0.11	0.17	0.11	0.15	0.10
880	0.408	0.003	0.634	0.005	0.04	0.03	0.12	0.08	0.15	0.10	0.17	0.11	0.17	0.11	0.15	0.10
890	0.403	0.003	0.626	0.005	0.04	0.03	0.12	0.08	0.15	0.10	0.16	0.11	0.16	0.11	0.15	0.10
900	0.398	0.003	0.618	0.005	0.04	0.03	0.12	0.08	0.15	0.10	0.16	0.11	0.16	0.11	0.15	0.10
910	0.393	0.003	0.610	0.005	0.04	0.02	0.12	0.08	0.14	0.10	0.16	0.11	0.16	0.11	0.15	0.10
920	0.388	0.003	0.602	0.005	0.04	0.02	0.12	0.08	0.14	0.10	0.16	0.11	0.16	0.11	0.14	0.10
930	0.383	0.003	0.594	0.005	0.04	0.02	0.11	0.08	0.14	0.10	0.15	0.11	0.15	0.11	0.14	0.10
940	0.378	0.003	0.586	0.004	0.03	0.02	0.11	0.08	0.14	0.09	0.15	0.10	0.15	0.10	0.14	0.10
950	0.373	0.003	0.578	0.004	0.03	0.02	0.11	0.08	0.14	0.09	0.15	0.10	0.15	0.10	0.14	0.09
960	0.368	0.003	0.570	0.004	0.03	0.02	0.11	0.07	0.13	0.09	0.15	0.10	0.15	0.10	0.14	0.09
970	0.363	0.003	0.562	0.004	0.03	0.02	0.11	0.07	0.13	0.09	0.15	0.10	0.15	0.10	0.14	0.09
980	0.358	0.003	0.554	0.004	0.03	0.02	0.11	0.07	0.13	0.09	0.14	0.10	0.14	0.10	0.13	0.09
990	0.353	0.003	0.546	0.004	0.03	0.02	0.10	0.07	0.13	0.09	0.14	0.10	0.14	0.10	0.13	0.09
1000	0.348	0.003	0.538	0.004	0.03	0.02	0.10	0.07	0.13	0.09	0.14	0.10	0.14	0.10	0.13	0.09
1010	0.343	0.003	0.530	0.004	0.03	0.02	0.10	0.07	0.12	0.09	0.14	0.09	0.14	0.09	0.13	0.09
1020	0.338	0.003	0.522	0.004	0.03	0.02	0.10	0.07	0.12	0.08	0.14	0.09	0.14	0.09	0.13	0.09
1030	0.333	0.003	0.514	0.004	0.03	0.02	0.10	0.07	0.12	0.08	0.13	0.09	0.13	0.09	0.12	0.08
1040	0.328	0.003	0.506	0.004	0.03	0.02	0.10	0.07	0.12	0.08	0.13	0.09	0.13	0.09	0.12	0.08
1050	0.323	0.003	0.498	0.004	0.03	0.02	0.10	0.07	0.12	0.08	0.13	0.09	0.13	0.09	0.12	0.08
1060	0.318	0.003	0.490	0.004	0.03	0.02	0.09	0.06	0.12	0.08	0.13	0.09	0.13	0.09	0.12	0.08
1070	0.313	0.003	0.482	0.004	0.03	0.02	0.09	0.06	0.11	0.08	0.13	0.09	0.13	0.09	0.12	0.08
1080	0.308	0.002	0.474	0.004	0.03	0.02	0.09	0.06	0.11	0.08	0.12	0.08	0.12	0.08	0.11	0.08
1090	0.303	0.002	0.466	0.004	0.03	0.02	0.09	0.06	0.11	0.08	0.12	0.08	0.12	0.08	0.11	0.08
1100	0.298	0.002	0.458	0.004	0.03	0.02	0.09	0.06	0.11	0.07	0.12	0.08	0.12	0.08	0.11	0.08
1110	0.293	0.002	0.450	0.003	0.03	0.02	0.09	0.06	0.11	0.07	0.12	0.08	0.12	0.08	0.11	0.07
1120	0.288	0.002	0.442	0.003	0.03	0.02	0.08	0.06	0.10	0.07	0.12	0.08	0.12	0.08	0.11	0.07
1130	0.283	0.002	0.434	0.003	0.03	0.02	0.08	0.06	0.10	0.07	0.11	0.08	0.11	0.08	0.10	0.07
1140	0.278	0.002	0.426	0.003	0.03	0.02	0.08	0.06	0.10	0.07	0.11	0.08	0.11	0.08	0.10	0.07
1150	0.273	0.002	0.418	0.003	0.02	0.02	0.08	0.06	0.10	0.07	0.11	0.08	0.11	0.08	0.10	0.07
1160	0.268	0.002	0.410	0.003	0.02	0.02	0.08	0.05	0.10	0.07	0.11	0.07	0.11	0.07	0.10	0.07
1170	0.263	0.002	0.402	0.003	0.02	0.02	0.08	0.05	0.09	0.07	0.10	0.07	0.10	0.07	0.10	0.07
1180	0.258	0.002	0.394	0.003	0.02	0.02	0.08	0.05	0.09	0.06	0.10	0.07	0.10	0.07	0.09	0.07
1190	0.253	0.002	0.386	0.003	0.02	0.02	0.07	0.05	0.09	0.06	0.10	0.07	0.10	0.07	0.09	0.06
1200	0.248	0.002	0.378	0.003	0.02	0.02	0.07	0.05	0.09	0.06	0.10	0.07	0.10	0.07	0.09	0.06
1210	0.243	0.002	0.370	0.003	0.02	0.02	0.07	0.05	0.09	0.06	0.10	0.07	0.10	0.07	0.09	0.06
1220	0.238	0.002	0.362	0.003	0.02	0.01	0.07	0.05	0.09	0.06	0.09	0.07	0.09	0.07	0.09	0.06
1230	0.233	0.002	0.354	0.003	0.02	0.01	0.07	0.05	0.08	0.06	0.09	0.06	0.09	0.06	0.09	0.06
1240	0.228	0.002	0.346	0.003	0.02	0.01	0.07	0.05	0.08	0.06	0.09	0.06	0.09	0.06	0.08	0.06
1250	0.223	0.002	0.338	0.003	0.02	0.01	0.06	0.05	0.08	0.06	0.09	0.06	0.09	0.06	0.08	0.06
1260	0.218	0.002	0.330	0.003	0.02	0.01	0.06	0.04	0.08	0.05	0.09	0.06	0.09	0.06	0.08	0.06
1270	0.213	0.002	0.322	0.002	0.02	0.01	0.06	0.04	0.08	0.05	0.08	0.06	0.08	0.06	0.08	0.05
1280	0.208	0.002	0.314	0.002	0.02	0.01	0.06	0.04	0.07	0.05	0.08	0.06	0.08	0.06	0.08	0.05
1290	0.203	0.002	0.306	0.002	0.02	0.01	0.06	0.04	0.07	0.05	0.08	0.06	0.08	0.06	0.07	0.05
1300	0.198	0.002	0.298	0.002	0.02	0.01	0.06	0.04	0.07	0.05	0.08	0.05	0.08	0.05	0.07	0.05
1310	0.193	0.002	0.290	0.002	0.02	0.01	0.06	0.04	0.07	0.05	0.08	0.05	0.08	0.05	0.07	0.05
1320	0.188	0.002	0.282	0.002	0.02	0.01	0.05	0.04	0.07	0.05	0.07	0.05	0.07	0.05	0.07	0.05
1330	0.183	0.001	0.274	0.002	0.02	0.01	0.05	0.04	0.06	0.05	0.07	0.05	0.07	0.05	0.07	0.05
1340	0.178	0.001	0.266	0.002	0.02	0.01	0.05	0.04	0.06	0.04	0.07	0.05	0.07	0.05	0.06	0.05
1350	0.173	0.001	0.258	0.002	0.02	0.01	0.05	0.03	0.06	0.04	0.07	0.05	0.07	0.05	0.06	0.04
1360	0.168	0.001	0.250	0.002	0.01	0.01	0.05	0.03	0.06	0.04	0.07	0.05	0.07	0.05	0.06	0.04
1370	0.163	0.001	0.242	0.002	0.01	0.01	0.05	0.03	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04
1380	0.158	0.001	0.234	0.002	0.01	0.01	0.04	0.03	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04
1390	0.153	0.001	0.226	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.06	0.04	0.06	0.04	0.05	0.04
1400	0.148	0.001	0.218	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.06	0.04	0.06	0.04	0.05	0.04
1410	0.143	0.001	0.210	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1420	0.138	0.001	0.202	0.002	0.01	0.01	0.04	0.03	0.05	0.03	0.05	0.04	0.05	0.04	0.05	0.04
1430	0.133	0.001	0.194	0.001	0.01	0.01	0.04	0.03	0.05	0.03	0.05	0.04	0.05	0.04	0.05	0.03
1440	0.128	0.001	0.186	0.001	0.01	0.01	0.04	0.03	0.04	0.03	0.05	0.04	0.05	0.04	0.04	0.03
1450	0.123	0.001	0.178	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.05	0.03	0.04	0.03
1460	0.118	0.001	0.170	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1470	0.113	0.001	0.162	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1480	0.108	0.001	0.154	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1490	0.103	0.001	0.146	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1500	0.098	0.001	0.138	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.04	0.03	0.04	0.03	0.03	0.02
1510	0.093	0.001	0.130	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.02
1520	0.088	0.001	0.122	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1530	0.083	0.001	0.114	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1540	0.078	0.001	0.106	0.001	0.01	0.00	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1550	0.073	0.001	0.098	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
1560	0.068	0.001	0.090	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1570	0.063	0.001	0.082	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1580	0.058	0.000	0.074	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01
1590	0.053	0.000	0.066	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1600	0.048	0.000	0.058	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1610	0.043	0.000	0.050	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1620	0.038	0.000	0.042	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1630	0.033	0.000	0.034	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1640	0.028	0.000	0.026	0.000	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1650	0.023	0.000	0.018	0.000	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01

SD-670	Moonlight	0	0	Avg. Net SL	8.29	5.63	4.81	4.45	4.27	3.51						
SD-670	325.763	0	308.756	1639			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.034	0.000	0.023	0.000	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00
10	1.162	0.004	1.487	0.005	0.48	0.35	0.32	0.24	0.28	0.20	0.26	0.19	0.24	0.18	0.20	0.15
20	1.676	0.005	2.424	0.008	0.78	0.51	0.53	0.35	0.45	0.30	0.42	0.27	0.40	0.26	0.33	0.22
30	1.370	0.004	2.808	0.009	0.90	0.42	0.61	0.28	0.52	0.24	0.48	0.22	0.46	0.21	0.38	0.18
40	3.433	0.011	3.493	0.011	1.12	1.04	0.76	0.71	0.65	0.60	0.60	0.56	0.58	0.54	0.47	0.44
50	4.577	0.014	3.212	0.010	1.03	1.39	0.70	0.94	0.60	0.81	0.55	0.74	0.53	0.71	0.44	0.59
60	4.658	0.014	2.564	0.008	0.82	1.41	0.56	0.96	0.48	0.82	0.44	0.76	0.42	0.73	0.35	0.60
70	5.139	0.016	2.956	0.010	0.95	1.56	0.64	1.06	0.55	0.90	0.51	0.84	0.49	0.80	0.40	0.66
80	5.959	0.018	3.605	0.012	1.15	1.81	0.78	1.23	0.67	1.05	0.62	0.97	0.59	0.93	0.49	0.77
90	6.271	0.019	3.584	0.012	1.15	1.90	0.78	1.29	0.67	1.10	0.62	1.02	0.59	0.98	0.49	0.81
100	6.669	0.020	3.647	0.012	1.17	2.02	0.79	1.37	0.68	1.17	0.63	1.08	0.60	1.04	0.49	0.86
110	7.059	0.022	3.925	0.013	1.26	2.14	0.85	1.45	0.73	1.24	0.67	1.15	0.65	1.10	0.53	0.91
120	6.703	0.021	3.559	0.012	1.14	2.03	0.77	1.38	0.66	1.18	0.61	1.09	0.59	1.05	0.48	0.86
130	6.357	0.020	3.247	0.011	1.04	1.93	0.71	1.31	0.60	1.12	0.56	1.03	0.53	0.99	0.44	0.82
140	6.045	0.019	3.002	0.010	0.96	1.83	0.65	1.25	0.56	1.06	0.52	0.98	0.49	0.94	0.41	0.78
150	5.749	0.018	2.783	0.009	0.89	1.74	0.60	1.18	0.52	1.01	0.48	0.94	0.46	0.90	0.38	0.74
160	5.418	0.017	2.524	0.008	0.81	1.64	0.55	1.12	0.47	0.95	0.43	0.88	0.42	0.85	0.34	0.70
170	5.081	0.016	2.162	0.007	0.69	1.54	0.47	1.05	0.40	0.89	0.37	0.83	0.36	0.79	0.29	0.65
180	4.839	0.015	1.882	0.006	0.60	1.47	0.41	1.00	0.35	0.85	0.32	0.79	0.31	0.76	0.26	0.62
190	4.694	0.014	1.686	0.005	0.54	1.42	0.37	0.97	0.31	0.83	0.29	0.76	0.28	0.73	0.23	0.60
200	4.563	0.014	1.551	0.005	0.50	1.38	0.34	0.94	0.29	0.80	0.27	0.74	0.26	0.71	0.21	0.59
210	4.279	0.013	1.474	0.005	0.47	1.30	0.32	0.88	0.27	0.75	0.25	0.70	0.24	0.67	0.20	0.55
220	4.091	0.013	1.592	0.005	0.51	1.24	0.35	0.84	0.30	0.72	0.27	0.67	0.26	0.64	0.22	0.53
230	3.920	0.012	1.711	0.006	0.55	1.19	0.37	0.81	0.32	0.69	0.29	0.64	0.28	0.61	0.23	0.50
240	3.838	0.012	1.866	0.006	0.60	1.16	0.41	0.79	0.35	0.68	0.32	0.62	0.31	0.60	0.25	0.49
250	4.034	0.012	2.114	0.007	0.68	1.22	0.46	0.83	0.39	0.71	0.36	0.66	0.35	0.63	0.29	0.52
260	4.249	0.013	2.371	0.008	0.76	1.29	0.52	0.88	0.44	0.75	0.41	0.69	0.39	0.66	0.32	0.55
270	4.462	0.014	2.638	0.009	0.84	1.35	0.57	0.92	0.49	0.79	0.45	0.73	0.43	0.70	0.36	0.57
280	4.478	0.014	2.709	0.009	0.87	1.36	0.59	0.92	0.50	0.79	0.46	0.73	0.45	0.70	0.37	0.58
290	4.102	0.013	2.427	0.008	0.78	1.24	0.53	0.84	0.45	0.72	0.42	0.67	0.40	0.64	0.33	0.53
300	3.767	0.012	2.134	0.007	0.68	1.14	0.46	0.78	0.40	0.66	0.37	0.61	0.35	0.59	0.29	0.48
310	3.449	0.011	1.840	0.006	0.59	1.05	0.40	0.71	0.34	0.61	0.32	0.56	0.30	0.54	0.25	0.44
320	3.138	0.010	1.543	0.005	0.49	0.95	0.34	0.65	0.29	0.55	0.26	0.51	0.25	0.49	0.21	0.40
330	2.953	0.009	1.351	0.004	0.43	0.90	0.29	0.61	0.25	0.52	0.23	0.48	0.22	0.46	0.18	0.38
340	3.102	0.010	1.425	0.005	0.46	0.94	0.31	0.64	0.26	0.55	0.24	0.50	0.23	0.48	0.19	0.40
350	3.678	0.011	1.897	0.006	0.61	1.12	0.41	0.76	0.35	0.65	0.33	0.60	0.31	0.57	0.26	0.47
360	4.179	0.013	2.300	0.007	0.74	1.27	0.50	0.86	0.43	0.74	0.39	0.68	0.38	0.65	0.31	0.54
370	4.272	0.013	2.363	0.008	0.76	1.30	0.51	0.88	0.44	0.75	0.41	0.69	0.39	0.67	0.32	0.55
380	4.371	0.013	2.422	0.008	0.77	1.33	0.53	0.90	0.45	0.77	0.42	0.71	0.40	0.68	0.33	0.56
390	4.410	0.014	2.398	0.008	0.77	1.34	0.52	0.91	0.45	0.78	0.41	0.72	0.40	0.69	0.33	0.57
400	4.636	0.014	2.588	0.008	0.83	1.41	0.56	0.95	0.48	0.82	0.44	0.75	0.43	0.72	0.35	0.60
410	5.291	0.016	3.282	0.011	1.05	1.60	0.71	1.09	0.61	0.93	0.56	0.86	0.54	0.83	0.44	0.68
420	5.948	0.018	3.984	0.013	1.27	1.80	0.87	1.23	0.74	1.05	0.68	0.97	0.66	0.93	0.54	0.76
430	5.817	0.018	3.911	0.013	1.25	1.76	0.85	1.20	0.73	1.02	0.67	0.95	0.64	0.91	0.53	0.75
440	5.456	0.017	3.617	0.012	1.16	1.65	0.79	1.12	0.67	0.96	0.62	0.89	0.60	0.85	0.49	0.70
450	5.043	0.015	3.317	0.011	1.06	1.53	0.72	1.04	0.62	0.89	0.57	0.82	0.55	0.79	0.45	0.65
460	4.617	0.014	2.961	0.010	0.95	1.40	0.64	0.95	0.55	0.81	0.51	0.75	0.49	0.72	0.40	0.59
470	4.338	0.013	2.808	0.009	0.90	1.32	0.61	0.89	0.52	0.76	0.48	0.71	0.46	0.68	0.38	0.56
480	4.048	0.012	2.653	0.009	0.85	1.23	0.58	0.83	0.49	0.71	0.46	0.66	0.44	0.63	0.36	0.52
490	3.754	0.012	2.498	0.008	0.80	1.14	0.54	0.77	0.46	0.66	0.43	0.61	0.41	0.59	0.34	0.48
500	3.463	0.011	2.382	0.008	0.76	1.05	0.52	0.71	0.44	0.61	0.41	0.56	0.39	0.54	0.32	0.44
510	3.219	0.010	2.358	0.008	0.75	0.98	0.51	0.66	0.44	0.57	0.40	0.52	0.39	0.50	0.32	0.41
520	3.006	0.009	2.382	0.008	0.76	0.91	0.52	0.62	0.44	0.53	0.41	0.49	0.39	0.47	0.32	0.39
530	2.795	0.009	2.401	0.008	0.77	0.85	0.52	0.58	0.45	0.49	0.41	0.45	0.40	0.44	0.33	0.36
540	2.516	0.008	2.415	0.008	0.77	0.76	0.52	0.52	0.45	0.44	0.41	0.41	0.40	0.39	0.33	0.32
550	2.130	0.007	2.429	0.008	0.78	0.65	0.53	0.44	0.45	0.38	0.42	0.35	0.40	0.33	0.33	0.27
560	1.826	0.006	2.493	0.008	0.80	0.55	0.54	0.38	0.46	0.32	0.43	0.30	0.41	0.29	0.34	0.23
570	1.716	0.005	2.732	0.009	0.87	0.52	0.59	0.35	0.51	0.30	0.47	0.28	0.45	0.27	0.37	0.22
580	1.655	0.005	3.058	0.010	0.98	0.50	0.66	0.34	0.57	0.29	0.52	0.27	0.50	0.26	0.41	0.21
590	1.644	0.005	3.319	0.011	1.06	0.50	0.72	0.34	0.62	0.29	0.57	0.27	0.55	0.26	0.45	0.21
600	1.620	0.005	3.527	0.011	1.13	0.49	0.77	0.33	0.66	0.29	0.61	0.26	0.58	0.25	0.48	0.21
610	1.602	0.005	3.685	0.012	1.18	0.49	0.80	0.33	0.68	0.28	0.63	0.26	0.61	0.25	0.50	0.21
620	1.633	0.005	3.862	0.013	1.24	0.50	0.84	0.34	0.72	0.29	0.66	0.27	0.64	0.25	0.52	0.21
630	1.732	0.005	4.112	0.013	1.32	0.53	0.89	0.36	0.76	0.30	0.71	0.28	0.68	0.27	0.56	0.22
640	1.825	0.006	4.357	0.014	1.39	0.55	0.95	0.38	0.81	0.32	0.75	0.30	0.72	0.28	0.59	0.23
650	1.778	0.005	4.391	0.014	1.41	0.54	0.95	0.37	0.82	0.31	0.75	0.29	0.72	0.28	0.60	0.23
660	1.328	0.004	3.916	0.013	1.25	0.40	0.85	0.27	0.73	0.23	0.67	0.22	0.65	0.21	0.53	0.17
670	1.241	0.004	3.775	0.012	1.21	0.38	0.82	0.26	0.70	0.22	0.65	0.20	0.62	0.19	0.51	0.16
680	1.183	0.004	3.715	0.012	1.19	0.36	0.81	0.24	0.69	0.21	0.64	0.19	0.61	0.18	0.50	0.15
690	1.055	0.003	3.671	0.012	1.17	0.32	0.80	0.22	0.68	0.19	0.63	0.17	0.60	0.16	0.50	0.14
700	0.912	0.003	3.574	0.012	1.14	0.28	0.78	0.19	0.66	0.16	0.61	0.15	0.59	0.14	0.48	0.12
710	0.863	0.003	3.522	0.011	1.13	0.26	0.77	0.18	0.65	0.15	0.60	0.14	0.58	0.13	0.48	0.11
720	0.849	0.003	3.485	0.011	1.12	0.26	0.76	0.17	0.65	0.15	0.60	0.14	0.57	0.13	0.47	0.11
730	0.775	0.002	3.410	0.011	1.09	0.24	0.74	0.16	0.63	0.14	0.59	0.13	0.56	0.12	0.46	0.10
740	0.946	0.003	3.549	0.011	1.14	0.29	0.77	0.19	0.66	0.17	0.61	0.15	0.58	0.15	0.48	0.12
750	1.159	0.004	3.711	0.012	1.19	0.35	0.81	0.24	0.69	0.20	0.64	0.19	0.61	0.18	0.50	0.15
760	0.922	0.003	3.370	0.011	1.08	0.28	0.73	0.19	0.63	0.16	0.58	0.15	0.56	0.14	0.46	0.12
770	0.679	0.002	2.777	0.009	0.89	0.21	0.60	0.14	0.52	0.12	0.48	0.11	0.46	0.11	0.38	0.09
780	0.689	0.002	2.689	0.009	0.86	0.21	0.58	0.14	0.50	0.12	0.46	0.11	0.44	0.11	0.36	0.09
790	0.753	0.002	2.797	0.009	0.89	0.23	0.61	0.16	0.52	0.13	0.48	0.12	0.46	0.12	0.38	0.10
800	0.999	0.003	3.001	0.010	0.96	0.30	0.65	0.21	0.56	0.18	0.52	0.16	0.49	0.16	0.41	0.13
810	0.738	0.002	2.566	0.008	0.82	0.22	0.56	0.15	0.48	0.13	0.44	0.12	0.42	0.12	0.35	0.09
820	0.859	0.003	2.532	0.008	0.81	0.26	0.55	0.18	0.47	0.15	0.43	0.14	0.42	0.13	0.34	0.11
830	1.154	0.004	2.761	0.009	0.88	0.35	0.60	0.24	0.51	0.20	0.47	0.19	0.45	0.18	0.37	0.15
840	1.305	0.004	2.843	0.009	0.91	0.40	0.62	0.27	0.53	0.23	0.49	0.21	0.47	0.20	0.39	0.17
850	0.927	0.003	2.366	0.008	0.76	0.28	0.51	0.19	0.44	0.16	0.41	0.15	0.39	0.14	0.32	0.12
860	1.035	0.003	2.454	0.008	0.79	0.31	0.53	0.21	0.46	0.18	0.42	0.17	0.40	0.16	0.33	0.13
870	1.427	0.004	2.863	0.009	0.92	0.43	0.62	0.29	0.53	0.25	0.49	0.23	0.47	0.22	0.39	0.18
880	0.982	0.003	2.428	0.008	0.78	0.30	0.53	0.20	0.45	0.17	0.42	0.16	0.40	0.15	0.33	0.13
890	1.512	0.005	2.347	0.008	0.75	0.46	0.51	0.31	0.44	0.27	0.40	0.25	0.39	0.24	0.32	0.19
900	0.710	0.002	1.232	0.004	0.39	0.22	0.27	0.15	0.23	0.13	0.21	0.12	0.20	0.11	0.17	0.09
910	0.604	0.002	1.177	0.004	0.38	0.18	0.26	0.12	0.22	0.11	0.20	0.10	0.19	0.09	0.16	0.08
920	0.830	0.003	1.603	0.005	0.51	0.25	0.35	0.17	0.30	0.15	0.28	0.14	0.26	0.13	0.22	0.11
930	0.531	0.002	1.094	0.004	0.35	0.16	0.24	0.11	0.20	0.09	0.19	0.09	0.18	0.08	0.15	0.07
940	0.760	0.002	1.194	0.004	0.38	0.23	0.26	0.16	0.22	0.13	0.20	0.12	0.20	0.12	0.16	0.10
950	0.878	0.003	1.246	0.004	0.40	0.27	0.27	0.18	0.23	0.15	0.21	0.14	0.21	0.14	0.17	0.11
960	0.973	0.003	1.266	0.004	0.41	0.30	0.28	0.20	0.24	0.17	0.22	0.16	0.21	0.15	0.17	0.12
970	0.990	0.003	1.296	0.004	0.41	0.30	0.28	0.20	0.24	0.17	0.22	0.16	0.21	0.15	0.18	0.13
980	0.906	0.003	1.280	0.004	0.41	0.27	0.28	0.19	0.24	0.16	0.22	0.15	0.21	0.14	0.17	0.12
990	0.781	0.002	1.159	0.004	0.37	0.24	0.25	0.16	0.22	0.14	0.20	0.13	0.19	0.12	0.16	0.10
1000	0.782	0.002	1.194	0.004	0.38	0.24	0.26	0.16	0.22	0.14	0.20	0.13	0.20	0.12	0.16	0.10
1010	0.775	0.002	1.226	0.004	0.39	0.24	0.27	0.16	0.23	0.14	0.21	0.13	0.20	0.12	0.17	0.10
1020	0.783	0.002	1.302	0.004	0.42	0.24	0.28	0.16	0.24	0.14	0.22	0.13	0.21	0.12	0.18	0.10
1030	0.712	0.002	1.262	0.004	0.40	0.22	0.27	0.15	0.23	0.13	0.22	0.12	0.21	0.11	0.17	0.09
1040	0.886	0.003	1.608	0.005	0.51	0.27	0.35	0.18	0.30	0.16	0.28	0.14	0.26	0.14	0.22	0.11
1050	1.141	0.004	1.899	0.006	0.61	0.35	0.41	0.24	0.35	0.20	0.33	0.19	0.31	0.18	0.26	0.15
1060	1.431	0.004	1.864	0.006	0.60	0.43	0.41	0.29	0.35	0.25	0.32	0.23	0.31	0.22	0.25	0.18
1070	1.255	0.004	1.777	0.006	0.57	0.38	0.39	0.26	0.33	0.22	0.30	0.20	0.29	0.20	0.24	0.16
1080	1.059	0.003	1.600	0.005	0.51	0.32	0.35	0.22	0.30	0.19	0.27	0.17	0.26	0.17	0.22	0.14
1090	0.864	0.003	1.449	0.005	0.46	0.26	0.31	0.18	0.27	0.15	0.25	0.14	0.24	0.13	0.20	0.11
1100	0.982	0.003	1.579	0.005	0.51	0.30	0.34	0.20	0.29	0.17	0.27	0.16	0.26	0.15	0.21	0.13
1110	0.726	0.002	1.491	0.005	0.48	0.22	0.32	0.15	0.28	0.13	0.26	0.12	0.25	0.11	0.20	0.09
1120	0.636	0.002	1.316	0.004	0.42	0.19	0.29	0.13	0.24	0.11	0.23	0.10	0.22	0.10	0.18	0.08
1130	1.177	0.004	1.740	0.006	0.56	0.36	0.38	0.24	0.32	0.21	0.30	0.19	0.29	0.18	0.24	0.15
1140	0.953	0.003	1.430	0.005	0.46	0.29	0.31	0.20	0.27	0.17	0.25	0.16	0.24	0.15	0.19	0.12
1150	0.745	0.002	1.410	0.005	0.45	0.23	0.31	0.15	0.26	0.13	0.24	0.12	0.23	0.12	0.19	0.10
1160	0.802	0.002	1.696	0.005	0.54	0.24	0.37	0.17	0.32	0.14	0.29	0.13	0.28	0.13	0.23	0.10
1170	0.966	0.003	1.837	0.006	0.59	0.29	0.40	0.20	0.34	0.17	0.32	0.16	0.30	0.15	0.25	0.12
1180	1.101	0.003	1.670	0.005	0.53	0.33	0.36	0.23	0.31	0.19	0.29	0.18	0.28	0.17	0.23	0.14
1190	1.291	0.004	1.231	0.004	0.39	0.39	0.27	0.27	0.23	0.23	0.21	0.21	0.20	0.20	0.17	0.17
1200	1.916	0.006	1.352	0.004	0.43	0.58	0.29	0.39	0.25	0.34	0.23	0.31	0.22	0.30	0.18	0.25
1210	1.570	0.005	0.779	0.003	0.25	0.48	0.17	0.32	0.14	0.28	0.13	0.26	0.13	0.25	0.11	0.20
1220	1.175	0.004	0.645	0.002	0.21	0.36	0.14	0.24	0.12	0.21	0.11	0.19	0.11	0.18	0.09	0.15
1230	1.011	0.003	0.588	0.002	0.19	0.31	0.13	0.21	0.11	0.18	0.10	0.16	0.10	0.16	0.08	0.13
1240	1.018	0.003	0.572	0.002	0.18	0.31	0.12	0.21	0.11	0.18	0.10	0.17	0.09	0.16	0.08	0.13
1250	0.917	0.003	0.525	0.002	0.17	0.28	0.11	0.19	0.10	0.16	0.09	0.15	0.09	0.14	0.07	0.12
1260	0.818	0.003	0.518	0.002	0.17	0.25	0.11	0.17	0.10	0.14	0.09	0.13	0.09	0.13	0.07	0.11
1270	0.715	0.002	0.501	0.002	0.16	0.22	0.11	0.15	0.09	0.13	0.09	0.12	0.08	0.11	0.07	0.09
1280	0.599	0.002	0.481	0.002	0.15	0.18	0.10	0.12	0.09	0.11	0.08	0.10	0.08	0.09	0.07	0.08
1290	0.516	0.002	0.469	0.002	0.15	0.16	0.10	0.11	0.09	0.09	0.08	0.08	0.08	0.08	0.06	0.07
1300	0.520	0.002	0.457	0.001	0.15	0.16	0.10	0.11	0.08	0.09	0.08	0.08	0.08	0.08	0.06	0.07
1310	0.476	0.001	0.445	0.001	0.14	0.14	0.10	0.10	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06
1320	0.462	0.001	0.433	0.001	0.14	0.14	0.09	0.10	0.08	0.08	0.07	0.08	0.07	0.07	0.06	0.06
1330	0.448	0.001	0.421	0.001	0.13	0.14	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06
1340	0.434	0.001	0.409	0.001	0.13	0.13	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06
1350	0.420	0.001	0.397	0.001	0.13	0.13	0.09	0.09	0.07	0.07	0.07	0.07	0.07	0.07	0.05	0.05
1360	0.406	0.001	0.385	0.001	0.12	0.12	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.05	0.05
1370	0.392	0.001	0.373	0.001	0.12	0.12	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05
1380	0.378	0.001	0.361	0.001	0.12	0.11	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05
1390	0.364	0.001	0.349	0.001	0.11	0.11	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05
1400	0.350	0.001	0.337	0.001	0.11	0.11	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.04
1410	0.336	0.001	0.325	0.001	0.10	0.10	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04
1420	0.322	0.001	0.313	0.001	0.10	0.10	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04
1430	0.308	0.001	0.301	0.001	0.10	0.09	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.04
1440	0.294	0.001	0.289	0.001	0.09	0.09	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04
1450	0.280	0.001	0.277	0.001	0.09	0.08	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04
1460	0.266	0.001	0.265	0.001	0.08	0.08	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03
1470	0.252	0.001	0.253	0.001	0.08	0.08	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.03	0.03
1480	0.238	0.001	0.241	0.001	0.08	0.07	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03
1490	0.224	0.001	0.229	0.001	0.07	0.07	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03
1500	0.210	0.001	0.217	0.001	0.07	0.06	0.05	0.04	0.04	0.04	0.04	0.03	0.04	0.03	0.03	0.03
1510	0.196	0.001	0.205	0.001	0.07	0.06	0.04	0.04	0.04	0.03	0.04	0.03	0.03	0.03	0.03	0.03
1520	0.182	0.001	0.193	0.001	0.06	0.06	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.02
1530	0.168	0.001	0.181	0.001	0.06	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02
1540	0.154	0.000	0.169	0.001	0.05	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
1550	0.140	0.000	0.157	0.001	0.05	0.04	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.02	0.02
1560	0.126	0.000	0.145	0.000	0.05	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1570	0.112	0.000	0.133	0.000	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
1580	0.098	0.000	0.121	0.000	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
1590	0.084	0.000	0.109	0.000	0.03	0.03	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1600	0.070	0.000	0.097	0.000	0.03	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1610	0.056	0.000	0.085	0.000	0.03	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1620	0.042	0.000	0.073	0.000	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1630	0.028	0.000	0.061	0.000	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1640	0.014	0.000	0.049	0.000	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00

SD-0675	Stone Steps	0	0	Avg. Net SL Change	3.98	5.19	5.02	4.81	4.57	5.17						
SD-675	188.01	0	174.875	1230	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
-10	0.434	0.002308	0.606	0.003465	0.16	0.11	0.21	0.14	0.21	0.14	0.20	0.13	0.19	0.13	0.21	0.14
0	2.983	0.015866	3.417	0.01954	0.93	0.75	1.21	0.98	1.17	0.95	1.12	0.91	1.06	0.86	1.20	0.98
10	3.43	0.018244	3.368	0.019259	0.91	0.87	1.19	1.13	1.15	1.09	1.10	1.05	1.05	0.99	1.19	1.12
20	3.048	0.016212	3.046	0.017418	0.83	0.77	1.08	1.00	1.04	0.97	1.00	0.93	0.95	0.88	1.07	1.00
30	2.753	0.014643	2.687	0.015365	0.73	0.69	0.95	0.91	0.92	0.88	0.88	0.84	0.84	0.80	0.95	0.90
40	2.424	0.012893	2.359	0.01349	0.64	0.61	0.83	0.80	0.81	0.77	0.77	0.74	0.73	0.70	0.83	0.79
50	2.172	0.011553	1.99	0.01138	0.54	0.55	0.70	0.71	0.68	0.69	0.65	0.66	0.62	0.63	0.70	0.71
60	1.996	0.010616	1.779	0.010173	0.48	0.50	0.63	0.66	0.61	0.64	0.58	0.61	0.55	0.58	0.63	0.65
70	1.883	0.010015	1.629	0.009315	0.44	0.47	0.58	0.62	0.56	0.60	0.53	0.57	0.51	0.55	0.57	0.62
80	1.786	0.009499	1.433	0.008194	0.39	0.45	0.51	0.59	0.49	0.57	0.47	0.54	0.45	0.52	0.51	0.59
90	1.825	0.009707	1.341	0.007668	0.36	0.46	0.47	0.60	0.46	0.58	0.44	0.56	0.42	0.53	0.47	0.60
100	2.285	0.012154	1.634	0.009344	0.44	0.58	0.58	0.75	0.56	0.73	0.54	0.70	0.51	0.66	0.58	0.75
110	2.716	0.014446	1.922	0.010991	0.52	0.69	0.68	0.89	0.66	0.86	0.63	0.83	0.60	0.79	0.68	0.89
120	2.907	0.015462	2.048	0.011711	0.56	0.73	0.72	0.96	0.70	0.93	0.67	0.89	0.64	0.84	0.72	0.95
130	3.161	0.016813	2.177	0.012449	0.59	0.80	0.77	1.04	0.74	1.01	0.71	0.96	0.68	0.92	0.77	1.04
140	3.484	0.018531	2.313	0.013227	0.63	0.88	0.82	1.15	0.79	1.11	0.76	1.06	0.72	1.01	0.82	1.14
150	3.789	0.020153	2.427	0.013878	0.66	0.96	0.86	1.25	0.83	1.21	0.80	1.15	0.76	1.10	0.86	1.24
160	3.91	0.020797	2.362	0.013507	0.64	0.99	0.84	1.29	0.81	1.24	0.77	1.19	0.74	1.13	0.83	1.28
170	3.627	0.019292	1.935	0.011065	0.52	0.91	0.68	1.19	0.66	1.15	0.63	1.11	0.60	1.05	0.68	1.19
180	3.355	0.017845	1.548	0.008852	0.42	0.85	0.55	1.10	0.53	1.07	0.51	1.02	0.48	0.97	0.55	1.10
190	3.083	0.016398	1.235	0.007062	0.33	0.78	0.44	1.01	0.42	0.98	0.40	0.94	0.38	0.89	0.44	1.01
200	2.866	0.015244	1.084	0.006199	0.29	0.72	0.38	0.94	0.37	0.91	0.36	0.87	0.34	0.83	0.38	0.94
210	2.939	0.015632	1.211	0.006925	0.33	0.74	0.43	0.97	0.41	0.94	0.40	0.90	0.38	0.85	0.43	0.96
220	2.989	0.015898	1.279	0.007314	0.35	0.75	0.45	0.98	0.44	0.95	0.42	0.91	0.40	0.87	0.45	0.98
230	2.846	0.015137	1.188	0.006793	0.32	0.72	0.42	0.94	0.41	0.91	0.39	0.87	0.37	0.82	0.42	0.93
240	2.958	0.015733	1.343	0.00768	0.36	0.75	0.48	0.97	0.46	0.94	0.44	0.90	0.42	0.86	0.47	0.97
250	3.214	0.017095	1.626	0.009298	0.44	0.81	0.58	1.06	0.56	1.02	0.53	0.98	0.51	0.93	0.57	1.05
260	3.423	0.018206	1.843	0.010539	0.50	0.86	0.65	1.13	0.63	1.09	0.60	1.04	0.57	0.99	0.65	1.12
270	3.258	0.017329	1.674	0.009573	0.45	0.82	0.59	1.07	0.57	1.04	0.55	0.99	0.52	0.94	0.59	1.07
280	2.95	0.015691	1.347	0.007703	0.37	0.74	0.48	0.97	0.46	0.94	0.44	0.90	0.42	0.85	0.47	0.97
290	3.176	0.016893	1.535	0.008778	0.42	0.80	0.54	1.05	0.53	1.01	0.50	0.97	0.48	0.92	0.54	1.04
300	3.394	0.018052	1.704	0.009744	0.46	0.86	0.60	1.12	0.58	1.08	0.56	1.03	0.53	0.98	0.60	1.11
310	3.608	0.01919	1.86	0.010636	0.50	0.91	0.66	1.19	0.64	1.15	0.61	1.10	0.58	1.04	0.66	1.18
320	3.725	0.019813	1.937	0.011076	0.53	0.94	0.69	1.23	0.66	1.19	0.63	1.14	0.60	1.08	0.68	1.22
330	3.291	0.017504	1.566	0.008955	0.42	0.83	0.55	1.08	0.54	1.05	0.51	1.00	0.49	0.95	0.55	1.08
340	2.743	0.01459	1.12	0.006405	0.30	0.69	0.40	0.90	0.38	0.87	0.37	0.84	0.35	0.79	0.39	0.90
350	2.23	0.011861	0.721	0.004123	0.20	0.56	0.26	0.73	0.25	0.71	0.24	0.68	0.22	0.65	0.25	0.73
360	1.967	0.010462	0.574	0.003282	0.16	0.50	0.20	0.65	0.20	0.63	0.19	0.60	0.18	0.57	0.20	0.64
370	1.831	0.009739	0.518	0.002962	0.14	0.46	0.18	0.60	0.18	0.58	0.17	0.56	0.16	0.53	0.18	0.60
380	1.702	0.009053	0.474	0.002711	0.13	0.43	0.17	0.56	0.16	0.54	0.16	0.52	0.15	0.49	0.17	0.56
390	1.62	0.008617	0.477	0.002728	0.13	0.41	0.17	0.53	0.16	0.52	0.16	0.49	0.15	0.47	0.17	0.53
400	1.505	0.008005	0.479	0.002739	0.13	0.38	0.17	0.50	0.16	0.48	0.16	0.46	0.15	0.44	0.17	0.49
410	1.371	0.007292	0.509	0.002911	0.14	0.35	0.18	0.45	0.17	0.44	0.17	0.42	0.16	0.40	0.18	0.45
420	1.271	0.00676	0.57	0.003259	0.15	0.32	0.20	0.42	0.20	0.40	0.19	0.39	0.18	0.37	0.20	0.42
430	1.27	0.006755	0.698	0.003991	0.19	0.32	0.25	0.42	0.24	0.40	0.23	0.39	0.22	0.37	0.25	0.42
440	1.394	0.007414	0.913	0.005221	0.25	0.35	0.32	0.46	0.31	0.44	0.30	0.42	0.28	0.40	0.32	0.46
450	1.468	0.007808	1.113	0.006365	0.30	0.37	0.39	0.48	0.38	0.47	0.36	0.45	0.35	0.42	0.39	0.48
460	1.528	0.008127	1.306	0.007468	0.35	0.39	0.46	0.50	0.45	0.49	0.43	0.47	0.41	0.44	0.46	0.50
470	1.547	0.008228	1.494	0.008543	0.41	0.39	0.53	0.51	0.51	0.49	0.49	0.47	0.46	0.45	0.53	0.51
480	1.585	0.00843	1.654	0.009458	0.45	0.40	0.59	0.52	0.57	0.50	0.54	0.48	0.51	0.46	0.58	0.52
490	1.584	0.008425	1.817	0.01039	0.49	0.40	0.64	0.52	0.62	0.50	0.60	0.48	0.57	0.46	0.64	0.52
500	1.663	0.008845	2.115	0.012094	0.57	0.42	0.75	0.55	0.72	0.53	0.69	0.51	0.66	0.48	0.75	0.55
510	1.741	0.00926	2.418	0.013827	0.66	0.44	0.86	0.57	0.83	0.55	0.79	0.53	0.75	0.50	0.85	0.57
520	1.542	0.008202	2.352	0.01345	0.64	0.39	0.83	0.51	0.80	0.49	0.77	0.47	0.73	0.45	0.83	0.51
530	1.143	0.006079	2.02	0.011551	0.55	0.29	0.71	0.38	0.69	0.36	0.66	0.35	0.63	0.33	0.71	0.37
540	0.99	0.005266	1.978	0.011311	0.54	0.25	0.70	0.33	0.68	0.32	0.65	0.30	0.62	0.29	0.70	0.32
550	0.793	0.004218	1.983	0.01134	0.54	0.20	0.70	0.26	0.68	0.25	0.65	0.24	0.62	0.23	0.70	0.26
560	0.898	0.004776	2.342	0.013392	0.64	0.23	0.83	0.30	0.80	0.29	0.77	0.27	0.73	0.26	0.83	0.29
570	1.033	0.005494	2.745	0.015697	0.74	0.26	0.97	0.34	0.94	0.33	0.90	0.31	0.85	0.30	0.97	0.34
580	1.474	0.00784	3.276	0.018733	0.89	0.37	1.16	0.49	1.12	0.47	1.07	0.45	1.02	0.43	1.15	0.48
590	1.822	0.009691	3.306	0.018905	0.90	0.46	1.17	0.60	1.13	0.58	1.08	0.56	1.03	0.53	1.17	0.60
600	1.541	0.008196	3.109	0.017778	0.84	0.39	1.10	0.51	1.06	0.49	1.02	0.47	0.97	0.45	1.10	0.51
610	1.153	0.006133	2.907	0.016623	0.79	0.29	1.03	0.38	0.99	0.37	0.95	0.35	0.90	0.33	1.02	0.38
620	1.097	0.005835	2.819	0.01612	0.76	0.28	1.00	0.36	0.96	0.35	0.92	0.33	0.88	0.32	0.99	0.36
630	0.938	0.004989	2.341	0.013387	0.63	0.24	0.83	0.31	0.80	0.30	0.77	0.29	0.73	0.27	0.83	0.31
640	0.882	0.004691	2.226	0.012729	0.60	0.22	0.79	0.29	0.76	0.28	0.73	0.27	0.69	0.26	0.78	0.29
650	1.16	0.00617	2.173	0.012426	0.59	0.29	0.77	0.38	0.74	0.37	0.71	0.35	0.68	0.34	0.77	0.38
660	1.43	0.007606	2.158	0.01234	0.59	0.36	0.76	0.47	0.74	0.46	0.71	0.44	0.67	0.41	0.76	0.47
670	1.436	0.007638	2.119	0.012117	0.57	0.36	0.75	0.47	0.72	0.46	0.69	0.44	0.66	0.42	0.75	0.47
680	0.943	0.005016	1.856	0.010613	0.50	0.24	0.66	0.31	0.63	0.30	0.61	0.29	0.58	0.27	0.65	0.31
690	0.652	0.003468	1.523	0.008709	0.41	0.16	0.54	0.21	0.52	0.21	0.50	0.20	0.47	0.19	0.54	0.21
700	0.774	0.004117	1.373	0.007851	0.37	0.20	0.49	0.25	0.47	0.25	0.45	0.24	0.43	0.22	0.48	0.25
710	0.568	0.003021	1.288	0.007365	0.35	0.14	0.46	0.19	0.44	0.18	0.42	0.17	0.40	0.16	0.45	0.19
720	0.424	0.002255	1.107	0.00633	0.30	0.11	0.39	0.14	0.38	0.13	0.36	0.13	0.34	0.12	0.39	0.14
730	0.721	0.003835	1.083	0.006193	0.29	0.18	0.38	0.24	0.37	0.23	0.35	0.22	0.34	0.21	0.38	0.24
740	0.759	0.004037	1.049	0.005999	0.28	0.19	0.37	0.25	0.36	0.24	0.34	0.23	0.33	0.22	0.37	0.25
750	0.683	0.003633	0.762	0.004357	0.21	0.17	0.27	0.22	0.26	0.22	0.25	0.21	0.24	0.20	0.27	0.22
760	0.961	0.005111	0.94	0.005375	0.25	0.24	0.33	0.32	0.32	0.31	0.31	0.29	0.29	0.28	0.33	0.32
770	1.002	0.00533	1.234	0.007056	0.33	0.25	0.44	0.33	0.42	0.32	0.40	0.31	0.38	0.29	0.43	0.33
780	0.658	0.0035	1.345	0.007691	0.36	0.17	0.48	0.22	0.46	0.21	0.44	0.20	0.42	0.19	0.47	0.22
790	0.563	0.002995	1.383	0.007909	0.38	0.14	0.49	0.19	0.47	0.18	0.45	0.17	0.43	0.16	0.49	0.18
800	0.52	0.002766	0.876	0.005009	0.24	0.13	0.31	0.17	0.30	0.17	0.29	0.16	0.27	0.15	0.31	0.17
810	0.485	0.00258	0.704	0.004026	0.19	0.12	0.25	0.16	0.24	0.15	0.23	0.15	0.22	0.14	0.25	0.16
820	0.467	0.002484	0.783	0.004477	0.21	0.12	0.28	0.15	0.27	0.15	0.26	0.14	0.24	0.14	0.28	0.15
830	0.485	0.00258	1.168	0.006679	0.32	0.12	0.41	0.16	0.40	0.15	0.38	0.15	0.36	0.14	0.41	0.16
840	0.615	0.003271	1.266	0.007239	0.34	0.16	0.45	0.20	0.43	0.20	0.41	0.19	0.39	0.18	0.45	0.20
850	0.562	0.002989	1.12	0.006405	0.30	0.14	0.40	0.18	0.38	0.18	0.37	0.17	0.35	0.16	0.39	0.18
860	0.524	0.002787	0.87	0.004975	0.24	0.13	0.31	0.17	0.30	0.17	0.29	0.16	0.27	0.15	0.31	0.17
870	0.451	0.002399	0.843	0.004821	0.23	0.11	0.30	0.15	0.29	0.14	0.28	0.14	0.26	0.13	0.30	0.15
880	0.333	0.001771	0.807	0.004615	0.22	0.08	0.29	0.11	0.28	0.11	0.26	0.10	0.25	0.10	0.28	0.11
890	0.76	0.004042	1.454	0.008315	0.39	0.19	0.51	0.25	0.50	0.24	0.48	0.23	0.45	0.22	0.51	0.25
900	0.348	0.001851	0.931	0.005324	0.25	0.09	0.33	0.11	0.32	0.11	0.31	0.11	0.29	0.10	0.33	0.11
910	0.597	0.003175	1.135	0.00649	0.31	0.15	0.40	0.20	0.39	0.19	0.37	0.18	0.35	0.17	0.40	0.20
920	0.964	0.005127	1.312	0.007503	0.36	0.24	0.46	0.32	0.45	0.31	0.43	0.29	0.41	0.28	0.46	0.32
930	1.392	0.007404	1.67	0.00955	0.45	0.35	0.59	0.46	0.57	0.44	0.55	0.42	0.52	0.40	0.59	0.46
940	1.405	0.007473	1.602	0.009161	0.43	0.35	0.57	0.46	0.55	0.45	0.52	0.43	0.50	0.41	0.56	0.46
950	1.29	0.006861	1.448	0.00828	0.39	0.33	0.51	0.42	0.50	0.41	0.47	0.39	0.45	0.37	0.51	0.42
960	1.102	0.005861	1.13	0.006462	0.31	0.28	0.40	0.36	0.39	0.35	0.37	0.34	0.35	0.32	0.40	0.36
970	1.122	0.005968	0.81	0.004632	0.22	0.28	0.29	0.37	0.28	0.36	0.27	0.34	0.25	0.32	0.29	0.37
980	1.198	0.006372	0.653	0.003734	0.18	0.30	0.23	0.39	0.22	0.38	0.21	0.37	0.20	0.35	0.23	0.39
990	1.046	0.005564	0.697	0.003986	0.19	0.26	0.25	0.34	0.24	0.33	0.23	0.32	0.22	0.30	0.25	0.34
1000	1.078	0.005734	0.847	0.004843	0.23	0.27	0.30	0.35	0.29	0.34	0.28	0.33	0.26	0.31	0.30	0.35
1010	0.981	0.005218	0.89	0.005089	0.24	0.25	0.31	0.32	0.30	0.31	0.29	0.30	0.28	0.28	0.31	0.32
1020	0.871	0.004633	0.886	0.005066	0.24	0.22	0.31	0.29	0.30	0.28	0.29	0.27	0.28	0.25	0.31	0.29
1030	0.895	0.00476	1.006	0.005753	0.27	0.23	0.36	0.29	0.34	0.28	0.33	0.27	0.31	0.26	0.35	0.29
1040	0.948	0.005042	1.235	0.007062	0.33	0.24	0.44	0.31	0.42	0.30	0.40	0.29	0.38	0.27	0.44	0.31
1050	1.046	0.005564	1.528	0.008738	0.41	0.26	0.54	0.34	0.52	0.33	0.50	0.32	0.48	0.30	0.54	0.34
1060	1.033	0.005494	1.624	0.009287	0.44	0.26	0.57	0.34	0.56	0.33	0.53	0.31	0.51	0.30	0.57	0.34
1070	0.759	0.004037	1.303	0.007451	0.35	0.19	0.46	0.25	0.45	0.24	0.43	0.23	0.41	0.22	0.46	0.25
1080	0.872	0.004638	1.273	0.007279	0.35	0.22	0.45	0.29	0.44	0.28	0.42	0.27	0.40	0.25	0.45	0.29
1090	0.473	0.002516	0.738	0.00422	0.20	0.12	0.26	0.16	0.25	0.15	0.24	0.14	0.23	0.14	0.26	0.16
1100	0.455	0.00242	0.549	0.003139	0.15	0.11	0.19	0.15	0.19	0.14	0.18	0.14	0.17	0.13	0.19	0.15
1110	0.425	0.002261	0.509	0.002911	0.14	0.11	0.18	0.14	0.17	0.14	0.17	0.13	0.16	0.12	0.18	0.14
1120	0.395	0.002101	0.469	0.002682	0.13	0.10	0.17	0.13	0.16	0.13	0.15	0.12	0.15	0.11	0.17	0.13
1130	0.365	0.001941	0.429	0.002453	0.12	0.09	0.15	0.12	0.15	0.12	0.14	0.11	0.13	0.11	0.15	0.12
1140	0.335	0.001782	0.389	0.002224	0.11	0.08	0.14	0.11	0.13	0.11	0.13	0.10	0.12	0.10	0.14	0.11
1150	0.305	0.001622	0.349	0.001996	0.09	0.08	0.12	0.10	0.12	0.10	0.11	0.09	0.11	0.09	0.12	0.10
1160	0.275	0.001463	0.309	0.001767	0.08	0.07	0.11	0.09	0.11	0.09	0.10	0.08	0.10	0.08	0.11	0.09
1170	0.245	0.001303	0.269	0.001538	0.07	0.06	0.10	0.08	0.09	0.08	0.09	0.07	0.08	0.07	0.09	0.08
1180	0.215	0.001144	0.229	0.00131	0.06	0.05	0.08	0.07	0.08	0.07	0.08	0.07	0.07	0.06	0.08	0.07
1190	0.185	0.000984	0.189	0.001081	0.05	0.05	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.07	0.06
1200	0.155	0.000824	0.149	0.000852	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05
1210	0.125	0.000665	0.109	0.000623	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04
1220	0.095	0.000505	0.069	0.000395	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03
1230	0.065	0.000346	0.029	0.000166	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02

SD-0680	Beacons	0	0	Avg. Net Sl	2.27	3.69	4.01	4.05	3.98	5.82						
SD-680	269.71	0	210.742	1357			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.030	0.000	0.023	0.000	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10	6.439	0.024	6.588	0.031	0.84	0.65	1.38	1.05	1.49	1.14	1.51	1.15	1.48	1.13	2.17	1.66
20	6.008	0.022	6.548	0.031	0.84	0.60	1.37	0.98	1.49	1.06	1.50	1.07	1.47	1.06	2.16	1.55
30	5.776	0.021	5.975	0.028	0.77	0.58	1.25	0.94	1.36	1.02	1.37	1.03	1.34	1.02	1.97	1.49
40	5.631	0.021	5.842	0.028	0.75	0.56	1.22	0.92	1.32	1.00	1.34	1.01	1.31	0.99	1.92	1.45
50	5.291	0.020	5.651	0.027	0.72	0.53	1.18	0.86	1.28	0.94	1.29	0.95	1.27	0.93	1.86	1.36
60	5.073	0.019	5.112	0.024	0.66	0.51	1.07	0.83	1.16	0.90	1.17	0.91	1.15	0.89	1.68	1.31
70	4.867	0.018	4.607	0.022	0.59	0.49	0.96	0.79	1.04	0.86	1.05	0.87	1.04	0.86	1.52	1.25
80	4.740	0.018	4.172	0.020	0.53	0.47	0.87	0.77	0.95	0.84	0.95	0.85	0.94	0.83	1.37	1.22
90	4.701	0.017	3.913	0.019	0.50	0.47	0.82	0.77	0.89	0.83	0.90	0.84	0.88	0.83	1.29	1.21
100	4.587	0.017	3.725	0.018	0.48	0.46	0.78	0.75	0.84	0.81	0.85	0.82	0.84	0.81	1.23	1.18
110	4.312	0.016	3.366	0.016	0.43	0.43	0.70	0.70	0.76	0.76	0.77	0.77	0.76	0.76	1.11	1.11
120	4.130	0.015	3.084	0.015	0.40	0.41	0.64	0.67	0.70	0.73	0.71	0.74	0.69	0.73	1.02	1.06
130	4.056	0.015	2.950	0.014	0.38	0.41	0.62	0.66	0.67	0.72	0.68	0.73	0.66	0.71	0.97	1.04
140	4.007	0.015	2.888	0.014	0.37	0.40	0.60	0.65	0.65	0.71	0.66	0.72	0.65	0.70	0.95	1.03
150	3.948	0.015	2.845	0.013	0.36	0.40	0.59	0.64	0.65	0.70	0.65	0.71	0.64	0.69	0.94	1.02
160	3.889	0.014	2.824	0.013	0.36	0.39	0.59	0.63	0.64	0.69	0.65	0.70	0.64	0.68	0.93	1.00
170	3.879	0.014	2.840	0.013	0.36	0.39	0.59	0.63	0.64	0.69	0.65	0.69	0.64	0.68	0.94	1.00
180	3.903	0.014	2.864	0.014	0.37	0.39	0.60	0.64	0.65	0.69	0.66	0.70	0.64	0.69	0.94	1.00
190	3.952	0.015	2.898	0.014	0.37	0.40	0.61	0.65	0.66	0.70	0.66	0.71	0.65	0.69	0.95	1.02
200	4.007	0.015	2.926	0.014	0.38	0.40	0.61	0.65	0.66	0.71	0.67	0.72	0.66	0.70	0.96	1.03
210	3.967	0.015	2.848	0.014	0.37	0.40	0.60	0.65	0.65	0.70	0.65	0.71	0.64	0.70	0.94	1.02
220	3.817	0.014	2.656	0.013	0.34	0.38	0.55	0.62	0.60	0.68	0.61	0.68	0.60	0.67	0.87	0.98
230	3.686	0.014	2.462	0.012	0.32	0.37	0.51	0.60	0.56	0.65	0.56	0.66	0.55	0.65	0.81	0.95
240	3.555	0.013	2.270	0.011	0.29	0.36	0.47	0.58	0.51	0.63	0.52	0.64	0.51	0.62	0.75	0.91
250	3.428	0.013	2.076	0.010	0.27	0.34	0.43	0.56	0.47	0.61	0.48	0.61	0.47	0.60	0.68	0.88
260	3.301	0.012	1.880	0.009	0.24	0.33	0.39	0.54	0.43	0.58	0.43	0.59	0.42	0.58	0.62	0.85
270	3.181	0.012	1.680	0.008	0.22	0.32	0.35	0.52	0.38	0.56	0.38	0.57	0.38	0.56	0.55	0.82
280	3.267	0.012	1.686	0.008	0.22	0.33	0.35	0.53	0.38	0.58	0.39	0.58	0.38	0.57	0.56	0.84
290	3.500	0.013	1.848	0.009	0.24	0.35	0.39	0.57	0.42	0.62	0.42	0.63	0.42	0.62	0.61	0.90
300	3.760	0.014	2.081	0.010	0.27	0.38	0.43	0.61	0.47	0.67	0.48	0.67	0.47	0.66	0.69	0.97
310	3.746	0.014	2.053	0.010	0.26	0.38	0.43	0.61	0.47	0.66	0.47	0.67	0.46	0.66	0.68	0.96
320	3.274	0.012	1.576	0.007	0.20	0.33	0.33	0.53	0.36	0.58	0.36	0.59	0.35	0.58	0.52	0.84
330	3.014	0.011	1.327	0.006	0.17	0.30	0.28	0.49	0.30	0.53	0.30	0.54	0.30	0.53	0.44	0.78
340	3.683	0.014	2.024	0.010	0.26	0.37	0.42	0.60	0.46	0.65	0.46	0.66	0.46	0.65	0.67	0.95
350	3.063	0.011	1.427	0.007	0.18	0.31	0.30	0.50	0.32	0.54	0.33	0.55	0.32	0.54	0.47	0.79
360	2.517	0.009	0.871	0.004	0.11	0.25	0.18	0.41	0.20	0.45	0.20	0.45	0.20	0.44	0.29	0.65
370	2.475	0.009	0.761	0.004	0.10	0.25	0.16	0.40	0.17	0.44	0.17	0.44	0.17	0.43	0.25	0.64
380	2.788	0.010	1.023	0.005	0.13	0.28	0.21	0.46	0.23	0.49	0.23	0.50	0.23	0.49	0.34	0.72
390	3.154	0.012	1.332	0.006	0.17	0.32	0.28	0.51	0.30	0.56	0.30	0.56	0.30	0.55	0.44	0.81
400	3.505	0.013	1.595	0.008	0.20	0.35	0.33	0.57	0.36	0.62	0.37	0.63	0.36	0.62	0.53	0.90
410	3.843	0.014	1.842	0.009	0.24	0.39	0.38	0.63	0.42	0.68	0.42	0.69	0.41	0.68	0.61	0.99
420	4.046	0.015	1.984	0.009	0.25	0.41	0.41	0.66	0.45	0.72	0.45	0.72	0.45	0.71	0.65	1.04
430	3.971	0.015	1.921	0.009	0.25	0.40	0.40	0.65	0.44	0.70	0.44	0.71	0.43	0.70	0.63	1.02
440	3.890	0.014	1.846	0.009	0.24	0.39	0.39	0.64	0.42	0.69	0.42	0.70	0.42	0.68	0.61	1.00
450	3.783	0.014	1.782	0.008	0.23	0.38	0.37	0.62	0.40	0.67	0.41	0.68	0.40	0.66	0.59	0.97
460	3.621	0.013	1.719	0.008	0.22	0.36	0.36	0.59	0.39	0.64	0.39	0.65	0.39	0.64	0.57	0.93
470	3.458	0.013	1.654	0.008	0.21	0.35	0.35	0.56	0.38	0.61	0.38	0.62	0.37	0.61	0.54	0.89
480	3.438	0.013	1.692	0.008	0.22	0.34	0.35	0.56	0.38	0.61	0.39	0.61	0.38	0.60	0.56	0.88
490	3.373	0.013	1.724	0.008	0.22	0.34	0.36	0.55	0.39	0.60	0.39	0.60	0.39	0.59	0.57	0.87
500	3.047	0.011	1.673	0.008	0.21	0.31	0.35	0.50	0.38	0.54	0.38	0.54	0.38	0.54	0.55	0.78
510	2.745	0.010	1.761	0.008	0.23	0.28	0.37	0.45	0.40	0.49	0.40	0.49	0.40	0.48	0.58	0.71
520	2.599	0.010	1.945	0.009	0.25	0.26	0.41	0.42	0.44	0.46	0.45	0.46	0.44	0.46	0.64	0.67
530	2.178	0.008	1.783	0.008	0.23	0.22	0.37	0.36	0.40	0.39	0.41	0.39	0.40	0.38	0.59	0.56
540	1.856	0.007	1.508	0.007	0.19	0.19	0.32	0.30	0.34	0.33	0.35	0.33	0.34	0.33	0.50	0.48
550	1.694	0.006	1.593	0.008	0.20	0.17	0.33	0.28	0.36	0.30	0.36	0.30	0.36	0.30	0.52	0.44
560	2.406	0.009	2.000	0.009	0.26	0.24	0.42	0.39	0.45	0.43	0.46	0.43	0.45	0.42	0.66	0.62
570	2.532	0.009	2.045	0.010	0.26	0.25	0.43	0.41	0.46	0.45	0.47	0.45	0.46	0.45	0.67	0.65
580	2.378	0.009	1.988	0.009	0.25	0.24	0.42	0.39	0.45	0.42	0.45	0.43	0.45	0.42	0.65	0.61
590	1.942	0.007	1.792	0.009	0.23	0.19	0.37	0.32	0.41	0.34	0.41	0.35	0.40	0.34	0.59	0.50
600	1.874	0.007	1.865	0.009	0.24	0.19	0.39	0.31	0.42	0.33	0.43	0.34	0.42	0.33	0.61	0.48
610	1.934	0.007	1.859	0.009	0.24	0.19	0.39	0.32	0.42	0.34	0.43	0.35	0.42	0.34	0.61	0.50
620	2.065	0.008	1.517	0.007	0.19	0.21	0.32	0.34	0.34	0.37	0.35	0.37	0.34	0.36	0.50	0.53
630	2.251	0.008	1.772	0.008	0.23	0.23	0.37	0.37	0.40	0.40	0.41	0.40	0.40	0.40	0.58	0.58
640	2.138	0.008	1.193	0.006	0.15	0.21	0.25	0.35	0.27	0.38	0.27	0.38	0.27	0.38	0.39	0.55
650	2.007	0.007	1.164	0.006	0.15	0.20	0.24	0.33	0.26	0.36	0.27	0.36	0.26	0.35	0.38	0.52
660	2.416	0.009	1.748	0.008	0.22	0.24	0.37	0.39	0.40	0.43	0.40	0.43	0.39	0.42	0.58	0.62
670	2.641	0.010	1.764	0.008	0.23	0.26	0.37	0.43	0.40	0.47	0.40	0.47	0.40	0.46	0.58	0.68
680	2.367	0.009	1.423	0.007	0.18	0.24	0.30	0.39	0.32	0.42	0.33	0.42	0.32	0.42	0.47	0.61
690	2.785	0.010	1.484	0.007	0.19	0.28	0.31	0.45	0.34	0.49	0.34	0.50	0.33	0.49	0.49	0.72
700	1.671	0.006	1.062	0.005	0.14	0.17	0.22	0.27	0.24	0.30	0.24	0.30	0.24	0.29	0.35	0.43
710	1.797	0.007	2.164	0.010	0.28	0.18	0.45	0.29	0.49	0.32	0.50	0.32	0.49	0.32	0.71	0.46
720	1.634	0.006	2.247	0.011	0.29	0.16	0.47	0.27	0.51	0.29	0.51	0.29	0.51	0.29	0.74	0.42
730	1.350	0.005	1.860	0.009	0.24	0.14	0.39	0.22	0.42	0.24	0.43	0.24	0.42	0.24	0.61	0.35
740	0.823	0.003	1.251	0.006	0.16	0.08	0.26	0.13	0.28	0.15	0.29	0.15	0.28	0.14	0.41	0.21
750	0.680	0.003	1.165	0.006	0.15	0.07	0.24	0.11	0.26	0.12	0.27	0.12	0.26	0.12	0.38	0.17
760	0.670	0.002	1.555	0.007	0.20	0.07	0.32	0.11	0.35	0.12	0.36	0.12	0.35	0.12	0.51	0.17
770	0.660	0.002	1.010	0.005	0.13	0.07	0.21	0.11	0.23	0.12	0.23	0.12	0.23	0.12	0.33	0.17
780	0.650	0.002	0.994	0.005	0.13	0.07	0.21	0.11	0.23	0.12	0.23	0.12	0.22	0.11	0.33	0.17
790	0.640	0.002	0.978	0.005	0.13	0.06	0.20	0.10	0.22	0.11	0.22	0.11	0.22	0.11	0.32	0.16
800	0.630	0.002	0.962	0.005	0.12	0.06	0.20	0.10	0.22	0.11	0.22	0.11	0.22	0.11	0.32	0.16
810	0.620	0.002	0.946	0.004	0.12	0.06	0.20	0.10	0.21	0.11	0.22	0.11	0.21	0.11	0.31	0.16
820	0.610	0.002	0.930	0.004	0.12	0.06	0.19	0.10	0.21	0.11	0.21	0.11	0.21	0.11	0.31	0.16
830	0.600	0.002	0.914	0.004	0.12	0.06	0.19	0.10	0.21	0.11	0.21	0.11	0.21	0.11	0.30	0.15
840	0.590	0.002	0.898	0.004	0.12	0.06	0.19	0.10	0.20	0.10	0.21	0.11	0.20	0.10	0.30	0.15
850	0.580	0.002	0.882	0.004	0.11	0.06	0.18	0.09	0.20	0.10	0.20	0.10	0.20	0.10	0.29	0.15
860	0.570	0.002	0.866	0.004	0.11	0.06	0.18	0.09	0.20	0.10	0.20	0.10	0.19	0.10	0.29	0.15
870	0.560	0.002	0.850	0.004	0.11	0.06	0.18	0.09	0.19	0.10	0.19	0.10	0.19	0.10	0.28	0.14
880	0.550	0.002	0.834	0.004	0.11	0.06	0.17	0.09	0.19	0.10	0.19	0.10	0.19	0.10	0.27	0.14
890	0.540	0.002	0.818	0.004	0.10	0.05	0.17	0.09	0.19	0.10	0.19	0.10	0.18	0.09	0.27	0.14
900	0.530	0.002	0.802	0.004	0.10	0.05	0.17	0.09	0.18	0.09	0.18	0.09	0.18	0.09	0.26	0.14
910	0.520	0.002	0.786	0.004	0.10	0.05	0.16	0.08	0.18	0.09	0.18	0.09	0.18	0.09	0.26	0.13
920	0.510	0.002	0.770	0.004	0.10	0.05	0.16	0.08	0.17	0.09	0.18	0.09	0.17	0.09	0.25	0.13
930	0.500	0.002	0.754	0.004	0.10	0.05	0.16	0.08	0.17	0.09	0.17	0.09	0.17	0.09	0.25	0.13
940	0.490	0.002	0.738	0.004	0.09	0.05	0.15	0.08	0.17	0.09	0.17	0.09	0.17	0.09	0.24	0.13
950	0.480	0.002	0.722	0.003	0.09	0.05	0.15	0.08	0.16	0.09	0.17	0.09	0.16	0.08	0.24	0.12
960	0.470	0.002	0.706	0.003	0.09	0.05	0.15	0.08	0.16	0.08	0.16	0.08	0.16	0.08	0.23	0.12
970	0.460	0.002	0.690	0.003	0.09	0.05	0.14	0.08	0.16	0.08	0.16	0.08	0.16	0.08	0.23	0.12
980	0.450	0.002	0.674	0.003	0.09	0.05	0.14	0.07	0.15	0.08	0.15	0.08	0.15	0.08	0.22	0.12
990	0.440	0.002	0.658	0.003	0.08	0.04	0.14	0.07	0.15	0.08	0.15	0.08	0.15	0.08	0.22	0.11
1000	0.430	0.002	0.642	0.003	0.08	0.04	0.13	0.07	0.15	0.08	0.15	0.08	0.14	0.08	0.21	0.11
1010	0.420	0.002	0.626	0.003	0.08	0.04	0.13	0.07	0.14	0.07	0.14	0.08	0.14	0.07	0.21	0.11
1020	0.410	0.002	0.610	0.003	0.08	0.04	0.13	0.07	0.14	0.07	0.14	0.07	0.14	0.07	0.20	0.11
1030	0.400	0.001	0.594	0.003	0.08	0.04	0.12	0.07	0.13	0.07	0.14	0.07	0.13	0.07	0.20	0.10
1040	0.390	0.001	0.578	0.003	0.07	0.04	0.12	0.06	0.13	0.07	0.13	0.07	0.13	0.07	0.19	0.10
1050	0.380	0.001	0.562	0.003	0.07	0.04	0.12	0.06	0.13	0.07	0.13	0.07	0.13	0.07	0.19	0.10
1060	0.370	0.001	0.546	0.003	0.07	0.04	0.11	0.06	0.12	0.07	0.12	0.07	0.12	0.07	0.18	0.10
1070	0.360	0.001	0.530	0.003	0.07	0.04	0.11	0.06	0.12	0.06	0.12	0.06	0.12	0.06	0.17	0.09
1080	0.350	0.001	0.514	0.002	0.07	0.04	0.11	0.06	0.12	0.06	0.12	0.06	0.12	0.06	0.17	0.09
1090	0.340	0.001	0.498	0.002	0.06	0.03	0.10	0.06	0.11	0.06	0.11	0.06	0.11	0.06	0.16	0.09
1100	0.330	0.001	0.482	0.002	0.06	0.03	0.10	0.05	0.11	0.06	0.11	0.06	0.11	0.06	0.16	0.08
1110	0.320	0.001	0.466	0.002	0.06	0.03	0.10	0.05	0.11	0.06	0.11	0.06	0.10	0.06	0.15	0.08
1120	0.310	0.001	0.450	0.002	0.06	0.03	0.09	0.05	0.10	0.05	0.10	0.06	0.10	0.05	0.15	0.08
1130	0.300	0.001	0.434	0.002	0.06	0.03	0.09	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.14	0.08
1140	0.290	0.001	0.418	0.002	0.05	0.03	0.09	0.05	0.09	0.05	0.10	0.05	0.09	0.05	0.14	0.07
1150	0.280	0.001	0.402	0.002	0.05	0.03	0.08	0.05	0.09	0.05	0.09	0.05	0.09	0.05	0.13	0.07
1160	0.270	0.001	0.386	0.002	0.05	0.03	0.08	0.04	0.09	0.05	0.09	0.05	0.09	0.05	0.13	0.07
1170	0.260	0.001	0.370	0.002	0.05	0.03	0.08	0.04	0.08	0.05	0.08	0.05	0.08	0.05	0.12	0.07
1180	0.250	0.001	0.354	0.002	0.05	0.03	0.07	0.04	0.08	0.04	0.08	0.04	0.08	0.04	0.12	0.06
1190	0.240	0.001	0.338	0.002	0.04	0.02	0.07	0.04	0.08	0.04	0.08	0.04	0.08	0.04	0.11	0.06
1200	0.230	0.001	0.322	0.002	0.04	0.02	0.07	0.04	0.07	0.04	0.07	0.04	0.07	0.04	0.11	0.06
1210	0.220	0.001	0.306	0.001	0.04	0.02	0.06	0.04	0.07	0.04	0.07	0.04	0.07	0.04	0.10	0.06
1220	0.210	0.001	0.290	0.001	0.04	0.02	0.06	0.03	0.07	0.04	0.07	0.04	0.07	0.04	0.10	0.05
1230	0.200	0.001	0.274	0.001	0.04	0.02	0.06	0.03	0.06	0.04	0.06	0.04	0.06	0.04	0.09	0.05
1240	0.190	0.001	0.258	0.001	0.03	0.02	0.05	0.03	0.06	0.03	0.06	0.03	0.06	0.03	0.08	0.05
1250	0.180	0.001	0.242	0.001	0.03	0.02	0.05	0.03	0.05	0.03	0.06	0.03	0.05	0.03	0.08	0.05
1260	0.170	0.001	0.226	0.001	0.03	0.02	0.05	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.07	0.04
1270	0.160	0.001	0.210	0.001	0.03	0.02	0.04	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.07	0.04
1280	0.150	0.001	0.194	0.001	0.02	0.02	0.04	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.06	0.04
1290	0.140	0.001	0.178	0.001	0.02	0.01	0.04	0.02	0.04	0.02	0.04	0.03	0.04	0.02	0.06	0.04
1300	0.130	0.000	0.162	0.001	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.02	0.04	0.02	0.05	0.03
1310	0.120	0.000	0.146	0.001	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.05	0.03
1320	0.110	0.000	0.130	0.001	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.03
1330	0.100	0.000	0.114	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.03
1340	0.090	0.000	0.098	0.000	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02
1350	0.080	0.000	0.082	0.000	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1360	0.070	0.000	0.066	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02

SD-0690	Leucadia	0	0	Avg. Net Sl	5.25	3.27	3.16	3.17	3.20	3.90						
SD-690	98.1278	0	105.601	1470			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	2.782	0.028	3.016	0.029	1.79	1.77	1.11	1.10	1.08	1.07	1.08	1.07	1.09	1.08	1.33	1.32
10	2.570	0.026	3.304	0.031	1.96	1.64	1.22	1.02	1.18	0.99	1.18	0.99	1.19	1.00	1.45	1.22
20	3.050	0.031	3.749	0.036	2.22	1.94	1.38	1.21	1.34	1.17	1.34	1.17	1.36	1.19	1.65	1.44
30	2.836	0.029	3.376	0.032	2.00	1.81	1.24	1.13	1.21	1.09	1.21	1.09	1.22	1.10	1.49	1.34
40	2.546	0.026	2.914	0.028	1.73	1.62	1.07	1.01	1.04	0.98	1.04	0.98	1.05	0.99	1.28	1.21
50	2.130	0.022	2.434	0.023	1.44	1.36	0.90	0.85	0.87	0.82	0.87	0.82	0.88	0.83	1.07	1.01
60	1.736	0.018	2.024	0.019	1.20	1.11	0.75	0.69	0.72	0.67	0.72	0.67	0.73	0.68	0.89	0.82
70	1.302	0.013	1.549	0.015	0.92	0.83	0.57	0.52	0.55	0.50	0.55	0.50	0.56	0.51	0.68	0.62
80	1.020	0.010	1.179	0.011	0.70	0.65	0.43	0.40	0.42	0.39	0.42	0.39	0.43	0.40	0.52	0.48
90	0.912	0.009	0.963	0.009	0.57	0.58	0.36	0.36	0.34	0.35	0.34	0.35	0.35	0.35	0.42	0.43
100	0.802	0.008	0.777	0.007	0.46	0.51	0.29	0.32	0.28	0.31	0.28	0.31	0.28	0.31	0.34	0.38
110	0.661	0.007	0.592	0.006	0.35	0.42	0.22	0.26	0.21	0.25	0.21	0.25	0.21	0.26	0.26	0.31
120	0.646	0.007	0.547	0.005	0.32	0.41	0.20	0.26	0.20	0.25	0.20	0.25	0.20	0.25	0.24	0.31
130	0.665	0.007	0.533	0.005	0.32	0.42	0.20	0.26	0.19	0.26	0.19	0.26	0.19	0.26	0.23	0.31
140	0.652	0.007	0.506	0.005	0.30	0.42	0.19	0.26	0.18	0.25	0.18	0.25	0.18	0.25	0.22	0.31
150	0.778	0.008	0.612	0.006	0.36	0.50	0.23	0.31	0.22	0.30	0.22	0.30	0.22	0.30	0.27	0.37
160	0.926	0.009	0.704	0.007	0.42	0.59	0.26	0.37	0.25	0.36	0.25	0.36	0.25	0.36	0.31	0.44
170	1.085	0.011	0.798	0.008	0.47	0.69	0.29	0.43	0.29	0.42	0.29	0.42	0.29	0.42	0.35	0.51
180	1.134	0.012	0.805	0.008	0.48	0.72	0.30	0.45	0.29	0.44	0.29	0.44	0.29	0.44	0.35	0.54
190	1.126	0.011	0.756	0.007	0.45	0.72	0.28	0.45	0.27	0.43	0.27	0.43	0.27	0.44	0.33	0.53
200	1.153	0.012	0.714	0.007	0.42	0.73	0.26	0.46	0.26	0.44	0.26	0.44	0.26	0.45	0.31	0.55
210	1.213	0.012	0.680	0.006	0.40	0.77	0.25	0.48	0.24	0.47	0.24	0.47	0.25	0.47	0.30	0.57
220	1.219	0.012	0.613	0.006	0.36	0.78	0.23	0.48	0.22	0.47	0.22	0.47	0.22	0.47	0.27	0.58
230	1.361	0.014	0.710	0.007	0.42	0.87	0.26	0.54	0.25	0.52	0.25	0.52	0.26	0.53	0.31	0.64
240	1.512	0.015	0.818	0.008	0.48	0.96	0.30	0.60	0.29	0.58	0.29	0.58	0.30	0.59	0.36	0.72
250	1.717	0.017	1.010	0.010	0.60	1.09	0.37	0.68	0.36	0.66	0.36	0.66	0.37	0.67	0.44	0.81
260	1.942	0.020	1.264	0.012	0.75	1.24	0.47	0.77	0.45	0.75	0.45	0.75	0.46	0.76	0.56	0.92
270	1.865	0.019	1.226	0.012	0.73	1.19	0.45	0.74	0.44	0.72	0.44	0.72	0.44	0.73	0.54	0.88
280	1.466	0.015	0.848	0.008	0.50	0.93	0.31	0.58	0.30	0.56	0.30	0.56	0.31	0.57	0.37	0.69
290	1.108	0.011	0.486	0.005	0.29	0.71	0.18	0.44	0.17	0.43	0.17	0.43	0.18	0.43	0.21	0.52
300	1.250	0.013	0.632	0.006	0.37	0.80	0.23	0.50	0.23	0.48	0.23	0.48	0.23	0.49	0.28	0.59
310	1.437	0.015	0.842	0.008	0.50	0.92	0.31	0.57	0.30	0.55	0.30	0.55	0.30	0.56	0.37	0.68
320	1.587	0.016	1.059	0.010	0.63	1.01	0.39	0.63	0.38	0.61	0.38	0.61	0.38	0.62	0.47	0.75
330	1.702	0.017	1.287	0.012	0.76	1.08	0.47	0.68	0.46	0.65	0.46	0.65	0.47	0.66	0.57	0.81
340	1.748	0.018	1.454	0.014	0.86	1.11	0.54	0.69	0.52	0.67	0.52	0.67	0.53	0.68	0.64	0.83
350	1.750	0.018	1.572	0.015	0.93	1.12	0.58	0.69	0.56	0.67	0.56	0.67	0.57	0.68	0.69	0.83
360	1.759	0.018	1.681	0.016	1.00	1.12	0.62	0.70	0.60	0.68	0.60	0.68	0.61	0.68	0.74	0.83
370	1.649	0.017	1.697	0.016	1.01	1.05	0.63	0.65	0.61	0.63	0.61	0.63	0.61	0.64	0.75	0.78
380	1.349	0.014	1.569	0.015	0.93	0.86	0.58	0.54	0.56	0.52	0.56	0.52	0.57	0.52	0.69	0.64
390	1.019	0.010	1.427	0.014	0.85	0.65	0.53	0.40	0.51	0.39	0.51	0.39	0.52	0.40	0.63	0.48
400	0.832	0.008	1.364	0.013	0.81	0.53	0.50	0.33	0.49	0.32	0.49	0.32	0.49	0.32	0.60	0.39
410	0.794	0.008	1.349	0.013	0.80	0.51	0.50	0.31	0.48	0.31	0.48	0.31	0.49	0.31	0.59	0.38
420	0.697	0.007	1.270	0.012	0.75	0.44	0.47	0.28	0.45	0.27	0.45	0.27	0.46	0.27	0.56	0.33
430	0.607	0.006	1.172	0.011	0.69	0.39	0.43	0.24	0.42	0.23	0.42	0.23	0.42	0.24	0.52	0.29
440	0.521	0.005	1.061	0.010	0.63	0.33	0.39	0.21	0.38	0.20	0.38	0.20	0.38	0.20	0.47	0.25
450	0.398	0.004	0.889	0.008	0.53	0.25	0.33	0.16	0.32	0.15	0.32	0.15	0.32	0.15	0.39	0.19
460	0.255	0.003	0.658	0.006	0.39	0.16	0.24	0.10	0.24	0.10	0.24	0.10	0.24	0.10	0.29	0.12
470	0.472	0.005	0.785	0.007	0.46	0.30	0.29	0.19	0.28	0.18	0.28	0.18	0.28	0.18	0.35	0.22
480	0.729	0.007	0.949	0.009	0.56	0.46	0.35	0.29	0.34	0.28	0.34	0.28	0.34	0.28	0.42	0.35
490	0.586	0.006	0.712	0.007	0.42	0.37	0.26	0.23	0.25	0.23	0.25	0.23	0.26	0.23	0.31	0.28
500	0.579	0.006	0.638	0.006	0.38	0.37	0.24	0.23	0.23	0.22	0.23	0.22	0.23	0.23	0.28	0.27
510	0.686	0.007	0.703	0.007	0.42	0.44	0.26	0.27	0.25	0.26	0.25	0.26	0.25	0.27	0.31	0.32
520	0.704	0.007	0.678	0.006	0.40	0.45	0.25	0.28	0.24	0.27	0.24	0.27	0.25	0.27	0.30	0.33
530	0.691	0.007	0.612	0.006	0.36	0.44	0.23	0.27	0.22	0.27	0.22	0.27	0.22	0.27	0.27	0.33
540	0.709	0.007	0.599	0.006	0.35	0.45	0.22	0.28	0.21	0.27	0.21	0.27	0.22	0.28	0.26	0.34
550	0.742	0.008	0.647	0.006	0.38	0.47	0.24	0.29	0.23	0.29	0.23	0.29	0.23	0.29	0.28	0.35
560	0.599	0.006	0.518	0.005	0.31	0.38	0.19	0.24	0.19	0.23	0.19	0.23	0.19	0.23	0.23	0.28
570	0.579	0.006	0.531	0.005	0.31	0.37	0.20	0.23	0.19	0.22	0.19	0.22	0.19	0.23	0.23	0.27
580	0.531	0.005	0.487	0.005	0.29	0.34	0.18	0.21	0.17	0.20	0.17	0.20	0.18	0.21	0.21	0.25
590	0.601	0.006	0.534	0.005	0.32	0.38	0.20	0.24	0.19	0.23	0.19	0.23	0.19	0.23	0.24	0.28
600	0.594	0.006	0.523	0.005	0.31	0.38	0.19	0.24	0.19	0.23	0.19	0.23	0.19	0.23	0.23	0.28
610	0.588	0.006	0.548	0.005	0.32	0.37	0.20	0.23	0.20	0.23	0.20	0.23	0.20	0.23	0.24	0.28
620	0.581	0.006	0.814	0.008	0.48	0.37	0.30	0.23	0.29	0.22	0.29	0.22	0.29	0.23	0.36	0.28
630	0.574	0.006	0.805	0.008	0.48	0.37	0.30	0.23	0.29	0.22	0.29	0.22	0.29	0.22	0.35	0.27
640	0.568	0.006	0.795	0.008	0.47	0.36	0.29	0.23	0.28	0.22	0.28	0.22	0.29	0.22	0.35	0.27
650	0.561	0.006	0.786	0.007	0.47	0.36	0.29	0.22	0.28	0.22	0.28	0.22	0.28	0.22	0.35	0.27
660	0.554	0.006	0.776	0.007	0.46	0.35	0.29	0.22	0.28	0.21	0.28	0.21	0.28	0.22	0.34	0.26
670	0.547	0.006	0.767	0.007	0.45	0.35	0.28	0.22	0.27	0.21	0.27	0.21	0.28	0.21	0.34	0.26
680	0.541	0.006	0.758	0.007	0.45	0.34	0.28	0.21	0.27	0.21	0.27	0.21	0.27	0.21	0.33	0.26
690	0.534	0.005	0.748	0.007	0.44	0.34	0.28	0.21	0.27	0.21	0.27	0.21	0.27	0.21	0.33	0.25
700	0.527	0.005	0.739	0.007	0.44	0.34	0.27	0.21	0.26	0.20	0.26	0.20	0.27	0.21	0.33	0.25
710	0.521	0.005	0.729	0.007	0.43	0.33	0.27	0.21	0.26	0.20	0.26	0.20	0.26	0.20	0.32	0.25
720	0.514	0.005	0.720	0.007	0.43	0.33	0.27	0.20	0.26	0.20	0.26	0.20	0.26	0.20	0.32	0.24
730	0.507	0.005	0.711	0.007	0.42	0.32	0.26	0.20	0.25	0.19	0.25	0.20	0.26	0.20	0.31	0.24
740	0.500	0.005	0.701	0.007	0.42	0.32	0.26	0.20	0.25	0.19	0.25	0.19	0.25	0.19	0.31	0.24
750	0.494	0.005	0.692	0.007	0.41	0.31	0.26	0.20	0.25	0.19	0.25	0.19	0.25	0.19	0.30	0.23
760	0.487	0.005	0.682	0.006	0.40	0.31	0.25	0.19	0.24	0.19	0.24	0.19	0.25	0.19	0.30	0.23
770	0.480	0.005	0.673	0.006	0.40	0.31	0.25	0.19	0.24	0.18	0.24	0.18	0.24	0.19	0.30	0.23
780	0.474	0.005	0.664	0.006	0.39	0.30	0.24	0.19	0.24	0.18	0.24	0.18	0.24	0.18	0.29	0.22
790	0.467	0.005	0.654	0.006	0.39	0.30	0.24	0.19	0.23	0.18	0.23	0.18	0.24	0.18	0.29	0.22
800	0.460	0.005	0.645	0.006	0.38	0.29	0.24	0.18	0.23	0.18	0.23	0.18	0.23	0.18	0.28	0.22
810	0.454	0.005	0.635	0.006	0.38	0.29	0.23	0.18	0.23	0.17	0.23	0.17	0.23	0.18	0.28	0.21
820	0.447	0.005	0.626	0.006	0.37	0.28	0.23	0.18	0.22	0.17	0.22	0.17	0.23	0.17	0.28	0.21
830	0.440	0.004	0.617	0.006	0.37	0.28	0.23	0.17	0.22	0.17	0.22	0.17	0.22	0.17	0.27	0.21
840	0.434	0.004	0.607	0.006	0.36	0.28	0.22	0.17	0.22	0.17	0.22	0.17	0.22	0.17	0.27	0.21
850	0.427	0.004	0.598	0.006	0.35	0.27	0.22	0.17	0.21	0.16	0.21	0.16	0.22	0.17	0.26	0.20
860	0.420	0.004	0.588	0.006	0.35	0.27	0.22	0.17	0.21	0.16	0.21	0.16	0.21	0.16	0.26	0.20
870	0.413	0.004	0.579	0.005	0.34	0.26	0.21	0.16	0.21	0.16	0.21	0.16	0.21	0.16	0.25	0.20
880	0.407	0.004	0.570	0.005	0.34	0.26	0.21	0.16	0.20	0.16	0.20	0.16	0.21	0.16	0.25	0.19
890	0.400	0.004	0.560	0.005	0.33	0.25	0.21	0.16	0.20	0.15	0.20	0.15	0.20	0.16	0.25	0.19
900	0.393	0.004	0.551	0.005	0.33	0.25	0.20	0.16	0.20	0.15	0.20	0.15	0.20	0.15	0.24	0.19
910	0.387	0.004	0.541	0.005	0.32	0.25	0.20	0.15	0.19	0.15	0.19	0.15	0.20	0.15	0.24	0.18
920	0.380	0.004	0.532	0.005	0.32	0.24	0.20	0.15	0.19	0.15	0.19	0.15	0.19	0.15	0.23	0.18
930	0.373	0.004	0.523	0.005	0.31	0.24	0.19	0.15	0.19	0.14	0.19	0.14	0.19	0.15	0.23	0.18
940	0.367	0.004	0.513	0.005	0.30	0.23	0.19	0.15	0.18	0.14	0.18	0.14	0.19	0.14	0.23	0.17
950	0.360	0.004	0.504	0.005	0.30	0.23	0.19	0.14	0.18	0.14	0.18	0.14	0.18	0.14	0.22	0.17
960	0.353	0.004	0.494	0.005	0.29	0.23	0.18	0.14	0.18	0.14	0.18	0.14	0.18	0.14	0.22	0.17
970	0.346	0.004	0.485	0.005	0.29	0.22	0.18	0.14	0.17	0.13	0.17	0.13	0.18	0.13	0.21	0.16
980	0.340	0.003	0.476	0.005	0.28	0.22	0.18	0.13	0.17	0.13	0.17	0.13	0.17	0.13	0.21	0.16
990	0.333	0.003	0.466	0.004	0.28	0.21	0.17	0.13	0.17	0.13	0.17	0.13	0.17	0.13	0.21	0.16
1000	0.326	0.003	0.457	0.004	0.27	0.21	0.17	0.13	0.16	0.13	0.16	0.13	0.17	0.13	0.20	0.15
1010	0.320	0.003	0.447	0.004	0.26	0.20	0.16	0.13	0.16	0.12	0.16	0.12	0.16	0.12	0.20	0.15
1020	0.313	0.003	0.438	0.004	0.26	0.20	0.16	0.12	0.16	0.12	0.16	0.12	0.16	0.12	0.19	0.15
1030	0.306	0.003	0.429	0.004	0.25	0.20	0.16	0.12	0.15	0.12	0.15	0.12	0.15	0.12	0.19	0.15
1040	0.300	0.003	0.419	0.004	0.25	0.19	0.15	0.12	0.15	0.12	0.15	0.12	0.15	0.12	0.18	0.14
1050	0.293	0.003	0.410	0.004	0.24	0.19	0.15	0.12	0.15	0.11	0.15	0.11	0.15	0.11	0.18	0.14
1060	0.286	0.003	0.400	0.004	0.24	0.18	0.15	0.11	0.14	0.11	0.14	0.11	0.14	0.11	0.18	0.14
1070	0.279	0.003	0.391	0.004	0.23	0.18	0.14	0.11	0.14	0.11	0.14	0.11	0.14	0.11	0.17	0.13
1080	0.273	0.003	0.382	0.004	0.23	0.17	0.14	0.11	0.14	0.10	0.14	0.10	0.14	0.11	0.17	0.13
1090	0.266	0.003	0.372	0.004	0.22	0.17	0.14	0.11	0.13	0.10	0.13	0.10	0.13	0.10	0.16	0.13
1100	0.259	0.003	0.363	0.003	0.21	0.17	0.13	0.10	0.13	0.10	0.13	0.10	0.13	0.10	0.16	0.12
1110	0.253	0.003	0.353	0.003	0.21	0.16	0.13	0.10	0.13	0.10	0.13	0.10	0.13	0.10	0.16	0.12
1120	0.246	0.003	0.344	0.003	0.20	0.16	0.13	0.10	0.12	0.09	0.12	0.09	0.12	0.10	0.15	0.12
1130	0.239	0.002	0.335	0.003	0.20	0.15	0.12	0.09	0.12	0.09	0.12	0.09	0.12	0.09	0.15	0.11
1140	0.233	0.002	0.325	0.003	0.19	0.15	0.12	0.09	0.12	0.09	0.12	0.09	0.12	0.09	0.14	0.11
1150	0.226	0.002	0.316	0.003	0.19	0.14	0.12	0.09	0.11	0.09	0.11	0.09	0.11	0.09	0.14	0.11
1160	0.219	0.002	0.306	0.003	0.18	0.14	0.11	0.09	0.11	0.08	0.11	0.08	0.11	0.09	0.13	0.10
1170	0.212	0.002	0.297	0.003	0.18	0.14	0.11	0.08	0.11	0.08	0.11	0.08	0.11	0.08	0.13	0.10
1180	0.206	0.002	0.288	0.003	0.17	0.13	0.11	0.08	0.10	0.08	0.10	0.08	0.10	0.08	0.13	0.10
1190	0.199	0.002	0.278	0.003	0.16	0.13	0.10	0.08	0.10	0.08	0.10	0.08	0.10	0.08	0.12	0.09
1200	0.192	0.002	0.269	0.003	0.16	0.12	0.10	0.08	0.10	0.07	0.10	0.07	0.10	0.07	0.12	0.09
1210	0.186	0.002	0.259	0.002	0.15	0.12	0.10	0.07	0.09	0.07	0.09	0.07	0.09	0.07	0.11	0.09
1220	0.179	0.002	0.250	0.002	0.15	0.11	0.09	0.07	0.09	0.07	0.09	0.07	0.09	0.07	0.11	0.08
1230	0.172	0.002	0.241	0.002	0.14	0.11	0.09	0.07	0.09	0.07	0.09	0.07	0.09	0.07	0.11	0.08
1240	0.166	0.002	0.231	0.002	0.14	0.11	0.09	0.07	0.08	0.06	0.08	0.06	0.08	0.06	0.10	0.08
1250	0.159	0.002	0.222	0.002	0.13	0.10	0.08	0.06	0.08	0.06	0.08	0.06	0.08	0.06	0.10	0.08
1260	0.152	0.002	0.212	0.002	0.13	0.10	0.08	0.06	0.08	0.06	0.08	0.06	0.08	0.06	0.09	0.07
1270	0.145	0.001	0.203	0.002	0.12	0.09	0.07	0.06	0.07	0.06	0.07	0.06	0.07	0.06	0.09	0.07
1280	0.139	0.001	0.194	0.002	0.11	0.09	0.07	0.06	0.07	0.05	0.07	0.05	0.07	0.05	0.09	0.07
1290	0.132	0.001	0.184	0.002	0.11	0.08	0.07	0.05	0.07	0.05	0.07	0.05	0.07	0.05	0.08	0.06
1300	0.125	0.001	0.175	0.002	0.10	0.08	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.08	0.06
1310	0.119	0.001	0.165	0.002	0.10	0.08	0.06	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.07	0.06
1320	0.112	0.001	0.156	0.001	0.09	0.07	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04	0.07	0.05
1330	0.105	0.001	0.147	0.001	0.09	0.07	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.06	0.05
1340	0.098	0.001	0.137	0.001	0.08	0.06	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.06	0.05
1350	0.092	0.001	0.128	0.001	0.08	0.06	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.06	0.04
1360	0.085	0.001	0.118	0.001	0.07	0.05	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.05	0.04
1370	0.078	0.001	0.109	0.001	0.06	0.05	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.05	0.04
1380	0.072	0.001	0.100	0.001	0.06	0.05	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1390	0.065	0.001	0.090	0.001	0.05	0.04	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.03	0.04	0.03
1400	0.058	0.001	0.081	0.001	0.05	0.04	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.03
1410	0.052	0.001	0.071	0.001	0.04	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1420	0.045	0.000	0.062	0.001	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02
1430	0.038	0.000	0.053	0.000	0.03	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.02
1440	0.031	0.000	0.043	0.000	0.03	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1450	0.025	0.000	0.034	0.000	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1460	0.018	0.000	0.024	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1470	0.011	0.000	0.015	0.000	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01

SD-0695	Leucadia	0	0	Avg. Net Sh	4.45	2.95	2.65	2.62	2.72	2.34						
SD-695	104.044	0	143.745	1500			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.016	0.000	0.010	0.000	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	2.509	0.024	2.507	0.017	0.93	1.28	0.61	0.85	0.55	0.76	0.54	0.75	0.56	0.78	0.49	0.67
20	2.681	0.026	2.717	0.019	1.00	1.37	0.66	0.91	0.60	0.81	0.59	0.80	0.61	0.83	0.53	0.72
30	2.668	0.026	2.824	0.020	1.04	1.36	0.69	0.90	0.62	0.81	0.61	0.80	0.64	0.83	0.55	0.72
40	2.439	0.023	2.938	0.020	1.09	1.24	0.72	0.82	0.65	0.74	0.64	0.73	0.66	0.76	0.57	0.65
50	2.207	0.021	2.988	0.021	1.10	1.13	0.73	0.75	0.66	0.67	0.65	0.66	0.67	0.69	0.58	0.59
60	2.055	0.020	2.674	0.019	0.99	1.05	0.65	0.69	0.59	0.62	0.58	0.62	0.60	0.64	0.52	0.55
70	1.866	0.018	2.328	0.016	0.86	0.95	0.57	0.63	0.51	0.57	0.51	0.56	0.52	0.58	0.45	0.50
80	1.713	0.016	2.094	0.015	0.77	0.87	0.51	0.58	0.46	0.52	0.45	0.51	0.47	0.53	0.41	0.46
90	1.522	0.015	1.949	0.014	0.72	0.78	0.48	0.51	0.43	0.46	0.42	0.46	0.44	0.47	0.38	0.41
100	1.513	0.015	1.827	0.013	0.67	0.77	0.45	0.51	0.40	0.46	0.40	0.45	0.41	0.47	0.35	0.41
110	1.532	0.015	1.763	0.012	0.65	0.78	0.43	0.52	0.39	0.46	0.38	0.46	0.40	0.48	0.34	0.41
120	1.452	0.014	1.677	0.012	0.62	0.74	0.41	0.49	0.37	0.44	0.36	0.44	0.38	0.45	0.33	0.39
130	1.229	0.012	1.417	0.010	0.52	0.63	0.35	0.42	0.31	0.37	0.31	0.37	0.32	0.38	0.28	0.33
140	1.070	0.010	1.197	0.008	0.44	0.55	0.29	0.36	0.26	0.32	0.26	0.32	0.27	0.33	0.23	0.29
150	0.966	0.009	1.035	0.007	0.38	0.49	0.25	0.33	0.23	0.29	0.22	0.29	0.23	0.30	0.20	0.26
160	0.923	0.009	0.905	0.006	0.33	0.47	0.22	0.31	0.20	0.28	0.20	0.28	0.20	0.29	0.18	0.25
170	0.885	0.009	0.784	0.005	0.29	0.45	0.19	0.30	0.17	0.27	0.17	0.27	0.18	0.28	0.15	0.24
180	0.945	0.009	0.758	0.005	0.28	0.48	0.19	0.32	0.17	0.29	0.16	0.28	0.17	0.29	0.15	0.25
190	1.260	0.012	0.932	0.006	0.34	0.64	0.23	0.43	0.20	0.38	0.20	0.38	0.21	0.39	0.18	0.34
200	1.625	0.016	1.148	0.008	0.42	0.83	0.28	0.55	0.25	0.49	0.25	0.49	0.26	0.51	0.22	0.44
210	1.868	0.018	1.369	0.010	0.51	0.95	0.34	0.63	0.30	0.57	0.30	0.56	0.31	0.58	0.27	0.50
220	1.913	0.018	1.450	0.010	0.54	0.98	0.35	0.65	0.32	0.58	0.31	0.57	0.33	0.60	0.28	0.51
230	1.927	0.019	1.503	0.010	0.56	0.98	0.37	0.65	0.33	0.58	0.33	0.58	0.34	0.60	0.29	0.52
240	1.611	0.015	1.310	0.009	0.48	0.82	0.32	0.54	0.29	0.49	0.28	0.48	0.29	0.50	0.25	0.43
250	1.633	0.016	1.324	0.009	0.49	0.83	0.32	0.55	0.29	0.50	0.29	0.49	0.30	0.51	0.26	0.44
260	1.846	0.018	1.496	0.010	0.55	0.94	0.37	0.62	0.33	0.56	0.32	0.55	0.34	0.57	0.29	0.50
270	1.844	0.018	1.455	0.010	0.54	0.94	0.36	0.62	0.32	0.56	0.32	0.55	0.33	0.57	0.28	0.49
280	1.853	0.018	1.483	0.010	0.55	0.95	0.36	0.63	0.33	0.56	0.32	0.56	0.33	0.58	0.29	0.50
290	1.354	0.013	1.137	0.008	0.42	0.69	0.28	0.46	0.25	0.41	0.25	0.41	0.26	0.42	0.22	0.36
300	1.174	0.011	1.112	0.008	0.41	0.60	0.27	0.40	0.24	0.36	0.24	0.35	0.25	0.37	0.22	0.31
310	0.990	0.010	1.109	0.008	0.41	0.51	0.27	0.33	0.24	0.30	0.24	0.30	0.25	0.31	0.22	0.27
320	0.857	0.008	1.094	0.008	0.40	0.44	0.27	0.29	0.24	0.26	0.24	0.26	0.25	0.27	0.21	0.23
330	0.706	0.007	1.084	0.008	0.40	0.36	0.27	0.24	0.24	0.21	0.24	0.21	0.24	0.22	0.21	0.19
340	0.524	0.005	1.070	0.007	0.40	0.27	0.26	0.18	0.24	0.16	0.23	0.16	0.24	0.16	0.21	0.14
350	0.563	0.005	1.286	0.009	0.48	0.29	0.31	0.19	0.28	0.17	0.28	0.17	0.29	0.18	0.25	0.15
360	0.571	0.005	1.499	0.010	0.55	0.29	0.37	0.19	0.33	0.17	0.33	0.17	0.34	0.18	0.29	0.15
370	0.538	0.005	1.697	0.012	0.63	0.27	0.42	0.18	0.37	0.16	0.37	0.16	0.38	0.17	0.33	0.14
380	0.505	0.005	1.896	0.013	0.70	0.26	0.46	0.17	0.42	0.15	0.41	0.15	0.43	0.16	0.37	0.14
390	0.575	0.006	2.087	0.015	0.77	0.29	0.51	0.19	0.46	0.17	0.45	0.17	0.47	0.18	0.41	0.15
400	0.684	0.007	2.260	0.016	0.83	0.35	0.55	0.23	0.50	0.21	0.49	0.21	0.51	0.21	0.44	0.18
410	0.602	0.006	2.079	0.014	0.77	0.31	0.51	0.20	0.46	0.18	0.45	0.18	0.47	0.19	0.40	0.16
420	0.622	0.006	1.991	0.014	0.74	0.32	0.49	0.21	0.44	0.19	0.43	0.19	0.45	0.19	0.39	0.17
430	0.619	0.006	1.803	0.013	0.67	0.32	0.44	0.21	0.40	0.19	0.39	0.19	0.41	0.19	0.35	0.17
440	0.558	0.005	1.574	0.011	0.58	0.28	0.39	0.19	0.35	0.17	0.34	0.17	0.35	0.17	0.31	0.15
450	0.483	0.005	1.358	0.009	0.50	0.25	0.33	0.16	0.30	0.15	0.29	0.14	0.31	0.15	0.26	0.13
460	0.440	0.004	1.199	0.008	0.44	0.22	0.29	0.15	0.26	0.13	0.26	0.13	0.27	0.14	0.23	0.12
470	0.360	0.003	1.021	0.007	0.38	0.18	0.25	0.12	0.22	0.11	0.22	0.11	0.23	0.11	0.20	0.10
480	0.321	0.003	0.854	0.006	0.32	0.16	0.21	0.11	0.19	0.10	0.19	0.10	0.19	0.10	0.17	0.09
490	0.346	0.003	0.696	0.005	0.26	0.18	0.17	0.12	0.15	0.11	0.15	0.10	0.16	0.11	0.14	0.09
500	0.290	0.003	0.602	0.004	0.22	0.15	0.15	0.10	0.13	0.09	0.13	0.09	0.14	0.09	0.12	0.08
510	0.319	0.003	0.525	0.004	0.19	0.16	0.13	0.11	0.12	0.10	0.11	0.10	0.12	0.10	0.10	0.09
520	0.367	0.004	0.566	0.004	0.21	0.19	0.14	0.12	0.12	0.11	0.12	0.11	0.13	0.11	0.11	0.10
530	0.349	0.003	0.713	0.005	0.26	0.18	0.17	0.12	0.16	0.11	0.15	0.10	0.16	0.11	0.14	0.09
540	0.556	0.005	0.824	0.006	0.30	0.28	0.20	0.19	0.18	0.17	0.18	0.17	0.19	0.17	0.16	0.15
550	0.711	0.007	0.891	0.006	0.33	0.36	0.22	0.24	0.20	0.22	0.19	0.21	0.20	0.22	0.17	0.19
560	0.529	0.005	0.765	0.005	0.28	0.27	0.19	0.18	0.17	0.16	0.17	0.16	0.17	0.16	0.15	0.14
570	0.701	0.007	0.718	0.005	0.27	0.36	0.18	0.24	0.16	0.21	0.16	0.21	0.16	0.22	0.14	0.19
580	0.810	0.008	0.716	0.005	0.26	0.41	0.18	0.27	0.16	0.25	0.16	0.24	0.16	0.25	0.14	0.22
590	0.862	0.008	0.718	0.005	0.27	0.44	0.18	0.29	0.16	0.26	0.16	0.26	0.16	0.27	0.14	0.23
600	0.746	0.007	0.768	0.005	0.28	0.38	0.19	0.25	0.17	0.23	0.17	0.22	0.17	0.23	0.15	0.20
610	0.576	0.006	0.757	0.005	0.28	0.29	0.19	0.19	0.17	0.17	0.16	0.17	0.17	0.18	0.15	0.15
620	0.563	0.005	0.758	0.005	0.28	0.29	0.19	0.19	0.17	0.17	0.16	0.17	0.17	0.18	0.15	0.15
630	0.969	0.009	0.928	0.006	0.34	0.49	0.23	0.33	0.20	0.29	0.20	0.29	0.21	0.30	0.18	0.26
640	0.986	0.009	1.089	0.008	0.40	0.50	0.27	0.33	0.24	0.30	0.24	0.30	0.25	0.31	0.21	0.26
650	0.929	0.009	1.068	0.007	0.39	0.47	0.26	0.31	0.23	0.28	0.23	0.28	0.24	0.29	0.21	0.25
660	0.706	0.007	1.057	0.007	0.39	0.36	0.26	0.24	0.23	0.21	0.23	0.21	0.24	0.22	0.21	0.19
670	0.596	0.006	1.289	0.009	0.48	0.30	0.32	0.20	0.28	0.18	0.28	0.18	0.29	0.19	0.25	0.16
680	0.937	0.009	1.462	0.010	0.54	0.48	0.36	0.32	0.32	0.28	0.32	0.28	0.33	0.29	0.28	0.25
690	1.018	0.010	1.606	0.011	0.59	0.52	0.39	0.34	0.35	0.31	0.35	0.31	0.36	0.32	0.31	0.27
700	0.827	0.008	1.421	0.010	0.52	0.42	0.35	0.28	0.31	0.25	0.31	0.25	0.32	0.26	0.28	0.22
710	0.549	0.005	1.272	0.009	0.47	0.28	0.31	0.19	0.28	0.17	0.28	0.16	0.29	0.17	0.25	0.15
720	0.486	0.005	1.152	0.008	0.43	0.25	0.28	0.16	0.25	0.15	0.25	0.15	0.26	0.15	0.22	0.13
730	1.183	0.011	1.628	0.011	0.60	0.60	0.40	0.40	0.36	0.36	0.35	0.35	0.37	0.37	0.32	0.32
740	1.304	0.013	1.661	0.012	0.61	0.67	0.41	0.44	0.36	0.40	0.36	0.39	0.37	0.41	0.32	0.35
750	1.103	0.011	1.437	0.010	0.53	0.56	0.35	0.37	0.32	0.33	0.31	0.33	0.32	0.34	0.28	0.30
760	0.670	0.006	1.157	0.008	0.43	0.34	0.28	0.23	0.25	0.20	0.25	0.20	0.26	0.21	0.22	0.18
770	0.590	0.006	0.961	0.007	0.35	0.30	0.24	0.20	0.21	0.18	0.21	0.18	0.22	0.18	0.19	0.16
780	0.556	0.005	1.140	0.008	0.42	0.28	0.28	0.19	0.25	0.17	0.25	0.17	0.26	0.17	0.22	0.15
790	0.521	0.005	1.514	0.011	0.56	0.27	0.37	0.18	0.33	0.16	0.33	0.16	0.34	0.16	0.29	0.14
800	0.478	0.005	1.364	0.009	0.50	0.24	0.33	0.16	0.30	0.15	0.30	0.14	0.31	0.15	0.26	0.13
810	0.596	0.006	1.598	0.011	0.59	0.30	0.39	0.20	0.35	0.18	0.35	0.18	0.36	0.19	0.31	0.16
820	0.908	0.009	1.831	0.013	0.68	0.46	0.45	0.31	0.40	0.28	0.40	0.27	0.41	0.28	0.36	0.24
830	0.935	0.009	1.669	0.012	0.62	0.48	0.41	0.32	0.37	0.28	0.36	0.28	0.38	0.29	0.32	0.25
840	0.804	0.008	1.490	0.010	0.55	0.41	0.36	0.27	0.33	0.24	0.32	0.24	0.34	0.25	0.29	0.22
850	0.540	0.005	0.810	0.006	0.30	0.28	0.20	0.18	0.18	0.16	0.18	0.16	0.18	0.17	0.16	0.14
860	0.532	0.005	0.798	0.006	0.29	0.27	0.20	0.18	0.18	0.16	0.17	0.16	0.18	0.17	0.15	0.14
870	0.524	0.005	0.785	0.005	0.29	0.27	0.19	0.18	0.17	0.16	0.17	0.16	0.18	0.16	0.15	0.14
880	0.515	0.005	0.773	0.005	0.29	0.26	0.19	0.17	0.17	0.16	0.17	0.15	0.17	0.16	0.15	0.14
890	0.507	0.005	0.760	0.005	0.28	0.26	0.19	0.17	0.17	0.15	0.17	0.15	0.17	0.16	0.15	0.14
900	0.499	0.005	0.748	0.005	0.28	0.25	0.18	0.17	0.16	0.15	0.16	0.15	0.17	0.16	0.15	0.13
910	0.491	0.005	0.736	0.005	0.27	0.25	0.18	0.17	0.16	0.15	0.16	0.15	0.17	0.15	0.14	0.13
920	0.483	0.005	0.723	0.005	0.27	0.25	0.18	0.16	0.16	0.15	0.16	0.14	0.16	0.15	0.14	0.13
930	0.474	0.005	0.711	0.005	0.26	0.24	0.17	0.16	0.16	0.14	0.15	0.14	0.16	0.15	0.14	0.13
940	0.466	0.004	0.698	0.005	0.26	0.24	0.17	0.16	0.15	0.14	0.15	0.14	0.16	0.15	0.14	0.13
950	0.458	0.004	0.686	0.005	0.25	0.23	0.17	0.15	0.15	0.14	0.15	0.14	0.15	0.14	0.13	0.12
960	0.450	0.004	0.674	0.005	0.25	0.23	0.16	0.15	0.15	0.14	0.15	0.13	0.15	0.14	0.13	0.12
970	0.442	0.004	0.661	0.005	0.24	0.23	0.16	0.15	0.15	0.13	0.14	0.13	0.15	0.14	0.13	0.12
980	0.433	0.004	0.649	0.005	0.24	0.22	0.16	0.15	0.14	0.13	0.14	0.13	0.15	0.13	0.13	0.12
990	0.425	0.004	0.636	0.004	0.24	0.22	0.16	0.14	0.14	0.13	0.14	0.13	0.14	0.13	0.12	0.11
1000	0.417	0.004	0.624	0.004	0.23	0.21	0.15	0.14	0.14	0.13	0.14	0.13	0.14	0.13	0.12	0.11
1010	0.409	0.004	0.612	0.004	0.23	0.21	0.15	0.14	0.13	0.12	0.13	0.12	0.14	0.13	0.12	0.11
1020	0.401	0.004	0.599	0.004	0.22	0.20	0.15	0.14	0.13	0.12	0.13	0.12	0.13	0.12	0.12	0.11
1030	0.392	0.004	0.587	0.004	0.22	0.20	0.14	0.13	0.13	0.12	0.13	0.12	0.13	0.12	0.11	0.11
1040	0.384	0.004	0.574	0.004	0.21	0.20	0.14	0.13	0.13	0.12	0.12	0.12	0.13	0.12	0.11	0.10
1050	0.376	0.004	0.562	0.004	0.21	0.19	0.14	0.13	0.12	0.11	0.12	0.11	0.13	0.12	0.11	0.10
1060	0.368	0.004	0.550	0.004	0.20	0.19	0.13	0.12	0.12	0.11	0.12	0.11	0.12	0.11	0.11	0.10
1070	0.360	0.003	0.537	0.004	0.20	0.18	0.13	0.12	0.12	0.11	0.12	0.11	0.12	0.11	0.10	0.10
1080	0.351	0.003	0.525	0.004	0.19	0.18	0.13	0.12	0.12	0.11	0.11	0.11	0.12	0.11	0.10	0.09
1090	0.343	0.003	0.512	0.004	0.19	0.18	0.13	0.12	0.11	0.10	0.11	0.10	0.12	0.11	0.10	0.09
1100	0.335	0.003	0.500	0.003	0.18	0.17	0.12	0.11	0.11	0.10	0.11	0.10	0.11	0.10	0.10	0.09
1110	0.327	0.003	0.488	0.003	0.18	0.17	0.12	0.11	0.11	0.10	0.11	0.10	0.11	0.10	0.09	0.09
1120	0.319	0.003	0.475	0.003	0.18	0.16	0.12	0.11	0.10	0.10	0.10	0.10	0.11	0.10	0.09	0.09
1130	0.310	0.003	0.463	0.003	0.17	0.16	0.11	0.10	0.10	0.09	0.10	0.09	0.10	0.10	0.09	0.08
1140	0.302	0.003	0.450	0.003	0.17	0.15	0.11	0.10	0.10	0.09	0.10	0.09	0.10	0.09	0.09	0.08
1150	0.294	0.003	0.438	0.003	0.16	0.15	0.11	0.10	0.10	0.09	0.10	0.09	0.10	0.09	0.09	0.08
1160	0.286	0.003	0.426	0.003	0.16	0.15	0.10	0.10	0.09	0.09	0.09	0.09	0.10	0.09	0.08	0.08
1170	0.278	0.003	0.413	0.003	0.15	0.14	0.10	0.09	0.09	0.08	0.09	0.08	0.09	0.09	0.08	0.07
1180	0.269	0.003	0.401	0.003	0.15	0.14	0.10	0.09	0.09	0.08	0.09	0.08	0.09	0.08	0.08	0.07
1190	0.261	0.003	0.388	0.003	0.14	0.13	0.10	0.09	0.09	0.08	0.08	0.08	0.09	0.08	0.08	0.07
1200	0.253	0.002	0.376	0.003	0.14	0.13	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07
1210	0.245	0.002	0.364	0.003	0.13	0.12	0.09	0.08	0.08	0.07	0.08	0.07	0.08	0.08	0.07	0.07
1220	0.237	0.002	0.351	0.002	0.13	0.12	0.09	0.08	0.08	0.07	0.08	0.07	0.08	0.07	0.07	0.06
1230	0.228	0.002	0.339	0.002	0.13	0.12	0.08	0.08	0.07	0.07	0.07	0.07	0.08	0.07	0.07	0.06
1240	0.220	0.002	0.326	0.002	0.12	0.11	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06
1250	0.212	0.002	0.314	0.002	0.12	0.11	0.08	0.07	0.07	0.06	0.07	0.06	0.07	0.07	0.06	0.06
1260	0.204	0.002	0.302	0.002	0.11	0.10	0.07	0.07	0.07	0.06	0.07	0.06	0.07	0.06	0.06	0.05
1270	0.196	0.002	0.289	0.002	0.11	0.10	0.07	0.07	0.06	0.06	0.06	0.06	0.07	0.06	0.06	0.05
1280	0.187	0.002	0.277	0.002	0.10	0.10	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05
1290	0.179	0.002	0.264	0.002	0.10	0.09	0.06	0.06	0.06	0.05	0.06	0.05	0.06	0.06	0.05	0.05
1300	0.171	0.002	0.252	0.002	0.09	0.09	0.06	0.06	0.06	0.05	0.05	0.05	0.06	0.05	0.05	0.05
1310	0.163	0.002	0.240	0.002	0.09	0.08	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04
1320	0.155	0.001	0.227	0.002	0.08	0.08	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04
1330	0.146	0.001	0.215	0.001	0.08	0.07	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05	0.04	0.04
1340	0.138	0.001	0.202	0.001	0.07	0.07	0.05	0.05	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04
1350	0.130	0.001	0.190	0.001	0.07	0.07	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03
1360	0.122	0.001	0.178	0.001	0.07	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03
1370	0.114	0.001	0.165	0.001	0.06	0.06	0.04	0.04	0.04	0.03	0.04	0.03	0.04	0.04	0.03	0.03
1380	0.105	0.001	0.153	0.001	0.06	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1390	0.097	0.001	0.140	0.001	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1400	0.089	0.001	0.128	0.001	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02
1410	0.081	0.001	0.116	0.001	0.04	0.04	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.03	0.02	0.02
1420	0.073	0.001	0.103	0.001	0.04	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1430	0.064	0.001	0.091	0.001	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1440	0.056	0.001	0.078	0.001	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1450	0.048	0.000	0.066	0.000	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1460	0.040	0.000	0.054	0.000	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1470	0.032	0.000	0.041	0.000	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1480	0.023	0.000	0.029	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1490	0.015	0.000	0.016	0.000	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.007	0.000	0.004	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0700	Grandview	0	0	Avg. Net SL	2.10	2.31	2.10	2.10	2.26	0.67						
SD-700	156.8425	0	206.84	1515			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	2.478	0.016	2.920	0.014	0.35	0.40	0.39	0.44	0.35	0.39	0.35	0.40	0.38	0.43	0.11	0.13
10	2.613	0.017	3.000	0.015	0.36	0.42	0.40	0.46	0.36	0.42	0.36	0.42	0.39	0.45	0.12	0.13
20	2.204	0.014	2.591	0.013	0.31	0.35	0.35	0.39	0.31	0.35	0.31	0.35	0.34	0.38	0.10	0.11
30	1.833	0.012	2.230	0.011	0.27	0.29	0.30	0.32	0.27	0.29	0.27	0.29	0.29	0.32	0.09	0.09
40	1.499	0.010	1.894	0.009	0.23	0.24	0.25	0.26	0.23	0.24	0.23	0.24	0.25	0.26	0.07	0.08
50	1.307	0.008	1.646	0.008	0.20	0.21	0.22	0.23	0.20	0.21	0.20	0.21	0.21	0.22	0.06	0.07
60	1.315	0.008	1.557	0.008	0.19	0.21	0.21	0.23	0.19	0.21	0.19	0.21	0.20	0.23	0.06	0.07
70	1.372	0.009	1.557	0.008	0.19	0.22	0.21	0.24	0.19	0.22	0.19	0.22	0.20	0.24	0.06	0.07
80	1.250	0.008	1.405	0.007	0.17	0.20	0.19	0.22	0.17	0.20	0.17	0.20	0.18	0.21	0.05	0.06
90	1.102	0.007	1.222	0.006	0.15	0.18	0.16	0.19	0.15	0.18	0.15	0.18	0.16	0.19	0.05	0.06
100	1.008	0.006	1.082	0.005	0.13	0.16	0.14	0.18	0.13	0.16	0.13	0.16	0.14	0.17	0.04	0.05
110	0.976	0.006	0.998	0.005	0.12	0.16	0.13	0.17	0.12	0.16	0.12	0.16	0.13	0.17	0.04	0.05
120	0.919	0.006	0.901	0.004	0.11	0.15	0.12	0.16	0.11	0.15	0.11	0.15	0.12	0.16	0.03	0.05
130	0.834	0.005	0.780	0.004	0.09	0.13	0.10	0.15	0.09	0.13	0.09	0.13	0.10	0.14	0.03	0.04
140	0.759	0.005	0.678	0.003	0.08	0.12	0.09	0.13	0.08	0.12	0.08	0.12	0.09	0.13	0.03	0.04
150	0.712	0.005	0.606	0.003	0.07	0.11	0.08	0.13	0.07	0.11	0.07	0.11	0.08	0.12	0.02	0.04
160	0.684	0.004	0.556	0.003	0.07	0.11	0.07	0.12	0.07	0.11	0.07	0.11	0.07	0.12	0.02	0.03
170	0.652	0.004	0.506	0.002	0.06	0.10	0.07	0.11	0.06	0.10	0.06	0.10	0.07	0.11	0.02	0.03
180	0.616	0.004	0.458	0.002	0.06	0.10	0.06	0.11	0.06	0.10	0.06	0.10	0.06	0.11	0.02	0.03
190	0.583	0.004	0.428	0.002	0.05	0.09	0.06	0.10	0.05	0.09	0.05	0.09	0.06	0.10	0.02	0.03
200	0.553	0.004	0.411	0.002	0.05	0.09	0.05	0.10	0.05	0.09	0.05	0.09	0.05	0.10	0.02	0.03
210	0.526	0.003	0.399	0.002	0.05	0.08	0.05	0.09	0.05	0.08	0.05	0.08	0.05	0.09	0.02	0.03
220	0.507	0.003	0.399	0.002	0.05	0.08	0.05	0.09	0.05	0.08	0.05	0.08	0.05	0.09	0.02	0.03
230	0.526	0.003	0.436	0.002	0.05	0.08	0.06	0.09	0.05	0.08	0.05	0.08	0.06	0.09	0.02	0.03
240	0.599	0.004	0.523	0.003	0.06	0.10	0.07	0.11	0.06	0.10	0.06	0.10	0.07	0.10	0.02	0.03
250	0.656	0.004	0.604	0.003	0.07	0.10	0.08	0.12	0.07	0.10	0.07	0.10	0.08	0.11	0.02	0.03
260	0.653	0.004	0.626	0.003	0.08	0.10	0.08	0.11	0.08	0.10	0.08	0.10	0.08	0.11	0.02	0.03
270	0.624	0.004	0.598	0.003	0.07	0.10	0.08	0.11	0.07	0.10	0.07	0.10	0.08	0.11	0.02	0.03
280	0.644	0.004	0.611	0.003	0.07	0.10	0.08	0.11	0.07	0.10	0.07	0.10	0.08	0.11	0.02	0.03
290	0.667	0.004	0.621	0.003	0.08	0.11	0.08	0.12	0.08	0.11	0.08	0.11	0.08	0.11	0.02	0.03
300	0.694	0.004	0.646	0.003	0.08	0.11	0.09	0.12	0.08	0.11	0.08	0.11	0.08	0.12	0.02	0.04
310	0.837	0.005	0.790	0.004	0.10	0.13	0.11	0.15	0.10	0.13	0.10	0.13	0.10	0.14	0.03	0.04
320	1.112	0.007	1.049	0.005	0.13	0.18	0.14	0.20	0.13	0.18	0.13	0.18	0.14	0.19	0.04	0.06
330	1.384	0.009	1.285	0.006	0.16	0.22	0.17	0.24	0.16	0.22	0.16	0.22	0.17	0.24	0.05	0.07
340	1.650	0.011	1.515	0.007	0.18	0.26	0.20	0.29	0.18	0.26	0.18	0.26	0.20	0.28	0.06	0.08
350	1.878	0.012	1.727	0.008	0.21	0.30	0.23	0.33	0.21	0.30	0.21	0.30	0.23	0.32	0.07	0.10
360	2.057	0.013	1.940	0.009	0.24	0.33	0.26	0.36	0.23	0.33	0.23	0.33	0.25	0.35	0.07	0.10
370	2.219	0.014	2.163	0.010	0.26	0.35	0.29	0.39	0.26	0.35	0.26	0.35	0.28	0.38	0.08	0.11
380	2.306	0.015	2.317	0.011	0.28	0.37	0.31	0.41	0.28	0.37	0.28	0.37	0.30	0.40	0.09	0.12
390	2.267	0.014	2.367	0.011	0.29	0.36	0.32	0.40	0.29	0.36	0.29	0.36	0.31	0.39	0.09	0.11
400	2.203	0.014	2.384	0.012	0.29	0.35	0.32	0.39	0.29	0.35	0.29	0.35	0.31	0.38	0.09	0.11
410	2.140	0.014	2.356	0.011	0.29	0.34	0.31	0.38	0.28	0.34	0.28	0.34	0.31	0.37	0.09	0.11
420	2.098	0.013	2.351	0.011	0.29	0.34	0.31	0.37	0.28	0.33	0.28	0.33	0.31	0.36	0.09	0.11
430	2.075	0.013	2.395	0.012	0.29	0.33	0.32	0.36	0.29	0.33	0.29	0.33	0.31	0.36	0.09	0.11
440	2.038	0.013	2.461	0.012	0.30	0.33	0.33	0.36	0.30	0.32	0.30	0.32	0.32	0.35	0.09	0.10
450	2.002	0.013	2.525	0.012	0.31	0.32	0.34	0.35	0.31	0.32	0.31	0.32	0.33	0.34	0.10	0.10
460	1.919	0.012	2.538	0.012	0.31	0.31	0.34	0.34	0.31	0.31	0.31	0.31	0.33	0.33	0.10	0.10
470	1.740	0.011	2.466	0.012	0.30	0.28	0.33	0.31	0.30	0.28	0.30	0.28	0.32	0.30	0.09	0.09
480	1.596	0.010	2.462	0.012	0.30	0.26	0.33	0.28	0.30	0.25	0.30	0.25	0.32	0.27	0.09	0.08
490	1.423	0.009	2.417	0.012	0.29	0.23	0.32	0.25	0.29	0.23	0.29	0.23	0.31	0.24	0.09	0.07
500	1.288	0.008	2.409	0.012	0.29	0.21	0.32	0.23	0.29	0.21	0.29	0.21	0.31	0.22	0.09	0.07
510	1.277	0.008	2.561	0.012	0.31	0.20	0.34	0.22	0.31	0.20	0.31	0.20	0.33	0.22	0.10	0.06
520	1.232	0.008	2.697	0.013	0.33	0.20	0.36	0.22	0.33	0.20	0.33	0.20	0.35	0.21	0.10	0.06
530	1.231	0.008	2.880	0.014	0.35	0.20	0.38	0.22	0.35	0.20	0.35	0.20	0.38	0.21	0.11	0.06
540	1.317	0.008	3.123	0.015	0.38	0.21	0.42	0.23	0.38	0.21	0.38	0.21	0.41	0.23	0.12	0.07
550	1.377	0.009	3.391	0.016	0.41	0.22	0.45	0.24	0.41	0.22	0.41	0.22	0.44	0.24	0.13	0.07
560	1.483	0.009	3.603	0.017	0.44	0.24	0.48	0.26	0.44	0.24	0.44	0.24	0.47	0.25	0.14	0.08
570	1.631	0.010	3.723	0.018	0.45	0.26	0.50	0.29	0.45	0.26	0.45	0.26	0.49	0.28	0.14	0.08
580	2.108	0.013	4.069	0.020	0.49	0.34	0.54	0.37	0.49	0.34	0.49	0.34	0.53	0.36	0.16	0.11
590	2.369	0.015	4.236	0.020	0.51	0.38	0.57	0.42	0.51	0.38	0.51	0.38	0.55	0.41	0.16	0.12
600	1.986	0.013	3.934	0.019	0.48	0.32	0.52	0.35	0.48	0.32	0.48	0.32	0.51	0.34	0.15	0.10
610	1.396	0.009	3.554	0.017	0.43	0.22	0.47	0.25	0.43	0.22	0.43	0.22	0.46	0.24	0.14	0.07
620	1.340	0.009	3.142	0.015	0.38	0.21	0.42	0.24	0.38	0.21	0.38	0.21	0.41	0.23	0.12	0.07
630	2.060	0.013	2.846	0.014	0.35	0.33	0.38	0.36	0.34	0.33	0.34	0.33	0.37	0.35	0.11	0.10
640	2.148	0.014	2.654	0.013	0.32	0.34	0.35	0.38	0.32	0.34	0.32	0.34	0.35	0.37	0.10	0.11
650	1.677	0.011	2.353	0.011	0.29	0.27	0.31	0.29	0.28	0.27	0.28	0.27	0.31	0.29	0.09	0.08
660	1.172	0.007	2.117	0.010	0.26	0.19	0.28	0.21	0.26	0.19	0.26	0.19	0.28	0.20	0.08	0.06
670	0.943	0.006	1.837	0.009	0.22	0.15	0.25	0.17	0.22	0.15	0.22	0.15	0.24	0.16	0.07	0.05
680	1.056	0.007	1.693	0.008	0.21	0.17	0.23	0.19	0.20	0.17	0.20	0.17	0.22	0.18	0.07	0.05
690	1.222	0.008	1.734	0.008	0.21	0.20	0.23	0.21	0.21	0.19	0.21	0.19	0.23	0.21	0.07	0.06
700	1.287	0.008	1.855	0.009	0.22	0.21	0.25	0.23	0.22	0.21	0.22	0.21	0.24	0.22	0.07	0.07
710	1.261	0.008	1.859	0.009	0.23	0.20	0.25	0.22	0.22	0.20	0.22	0.20	0.24	0.22	0.07	0.06
720	1.203	0.008	1.810	0.009	0.22	0.19	0.24	0.21	0.22	0.19	0.22	0.19	0.24	0.21	0.07	0.06
730	1.006	0.006	1.794	0.009	0.22	0.16	0.24	0.18	0.22	0.16	0.22	0.16	0.23	0.17	0.07	0.05
740	0.772	0.005	1.738	0.008	0.21	0.12	0.23	0.14	0.21	0.12	0.21	0.12	0.23	0.13	0.07	0.04
750	0.627	0.004	1.699	0.008	0.21	0.10	0.23	0.11	0.21	0.10	0.21	0.10	0.22	0.11	0.07	0.03
760	0.602	0.004	1.690	0.008	0.20	0.10	0.23	0.11	0.20	0.10	0.20	0.10	0.22	0.10	0.06	0.03
770	0.650	0.004	1.684	0.008	0.20	0.10	0.22	0.11	0.20	0.10	0.20	0.10	0.22	0.11	0.06	0.03
780	0.966	0.006	1.778	0.009	0.22	0.15	0.24	0.17	0.21	0.15	0.21	0.15	0.23	0.17	0.07	0.05
790	1.295	0.008	1.703	0.008	0.21	0.21	0.23	0.23	0.21	0.21	0.21	0.21	0.22	0.22	0.07	0.07
800	1.369	0.009	1.662	0.008	0.20	0.22	0.22	0.24	0.20	0.22	0.20	0.22	0.22	0.24	0.06	0.07
810	1.823	0.012	2.187	0.011	0.27	0.29	0.29	0.32	0.26	0.29	0.26	0.29	0.29	0.31	0.08	0.09
820	2.228	0.014	2.451	0.012	0.30	0.36	0.33	0.39	0.30	0.35	0.30	0.36	0.32	0.38	0.09	0.11
830	1.772	0.011	2.048	0.010	0.25	0.28	0.27	0.31	0.25	0.28	0.25	0.28	0.27	0.30	0.08	0.09
840	1.256	0.008	1.601	0.008	0.19	0.20	0.21	0.22	0.19	0.20	0.19	0.20	0.21	0.22	0.06	0.06
850	0.967	0.006	1.267	0.006	0.15	0.15	0.17	0.17	0.15	0.15	0.15	0.15	0.17	0.17	0.05	0.05
860	0.924	0.006	1.212	0.006	0.15	0.15	0.16	0.16	0.15	0.15	0.15	0.15	0.16	0.16	0.05	0.05
870	1.283	0.008	1.308	0.006	0.16	0.21	0.17	0.23	0.16	0.20	0.16	0.20	0.17	0.22	0.05	0.06
880	1.676	0.011	1.565	0.008	0.19	0.27	0.21	0.29	0.19	0.27	0.19	0.27	0.20	0.29	0.06	0.08
890	1.763	0.011	1.665	0.008	0.20	0.28	0.22	0.31	0.20	0.28	0.20	0.28	0.22	0.30	0.06	0.09
900	1.402	0.009	1.520	0.007	0.18	0.22	0.20	0.25	0.18	0.22	0.18	0.22	0.20	0.24	0.06	0.07
910	1.136	0.007	1.506	0.007	0.18	0.18	0.20	0.20	0.18	0.18	0.18	0.18	0.20	0.20	0.06	0.06
920	1.251	0.008	1.691	0.008	0.21	0.20	0.23	0.22	0.20	0.20	0.20	0.20	0.22	0.22	0.06	0.06
930	1.459	0.009	1.861	0.009	0.23	0.23	0.25	0.26	0.22	0.23	0.22	0.23	0.24	0.25	0.07	0.07
940	1.597	0.010	1.958	0.009	0.24	0.26	0.26	0.28	0.24	0.25	0.24	0.25	0.26	0.27	0.08	0.08
950	2.235	0.014	2.312	0.011	0.28	0.36	0.31	0.39	0.28	0.36	0.28	0.36	0.30	0.38	0.09	0.11
960	2.509	0.016	2.194	0.011	0.27	0.40	0.29	0.44	0.27	0.40	0.27	0.40	0.29	0.43	0.08	0.13
970	2.307	0.015	1.952	0.009	0.24	0.37	0.26	0.41	0.24	0.37	0.24	0.37	0.25	0.40	0.07	0.12
980	1.897	0.012	1.834	0.009	0.22	0.30	0.24	0.33	0.22	0.30	0.22	0.30	0.24	0.33	0.07	0.10
990	1.676	0.011	1.567	0.008	0.19	0.27	0.21	0.29	0.19	0.27	0.19	0.27	0.20	0.29	0.06	0.08
1000	1.697	0.011	1.435	0.007	0.17	0.27	0.19	0.30	0.17	0.27	0.17	0.27	0.19	0.29	0.06	0.09
1010	1.356	0.009	1.310	0.006	0.16	0.22	0.17	0.24	0.16	0.22	0.16	0.22	0.17	0.23	0.05	0.07
1020	0.874	0.006	1.109	0.005	0.13	0.14	0.15	0.15	0.13	0.14	0.13	0.14	0.14	0.15	0.04	0.04
1030	0.657	0.004	0.927	0.004	0.11	0.11	0.12	0.12	0.11	0.10	0.11	0.10	0.12	0.11	0.04	0.03
1040	0.701	0.004	0.735	0.004	0.09	0.11	0.10	0.12	0.09	0.11	0.09	0.11	0.10	0.12	0.03	0.04
1050	0.775	0.005	0.668	0.003	0.08	0.12	0.09	0.14	0.08	0.12	0.08	0.12	0.09	0.13	0.03	0.04
1060	0.496	0.003	0.655	0.003	0.08	0.08	0.09	0.09	0.08	0.08	0.08	0.08	0.09	0.09	0.03	0.03
1070	0.486	0.003	0.642	0.003	0.08	0.08	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.02	0.02
1080	0.475	0.003	0.629	0.003	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.02	0.02
1090	0.465	0.003	0.616	0.003	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.07	0.08	0.08	0.02	0.02
1100	0.454	0.003	0.603	0.003	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.07	0.08	0.08	0.02	0.02
1110	0.444	0.003	0.590	0.003	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.07	0.08	0.08	0.02	0.02
1120	0.433	0.003	0.577	0.003	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.07	0.08	0.07	0.02	0.02
1130	0.423	0.003	0.564	0.003	0.07	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.02	0.02
1140	0.412	0.003	0.551	0.003	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.02	0.02
1150	0.402	0.003	0.538	0.003	0.07	0.06	0.07	0.07	0.06	0.06	0.07	0.06	0.07	0.07	0.02	0.02
1160	0.391	0.002	0.525	0.003	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.02	0.02
1170	0.381	0.002	0.512	0.002	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.02	0.02
1180	0.370	0.002	0.499	0.002	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.07	0.06	0.02	0.02
1190	0.360	0.002	0.486	0.002	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.02	0.02
1200	0.349	0.002	0.473	0.002	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.02	0.02
1210	0.339	0.002	0.460	0.002	0.06	0.05	0.06	0.06	0.06	0.05	0.06	0.05	0.06	0.06	0.02	0.02
1220	0.328	0.002	0.447	0.002	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.05	0.06	0.06	0.02	0.02
1230	0.318	0.002	0.434	0.002	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.05	0.06	0.05	0.02	0.02
1240	0.307	0.002	0.421	0.002	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.02
1250	0.297	0.002	0.408	0.002	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.02
1260	0.286	0.002	0.395	0.002	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.01
1270	0.276	0.002	0.382	0.002	0.05	0.04	0.05	0.05	0.05	0.04	0.05	0.04	0.05	0.05	0.01	0.01
1280	0.265	0.002	0.369	0.002	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.05	0.05	0.01	0.01
1290	0.255	0.002	0.356	0.002	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.01	0.01
1300	0.244	0.002	0.343	0.002	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.01	0.01
1310	0.234	0.001	0.330	0.002	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.01	0.01
1320	0.223	0.001	0.317	0.002	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.01	0.01
1330	0.213	0.001	0.304	0.001	0.04	0.03	0.04	0.04	0.04	0.03	0.04	0.03	0.04	0.04	0.01	0.01
1340	0.202	0.001	0.291	0.001	0.04	0.03	0.04	0.04	0.04	0.03	0.04	0.03	0.04	0.03	0.01	0.01
1350	0.192	0.001	0.278	0.001	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.01	0.01
1360	0.181	0.001	0.265	0.001	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01
1370	0.171	0.001	0.252	0.001	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01
1380	0.160	0.001	0.239	0.001	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.01
1390	0.150	0.001	0.226	0.001	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.03	0.01	0.01
1400	0.139	0.001	0.213	0.001	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.01	0.01
1410	0.129	0.001	0.200	0.001	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.01	0.01
1420	0.118	0.001	0.187	0.001	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
1430	0.108	0.001	0.174	0.001	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
1440	0.097	0.001	0.161	0.001	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.00
1450	0.086	0.001	0.148	0.001	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.00
1460	0.076	0.000	0.135	0.001	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.00
1470	0.065	0.000	0.122	0.001	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00
1480	0.055	0.000	0.109	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
1490	0.044	0.000	0.096	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
1500	0.034	0.000	0.083	0.000	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
1510	0.023	0.000	0.070	0.000	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1520	0.013	0.000	0.057	0.000	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00

SD-0710	Batiquitos	0	0	Avg. Net Cl	0.48	1.38	1.42	1.54	1.66	0.00						
SD-710	297.786	0	279.863	1485	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.066	0.000	0.069	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.852	0.006	1.568	0.006	0.03	0.04	0.09	0.10	0.10	0.11	0.10	0.11	0.11	0.12	0.00	0.00
20	3.731	0.013	3.365	0.012	0.07	0.07	0.20	0.21	0.20	0.21	0.22	0.23	0.24	0.25	0.00	0.00
30	3.151	0.011	2.458	0.009	0.05	0.06	0.14	0.17	0.15	0.18	0.16	0.19	0.17	0.21	0.00	0.00
40	3.507	0.012	2.344	0.008	0.05	0.07	0.14	0.19	0.14	0.20	0.15	0.22	0.17	0.23	0.00	0.00
50	4.162	0.014	2.436	0.009	0.05	0.08	0.14	0.23	0.15	0.24	0.16	0.26	0.17	0.28	0.00	0.00
60	4.390	0.015	2.348	0.008	0.05	0.08	0.14	0.24	0.14	0.25	0.15	0.27	0.17	0.29	0.00	0.00
70	4.471	0.015	2.391	0.009	0.05	0.09	0.14	0.25	0.14	0.25	0.16	0.28	0.17	0.30	0.00	0.00
80	4.241	0.014	2.156	0.008	0.04	0.08	0.13	0.23	0.13	0.24	0.14	0.26	0.15	0.28	0.00	0.00
90	4.385	0.015	1.977	0.007	0.04	0.08	0.12	0.24	0.12	0.25	0.13	0.27	0.14	0.29	0.00	0.00
100	4.699	0.016	2.085	0.007	0.04	0.09	0.12	0.26	0.13	0.27	0.14	0.29	0.15	0.31	0.00	0.00
110	4.978	0.017	2.256	0.008	0.05	0.09	0.13	0.28	0.14	0.28	0.15	0.31	0.16	0.33	0.00	0.00
120	5.231	0.018	2.494	0.009	0.05	0.10	0.15	0.29	0.15	0.30	0.16	0.32	0.18	0.35	0.00	0.00
130	5.157	0.017	2.452	0.009	0.05	0.10	0.14	0.29	0.15	0.29	0.16	0.32	0.17	0.34	0.00	0.00
140	4.652	0.016	1.984	0.007	0.04	0.09	0.12	0.26	0.12	0.27	0.13	0.29	0.14	0.31	0.00	0.00
150	4.218	0.014	1.540	0.006	0.03	0.08	0.09	0.23	0.09	0.24	0.10	0.26	0.11	0.28	0.00	0.00
160	3.916	0.013	1.254	0.004	0.03	0.07	0.07	0.22	0.08	0.22	0.08	0.24	0.09	0.26	0.00	0.00
170	3.645	0.012	1.030	0.004	0.02	0.07	0.06	0.20	0.06	0.21	0.07	0.23	0.07	0.24	0.00	0.00
180	3.136	0.011	0.811	0.003	0.02	0.06	0.05	0.17	0.05	0.18	0.05	0.19	0.06	0.21	0.00	0.00
190	3.013	0.010	0.970	0.003	0.02	0.06	0.06	0.17	0.06	0.17	0.06	0.19	0.07	0.20	0.00	0.00
200	2.921	0.010	1.095	0.004	0.02	0.06	0.06	0.16	0.07	0.17	0.07	0.18	0.08	0.19	0.00	0.00
210	2.556	0.009	0.940	0.003	0.02	0.05	0.06	0.14	0.06	0.15	0.06	0.16	0.07	0.17	0.00	0.00
220	2.213	0.007	0.791	0.003	0.02	0.04	0.05	0.12	0.05	0.13	0.05	0.14	0.06	0.15	0.00	0.00
230	1.930	0.006	0.478	0.002	0.01	0.04	0.03	0.11	0.03	0.11	0.03	0.12	0.03	0.13	0.00	0.00
240	1.748	0.006	0.370	0.001	0.01	0.03	0.02	0.10	0.02	0.10	0.02	0.11	0.03	0.12	0.00	0.00
250	1.688	0.006	0.378	0.001	0.01	0.03	0.02	0.09	0.02	0.10	0.02	0.10	0.03	0.11	0.00	0.00
260	1.723	0.006	0.461	0.002	0.01	0.03	0.03	0.10	0.03	0.10	0.03	0.11	0.03	0.11	0.00	0.00
270	1.829	0.006	0.554	0.002	0.01	0.03	0.03	0.10	0.03	0.10	0.04	0.11	0.04	0.12	0.00	0.00
280	1.945	0.007	0.622	0.002	0.01	0.04	0.04	0.11	0.04	0.11	0.04	0.12	0.04	0.13	0.00	0.00
290	2.070	0.007	0.632	0.002	0.01	0.04	0.04	0.11	0.04	0.12	0.04	0.13	0.04	0.14	0.00	0.00
300	2.288	0.008	0.694	0.002	0.01	0.04	0.04	0.13	0.04	0.13	0.05	0.14	0.05	0.15	0.00	0.00
310	2.505	0.008	0.760	0.003	0.02	0.05	0.04	0.14	0.05	0.14	0.05	0.15	0.05	0.17	0.00	0.00
320	2.813	0.009	0.893	0.003	0.02	0.05	0.05	0.16	0.05	0.16	0.06	0.17	0.06	0.19	0.00	0.00
330	3.466	0.012	1.315	0.005	0.03	0.07	0.08	0.19	0.08	0.20	0.09	0.21	0.09	0.23	0.00	0.00
340	4.110	0.014	1.773	0.006	0.04	0.08	0.10	0.23	0.11	0.23	0.12	0.25	0.13	0.27	0.00	0.00
350	4.755	0.016	2.222	0.008	0.04	0.09	0.13	0.26	0.13	0.27	0.15	0.29	0.16	0.32	0.00	0.00
360	5.186	0.017	2.534	0.009	0.05	0.10	0.15	0.29	0.15	0.30	0.17	0.32	0.18	0.34	0.00	0.00
370	5.598	0.019	2.790	0.010	0.06	0.11	0.16	0.31	0.17	0.32	0.18	0.35	0.20	0.37	0.00	0.00
380	5.597	0.019	2.660	0.010	0.05	0.11	0.16	0.31	0.16	0.32	0.17	0.35	0.19	0.37	0.00	0.00
390	5.510	0.019	2.506	0.009	0.05	0.10	0.15	0.30	0.15	0.31	0.16	0.34	0.18	0.37	0.00	0.00
400	5.405	0.018	2.402	0.009	0.05	0.10	0.14	0.30	0.15	0.31	0.16	0.33	0.17	0.36	0.00	0.00
410	5.344	0.018	2.315	0.008	0.05	0.10	0.14	0.30	0.14	0.30	0.15	0.33	0.16	0.36	0.00	0.00
420	5.288	0.018	2.283	0.008	0.05	0.10	0.13	0.29	0.14	0.30	0.15	0.33	0.16	0.35	0.00	0.00
430	5.211	0.017	2.402	0.009	0.05	0.10	0.14	0.29	0.15	0.30	0.16	0.32	0.17	0.35	0.00	0.00
440	5.130	0.017	2.474	0.009	0.05	0.10	0.15	0.28	0.15	0.29	0.16	0.32	0.18	0.34	0.00	0.00
450	5.046	0.017	2.626	0.009	0.05	0.10	0.15	0.28	0.16	0.29	0.17	0.31	0.19	0.34	0.00	0.00
460	4.913	0.016	2.809	0.010	0.06	0.09	0.17	0.27	0.17	0.28	0.18	0.30	0.20	0.33	0.00	0.00
470	4.761	0.016	2.906	0.010	0.06	0.09	0.17	0.26	0.18	0.27	0.19	0.29	0.21	0.32	0.00	0.00
480	4.532	0.015	2.979	0.011	0.06	0.09	0.18	0.25	0.18	0.26	0.20	0.28	0.21	0.30	0.00	0.00
490	4.347	0.015	2.872	0.010	0.06	0.08	0.17	0.24	0.17	0.25	0.19	0.27	0.20	0.29	0.00	0.00
500	4.062	0.014	2.677	0.010	0.05	0.08	0.16	0.22	0.16	0.23	0.18	0.25	0.19	0.27	0.00	0.00
510	3.564	0.012	2.444	0.009	0.05	0.07	0.14	0.20	0.15	0.20	0.16	0.22	0.17	0.24	0.00	0.00
520	3.551	0.012	2.645	0.009	0.05	0.07	0.16	0.20	0.16	0.20	0.17	0.22	0.19	0.24	0.00	0.00
530	3.317	0.011	2.723	0.010	0.06	0.06	0.16	0.18	0.17	0.19	0.18	0.20	0.19	0.22	0.00	0.00
540	2.609	0.009	2.490	0.009	0.05	0.05	0.15	0.14	0.15	0.15	0.16	0.16	0.18	0.17	0.00	0.00
550	2.115	0.007	2.290	0.008	0.05	0.04	0.13	0.12	0.14	0.12	0.15	0.13	0.16	0.14	0.00	0.00
560	2.337	0.008	2.600	0.009	0.05	0.04	0.15	0.13	0.16	0.13	0.17	0.14	0.18	0.16	0.00	0.00
570	1.931	0.006	2.365	0.008	0.05	0.04	0.14	0.11	0.14	0.11	0.16	0.12	0.17	0.13	0.00	0.00
580	1.268	0.004	2.085	0.007	0.04	0.02	0.12	0.07	0.13	0.07	0.14	0.08	0.15	0.08	0.00	0.00
590	1.087	0.004	2.303	0.008	0.05	0.02	0.14	0.06	0.14	0.06	0.15	0.07	0.16	0.07	0.00	0.00
600	1.281	0.004	2.924	0.010	0.06	0.02	0.17	0.07	0.18	0.07	0.19	0.08	0.21	0.09	0.00	0.00
610	1.154	0.004	2.681	0.010	0.05	0.02	0.16	0.06	0.16	0.07	0.18	0.07	0.19	0.08	0.00	0.00
620	1.659	0.006	2.928	0.010	0.06	0.03	0.17	0.09	0.18	0.09	0.19	0.10	0.21	0.11	0.00	0.00
630	0.925	0.003	2.217	0.008	0.04	0.02	0.13	0.05	0.13	0.05	0.15	0.06	0.16	0.06	0.00	0.00
640	0.543	0.002	1.864	0.007	0.04	0.01	0.11	0.03	0.11	0.03	0.12	0.03	0.13	0.04	0.00	0.00
650	0.907	0.003	1.966	0.007	0.04	0.02	0.12	0.05	0.12	0.05	0.13	0.06	0.14	0.06	0.00	0.00
660	0.835	0.003	1.771	0.006	0.04	0.02	0.10	0.05	0.11	0.05	0.12	0.05	0.13	0.06	0.00	0.00
670	1.127	0.004	1.639	0.006	0.03	0.02	0.10	0.06	0.10	0.06	0.11	0.07	0.12	0.07	0.00	0.00
680	0.849	0.003	1.586	0.006	0.03	0.02	0.09	0.05	0.10	0.05	0.10	0.05	0.11	0.06	0.00	0.00
690	0.664	0.002	1.513	0.005	0.03	0.01	0.09	0.04	0.09	0.04	0.10	0.04	0.11	0.04	0.00	0.00
700	0.728	0.002	1.900	0.007	0.04	0.01	0.11	0.04	0.12	0.04	0.12	0.04	0.13	0.05	0.00	0.00
710	0.862	0.003	2.498	0.009	0.05	0.02	0.15	0.05	0.15	0.05	0.16	0.05	0.18	0.06	0.00	0.00
720	1.209	0.004	3.220	0.012	0.07	0.02	0.19	0.07	0.20	0.07	0.21	0.07	0.23	0.08	0.00	0.00
730	1.840	0.006	4.136	0.015	0.08	0.04	0.24	0.10	0.25	0.10	0.27	0.11	0.29	0.12	0.00	0.00
740	1.115	0.004	3.528	0.013	0.07	0.02	0.21	0.06	0.21	0.06	0.23	0.07	0.25	0.07	0.00	0.00
750	1.427	0.005	3.858	0.014	0.08	0.03	0.23	0.08	0.23	0.08	0.25	0.09	0.27	0.09	0.00	0.00
760	1.311	0.004	3.607	0.013	0.07	0.02	0.21	0.07	0.22	0.07	0.24	0.08	0.26	0.09	0.00	0.00
770	1.093	0.004	3.007	0.011	0.06	0.02	0.18	0.06	0.18	0.06	0.20	0.07	0.21	0.07	0.00	0.00
780	0.666	0.002	2.394	0.009	0.05	0.01	0.14	0.04	0.15	0.04	0.16	0.04	0.17	0.04	0.00	0.00
790	0.663	0.002	2.504	0.009	0.05	0.01	0.15	0.04	0.15	0.04	0.16	0.04	0.18	0.04	0.00	0.00
800	0.768	0.003	2.765	0.010	0.06	0.01	0.16	0.04	0.17	0.04	0.18	0.05	0.20	0.05	0.00	0.00
810	1.134	0.004	3.460	0.012	0.07	0.02	0.20	0.06	0.21	0.06	0.23	0.07	0.24	0.08	0.00	0.00
820	1.025	0.003	3.616	0.013	0.07	0.02	0.21	0.06	0.22	0.06	0.24	0.06	0.26	0.07	0.00	0.00
830	1.275	0.004	4.064	0.015	0.08	0.02	0.24	0.07	0.25	0.07	0.27	0.08	0.29	0.08	0.00	0.00
840	1.242	0.004	3.920	0.014	0.08	0.02	0.23	0.07	0.24	0.07	0.26	0.08	0.28	0.08	0.00	0.00
850	1.360	0.005	3.308	0.012	0.07	0.03	0.19	0.08	0.20	0.08	0.22	0.08	0.23	0.09	0.00	0.00
860	2.019	0.007	3.541	0.013	0.07	0.04	0.21	0.11	0.21	0.12	0.23	0.12	0.25	0.13	0.00	0.00
870	1.803	0.006	3.270	0.012	0.07	0.03	0.19	0.10	0.20	0.10	0.21	0.11	0.23	0.12	0.00	0.00
880	1.885	0.006	3.138	0.011	0.06	0.04	0.18	0.10	0.19	0.11	0.21	0.12	0.22	0.13	0.00	0.00
890	1.786	0.006	2.971	0.011	0.06	0.03	0.17	0.10	0.18	0.10	0.20	0.11	0.21	0.12	0.00	0.00
900	1.492	0.005	2.705	0.010	0.05	0.03	0.16	0.08	0.16	0.09	0.18	0.09	0.19	0.10	0.00	0.00
910	1.225	0.004	2.400	0.009	0.05	0.02	0.14	0.07	0.15	0.07	0.16	0.08	0.17	0.08	0.00	0.00
920	1.020	0.003	2.221	0.008	0.04	0.02	0.13	0.06	0.13	0.06	0.15	0.06	0.16	0.07	0.00	0.00
930	0.853	0.003	2.144	0.008	0.04	0.02	0.13	0.05	0.13	0.05	0.14	0.05	0.15	0.06	0.00	0.00
940	0.805	0.003	2.171	0.008	0.04	0.02	0.13	0.04	0.13	0.05	0.14	0.05	0.15	0.05	0.00	0.00
950	0.758	0.003	2.237	0.008	0.05	0.01	0.13	0.04	0.14	0.04	0.15	0.05	0.16	0.05	0.00	0.00
960	0.697	0.002	2.160	0.008	0.04	0.01	0.13	0.04	0.13	0.04	0.14	0.04	0.15	0.05	0.00	0.00
970	0.839	0.003	2.323	0.008	0.05	0.02	0.14	0.05	0.14	0.05	0.15	0.05	0.16	0.06	0.00	0.00
980	0.793	0.003	2.185	0.008	0.04	0.02	0.13	0.04	0.13	0.05	0.14	0.05	0.15	0.05	0.00	0.00
990	1.654	0.006	3.115	0.011	0.06	0.03	0.18	0.09	0.19	0.09	0.20	0.10	0.22	0.11	0.00	0.00
1000	1.533	0.005	2.919	0.010	0.06	0.03	0.17	0.08	0.18	0.09	0.19	0.09	0.21	0.10	0.00	0.00
1010	1.646	0.006	2.806	0.010	0.06	0.03	0.17	0.09	0.17	0.09	0.18	0.10	0.20	0.11	0.00	0.00
1020	1.085	0.004	2.017	0.007	0.04	0.02	0.12	0.06	0.12	0.06	0.13	0.07	0.14	0.07	0.00	0.00
1030	0.821	0.003	1.715	0.006	0.03	0.02	0.10	0.05	0.10	0.05	0.11	0.05	0.12	0.05	0.00	0.00
1040	1.039	0.003	1.800	0.006	0.04	0.02	0.11	0.06	0.11	0.06	0.12	0.06	0.13	0.07	0.00	0.00
1050	1.181	0.004	1.836	0.007	0.04	0.02	0.11	0.07	0.11	0.07	0.12	0.07	0.13	0.08	0.00	0.00
1060	1.095	0.004	1.774	0.006	0.04	0.02	0.10	0.06	0.11	0.06	0.12	0.07	0.13	0.07	0.00	0.00
1070	1.064	0.004	1.756	0.006	0.04	0.02	0.10	0.06	0.11	0.06	0.12	0.07	0.12	0.07	0.00	0.00
1080	1.070	0.004	1.883	0.007	0.04	0.02	0.11	0.06	0.11	0.06	0.12	0.07	0.13	0.07	0.00	0.00
1090	1.352	0.005	2.151	0.008	0.04	0.03	0.13	0.07	0.13	0.08	0.14	0.08	0.15	0.09	0.00	0.00
1100	1.178	0.004	1.871	0.007	0.04	0.02	0.11	0.07	0.11	0.07	0.12	0.07	0.13	0.08	0.00	0.00
1110	1.028	0.003	1.599	0.006	0.03	0.02	0.09	0.06	0.10	0.06	0.11	0.06	0.11	0.07	0.00	0.00
1120	0.809	0.003	1.561	0.006	0.03	0.02	0.09	0.04	0.09	0.05	0.10	0.05	0.11	0.05	0.00	0.00
1130	0.852	0.003	1.524	0.005	0.03	0.02	0.09	0.05	0.09	0.05	0.10	0.05	0.11	0.06	0.00	0.00
1140	1.109	0.004	1.739	0.006	0.04	0.02	0.10	0.06	0.11	0.06	0.11	0.07	0.12	0.07	0.00	0.00
1150	1.449	0.005	2.105	0.008	0.04	0.03	0.12	0.08	0.13	0.08	0.14	0.09	0.15	0.10	0.00	0.00
1160	1.006	0.003	1.601	0.006	0.03	0.02	0.09	0.06	0.10	0.06	0.11	0.06	0.11	0.07	0.00	0.00
1170	1.126	0.004	1.689	0.006	0.03	0.02	0.10	0.06	0.10	0.06	0.11	0.07	0.12	0.07	0.00	0.00
1180	1.021	0.003	1.564	0.006	0.03	0.02	0.09	0.06	0.09	0.06	0.10	0.06	0.11	0.07	0.00	0.00
1190	0.904	0.003	1.378	0.005	0.03	0.02	0.08	0.05	0.08	0.05	0.09	0.06	0.10	0.06	0.00	0.00
1200	1.334	0.004	1.826	0.007	0.04	0.03	0.11	0.07	0.11	0.08	0.12	0.08	0.13	0.09	0.00	0.00
1210	1.148	0.004	1.572	0.006	0.03	0.02	0.09	0.06	0.10	0.07	0.10	0.07	0.11	0.08	0.00	0.00
1220	1.184	0.004	1.717	0.006	0.03	0.02	0.10	0.07	0.10	0.07	0.11	0.07	0.12	0.08	0.00	0.00
1230	1.114	0.004	1.523	0.005	0.03	0.02	0.09	0.06	0.09	0.06	0.10	0.07	0.11	0.07	0.00	0.00
1240	0.860	0.003	1.163	0.004	0.02	0.02	0.07	0.05	0.07	0.05	0.08	0.05	0.08	0.06	0.00	0.00
1250	0.806	0.003	1.026	0.004	0.02	0.02	0.06	0.04	0.06	0.05	0.07	0.05	0.07	0.05	0.00	0.00
1260	0.829	0.003	1.009	0.004	0.02	0.02	0.06	0.05	0.06	0.05	0.07	0.05	0.07	0.06	0.00	0.00
1270	0.759	0.003	0.913	0.003	0.02	0.01	0.05	0.04	0.06	0.04	0.06	0.05	0.06	0.05	0.00	0.00
1280	0.756	0.003	0.873	0.003	0.02	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.00	0.00
1290	1.002	0.003	1.000	0.004	0.02	0.02	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.07	0.00	0.00
1300	0.783	0.003	0.855	0.003	0.02	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.00	0.00
1310	0.582	0.002	0.654	0.002	0.01	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.00	0.00
1320	0.560	0.002	0.594	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.00	0.00
1330	0.472	0.002	0.593	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.00	0.00
1340	0.383	0.001	0.576	0.002	0.01	0.01	0.03	0.02	0.03	0.02	0.04	0.02	0.04	0.03	0.00	0.00
1350	0.358	0.001	0.538	0.002	0.01	0.01	0.03	0.02	0.03	0.02	0.04	0.02	0.04	0.02	0.00	0.00
1360	0.332	0.001	0.500	0.002	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.02	0.00	0.00
1370	0.307	0.001	0.462	0.002	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.00	0.00
1380	0.281	0.001	0.424	0.002	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.00	0.00
1390	0.256	0.001	0.386	0.001	0.01	0.00	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.00	0.00
1400	0.230	0.001	0.348	0.001	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.00	0.00
1410	0.205	0.001	0.310	0.001	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.00	0.00
1420	0.179	0.001	0.272	0.001	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.00	0.00
1430	0.154	0.001	0.234	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.00	0.00
1440	0.128	0.000	0.196	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
1450	0.103	0.000	0.158	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
1460	0.077	0.000	0.120	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.00
1470	0.051	0.000	0.082	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1480	0.026	0.000	0.044	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.000	0.000	0.006	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CB-0720	Batiquitos	0	0	Avg. Net Sl	-0.04	0.26	0.52	0.57	0.35	0.00						
CB-720	493.724	0	508.685	1556			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.457	0.001	0.578	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
10	0.968	0.002	0.909	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
20	0.905	0.002	0.974	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
30	0.638	0.001	0.874	0.002	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
40	0.722	0.001	0.946	0.002	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
50	0.883	0.002	1.040	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
60	1.172	0.002	1.342	0.003	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.00	0.00
70	1.524	0.003	1.704	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.00
80	2.633	0.005	2.788	0.005	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.02	0.02	0.00	0.00
90	3.334	0.007	3.497	0.007	0.00	0.00	0.02	0.02	0.04	0.04	0.05	0.05	0.03	0.03	0.00	0.00
100	3.150	0.006	3.334	0.007	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.03	0.03	0.00	0.00
110	2.526	0.005	2.773	0.005	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00
120	1.622	0.003	1.985	0.004	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.01	0.00	0.00
130	1.333	0.003	1.751	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.00
140	1.601	0.003	1.970	0.004	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.01	0.00	0.00
150	2.382	0.005	2.623	0.005	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00
160	3.343	0.007	3.534	0.007	0.00	0.00	0.02	0.02	0.04	0.04	0.05	0.05	0.03	0.03	0.00	0.00
170	3.976	0.008	3.965	0.008	0.00	0.00	0.02	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.00	0.00
180	4.721	0.010	4.356	0.009	0.00	0.00	0.03	0.03	0.05	0.06	0.06	0.07	0.04	0.04	0.00	0.00
190	5.552	0.011	4.765	0.009	0.00	0.00	0.03	0.04	0.06	0.07	0.06	0.08	0.04	0.05	0.00	0.00
200	6.023	0.012	4.657	0.009	0.00	0.00	0.03	0.04	0.06	0.08	0.06	0.08	0.04	0.05	0.00	0.00
210	6.287	0.013	4.408	0.009	0.00	0.00	0.03	0.04	0.05	0.08	0.06	0.09	0.04	0.05	0.00	0.00
220	6.601	0.013	4.307	0.008	0.00	0.00	0.03	0.04	0.05	0.08	0.06	0.09	0.03	0.06	0.00	0.00
230	6.763	0.014	4.077	0.008	0.00	0.00	0.03	0.04	0.05	0.08	0.05	0.09	0.03	0.06	0.00	0.00
240	6.776	0.014	3.771	0.007	0.00	0.00	0.02	0.04	0.05	0.08	0.05	0.09	0.03	0.06	0.00	0.00
250	6.735	0.014	3.549	0.007	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.09	0.03	0.06	0.00	0.00
260	6.640	0.013	3.371	0.007	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.09	0.03	0.06	0.00	0.00
270	6.492	0.013	3.196	0.006	0.00	0.00	0.02	0.04	0.04	0.08	0.04	0.09	0.03	0.05	0.00	0.00
280	6.324	0.013	3.039	0.006	0.00	0.00	0.02	0.04	0.04	0.08	0.04	0.09	0.02	0.05	0.00	0.00
290	6.108	0.012	2.896	0.006	0.00	0.00	0.02	0.04	0.04	0.08	0.04	0.08	0.02	0.05	0.00	0.00
300	5.791	0.012	2.674	0.005	0.00	0.00	0.02	0.04	0.03	0.07	0.04	0.08	0.02	0.05	0.00	0.00
310	5.408	0.011	2.429	0.005	0.00	0.00	0.01	0.03	0.03	0.07	0.03	0.07	0.02	0.05	0.00	0.00
320	4.979	0.010	2.208	0.004	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.07	0.02	0.04	0.00	0.00
330	4.556	0.009	2.027	0.004	0.00	0.00	0.01	0.03	0.02	0.06	0.03	0.06	0.02	0.04	0.00	0.00
340	4.294	0.009	1.975	0.004	0.00	0.00	0.01	0.03	0.02	0.05	0.03	0.06	0.02	0.04	0.00	0.00
350	4.250	0.009	2.103	0.004	0.00	0.00	0.01	0.03	0.03	0.05	0.03	0.06	0.02	0.04	0.00	0.00
360	4.284	0.009	2.305	0.005	0.00	0.00	0.01	0.03	0.03	0.05	0.03	0.06	0.02	0.04	0.00	0.00
370	4.341	0.009	2.497	0.005	0.00	0.00	0.02	0.03	0.03	0.05	0.03	0.06	0.02	0.04	0.00	0.00
380	4.546	0.009	2.771	0.005	0.00	0.00	0.02	0.03	0.03	0.06	0.04	0.06	0.02	0.04	0.00	0.00
390	4.900	0.010	3.119	0.006	0.00	0.00	0.02	0.03	0.04	0.06	0.04	0.07	0.03	0.04	0.00	0.00
400	5.295	0.011	3.477	0.007	0.00	0.00	0.02	0.03	0.04	0.07	0.05	0.07	0.03	0.04	0.00	0.00
410	5.689	0.012	3.791	0.007	0.00	0.00	0.02	0.04	0.05	0.07	0.05	0.08	0.03	0.05	0.00	0.00
420	5.983	0.012	3.958	0.008	0.00	0.00	0.02	0.04	0.05	0.07	0.05	0.08	0.03	0.05	0.00	0.00
430	6.106	0.012	3.937	0.008	0.00	0.00	0.02	0.04	0.05	0.08	0.05	0.08	0.03	0.05	0.00	0.00
440	6.176	0.013	3.846	0.008	0.00	0.00	0.02	0.04	0.05	0.08	0.05	0.09	0.03	0.05	0.00	0.00
450	6.267	0.013	3.789	0.007	0.00	0.00	0.02	0.04	0.05	0.08	0.05	0.09	0.03	0.05	0.00	0.00
460	6.204	0.013	3.626	0.007	0.00	0.00	0.02	0.04	0.04	0.08	0.05	0.09	0.03	0.05	0.00	0.00
470	5.813	0.012	3.158	0.006	0.00	0.00	0.02	0.04	0.04	0.07	0.04	0.08	0.03	0.05	0.00	0.00
480	5.606	0.011	2.896	0.006	0.00	0.00	0.02	0.04	0.04	0.07	0.04	0.08	0.02	0.05	0.00	0.00
490	5.639	0.011	2.898	0.006	0.00	0.00	0.02	0.04	0.04	0.07	0.04	0.08	0.02	0.05	0.00	0.00
500	5.667	0.011	2.907	0.006	0.00	0.00	0.02	0.04	0.04	0.07	0.04	0.08	0.02	0.05	0.00	0.00
510	5.107	0.010	2.536	0.005	0.00	0.00	0.02	0.03	0.03	0.06	0.03	0.07	0.02	0.04	0.00	0.00
520	4.679	0.009	2.451	0.005	0.00	0.00	0.02	0.03	0.03	0.06	0.03	0.06	0.02	0.04	0.00	0.00
530	4.560	0.009	2.714	0.005	0.00	0.00	0.02	0.03	0.03	0.06	0.04	0.06	0.02	0.04	0.00	0.00
540	4.452	0.009	2.862	0.006	0.00	0.00	0.02	0.03	0.03	0.06	0.04	0.06	0.02	0.04	0.00	0.00
550	4.410	0.009	2.907	0.006	0.00	0.00	0.02	0.03	0.04	0.05	0.04	0.06	0.02	0.04	0.00	0.00
560	4.676	0.009	3.167	0.006	0.00	0.00	0.02	0.03	0.04	0.06	0.04	0.06	0.03	0.04	0.00	0.00
570	4.873	0.010	3.349	0.007	0.00	0.00	0.02	0.03	0.04	0.06	0.04	0.07	0.03	0.04	0.00	0.00
580	4.905	0.010	3.402	0.007	0.00	0.00	0.02	0.03	0.04	0.06	0.05	0.07	0.03	0.04	0.00	0.00
590	4.919	0.010	3.475	0.007	0.00	0.00	0.02	0.03	0.04	0.06	0.05	0.07	0.03	0.04	0.00	0.00
600	5.078	0.010	3.709	0.007	0.00	0.00	0.02	0.03	0.04	0.06	0.05	0.07	0.03	0.04	0.00	0.00
610	5.323	0.011	4.017	0.008	0.00	0.00	0.02	0.03	0.05	0.07	0.05	0.07	0.03	0.04	0.00	0.00
620	5.558	0.011	4.307	0.008	0.00	0.00	0.03	0.04	0.05	0.07	0.06	0.08	0.03	0.05	0.00	0.00
630	5.781	0.012	4.596	0.009	0.00	0.00	0.03	0.04	0.06	0.07	0.06	0.08	0.04	0.05	0.00	0.00
640	5.815	0.012	4.725	0.009	0.00	0.00	0.03	0.04	0.06	0.07	0.06	0.08	0.04	0.05	0.00	0.00
650	5.434	0.011	4.496	0.009	0.00	0.00	0.03	0.03	0.05	0.07	0.06	0.07	0.04	0.05	0.00	0.00
660	4.840	0.010	4.119	0.008	0.00	0.00	0.03	0.03	0.05	0.06	0.06	0.07	0.03	0.04	0.00	0.00
670	4.261	0.009	3.800	0.007	0.00	0.00	0.02	0.03	0.05	0.05	0.05	0.06	0.03	0.04	0.00	0.00
680	3.908	0.008	3.720	0.007	0.00	0.00	0.02	0.02	0.05	0.05	0.05	0.05	0.03	0.03	0.00	0.00
690	3.733	0.008	3.832	0.008	0.00	0.00	0.02	0.02	0.05	0.05	0.05	0.05	0.03	0.03	0.00	0.00
700	3.684	0.007	4.093	0.008	0.00	0.00	0.03	0.02	0.05	0.05	0.05	0.05	0.03	0.03	0.00	0.00
710	3.366	0.007	4.141	0.008	0.00	0.00	0.03	0.02	0.05	0.04	0.06	0.05	0.03	0.03	0.00	0.00
720	2.993	0.006	4.096	0.008	0.00	0.00	0.03	0.02	0.05	0.04	0.05	0.04	0.03	0.02	0.00	0.00
730	2.841	0.006	4.166	0.008	0.00	0.00	0.03	0.02	0.05	0.04	0.06	0.04	0.03	0.02	0.00	0.00
740	2.745	0.006	4.282	0.008	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.03	0.02	0.00	0.00
750	2.672	0.005	4.404	0.009	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.04	0.04	0.02	0.00	0.00
760	2.734	0.006	4.626	0.009	0.00	0.00	0.03	0.02	0.06	0.03	0.06	0.04	0.04	0.02	0.00	0.00
770	2.857	0.006	4.908	0.010	0.00	0.00	0.03	0.02	0.06	0.04	0.07	0.04	0.04	0.02	0.00	0.00
780	2.974	0.006	5.187	0.010	0.00	0.00	0.03	0.02	0.06	0.04	0.07	0.04	0.04	0.02	0.00	0.00
790	3.012	0.006	5.366	0.011	0.00	0.00	0.03	0.02	0.06	0.04	0.07	0.04	0.04	0.03	0.00	0.00
800	2.917	0.006	5.394	0.011	0.00	0.00	0.03	0.02	0.07	0.04	0.07	0.04	0.04	0.02	0.00	0.00
810	2.778	0.006	5.344	0.011	0.00	0.00	0.03	0.02	0.06	0.03	0.07	0.04	0.04	0.02	0.00	0.00
820	2.632	0.005	5.221	0.010	0.00	0.00	0.03	0.02	0.06	0.03	0.07	0.04	0.04	0.02	0.00	0.00
830	2.438	0.005	5.019	0.010	0.00	0.00	0.03	0.02	0.06	0.03	0.07	0.03	0.04	0.02	0.00	0.00
840	2.207	0.004	4.792	0.009	0.00	0.00	0.03	0.01	0.06	0.03	0.06	0.03	0.04	0.02	0.00	0.00
850	1.989	0.004	4.580	0.009	0.00	0.00	0.03	0.01	0.06	0.02	0.06	0.03	0.04	0.02	0.00	0.00
860	1.897	0.004	4.491	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
870	1.876	0.004	4.468	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
880	1.864	0.004	4.440	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
890	1.885	0.004	4.440	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
900	1.889	0.004	4.427	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
910	1.893	0.004	4.373	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
920	1.879	0.004	4.385	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
930	1.873	0.004	4.471	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
940	1.846	0.004	4.508	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
950	1.824	0.004	4.457	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
960	1.816	0.004	4.377	0.009	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.04	0.02	0.00	0.00
970	1.793	0.004	4.308	0.008	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.02	0.03	0.01	0.00	0.00
980	1.802	0.004	4.230	0.008	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.02	0.03	0.02	0.00	0.00
990	1.819	0.004	4.186	0.008	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.03	0.03	0.02	0.00	0.00
1000	1.811	0.004	4.066	0.008	0.00	0.00	0.03	0.01	0.05	0.02	0.05	0.02	0.03	0.02	0.00	0.00
1010	1.799	0.004	3.914	0.008	0.00	0.00	0.02	0.01	0.05	0.02	0.05	0.02	0.03	0.01	0.00	0.00
1020	1.763	0.004	3.781	0.007	0.00	0.00	0.02	0.01	0.05	0.02	0.05	0.02	0.03	0.01	0.00	0.00
1030	1.710	0.003	3.647	0.007	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.02	0.03	0.01	0.00	0.00
1040	1.667	0.003	3.510	0.007	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.02	0.03	0.01	0.00	0.00
1050	1.654	0.003	3.425	0.007	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.02	0.03	0.01	0.00	0.00
1060	1.650	0.003	3.381	0.007	0.00	0.00	0.02	0.01	0.04	0.02	0.05	0.02	0.03	0.01	0.00	0.00
1070	1.641	0.003	3.335	0.007	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.02	0.03	0.01	0.00	0.00
1080	1.631	0.003	3.218	0.006	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.02	0.03	0.01	0.00	0.00
1090	1.570	0.003	3.089	0.006	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1100	1.486	0.003	2.971	0.006	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1110	1.421	0.003	2.878	0.006	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1120	1.369	0.003	2.785	0.005	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1130	1.340	0.003	2.716	0.005	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1140	1.341	0.003	2.719	0.005	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1150	1.350	0.003	2.692	0.005	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1160	1.359	0.003	2.651	0.005	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1170	1.465	0.003	2.755	0.005	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1180	1.633	0.003	2.935	0.006	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1190	1.788	0.004	3.061	0.006	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.02	0.02	0.01	0.00	0.00
1200	1.894	0.004	3.134	0.006	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.03	0.03	0.02	0.00	0.00
1210	1.991	0.004	3.166	0.006	0.00	0.00	0.02	0.01	0.04	0.02	0.04	0.03	0.03	0.02	0.00	0.00
1220	2.073	0.004	3.182	0.006	0.00	0.00	0.02	0.01	0.04	0.03	0.04	0.03	0.03	0.02	0.00	0.00
1230	2.171	0.004	3.185	0.006	0.00	0.00	0.02	0.01	0.04	0.03	0.04	0.03	0.03	0.02	0.00	0.00
1240	2.235	0.005	3.188	0.006	0.00	0.00	0.02	0.01	0.04	0.03	0.04	0.03	0.03	0.02	0.00	0.00
1250	2.307	0.005	3.138	0.006	0.00	0.00	0.02	0.01	0.04	0.03	0.04	0.03	0.03	0.02	0.00	0.00
1260	2.362	0.005	3.092	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.03	0.02	0.00	0.00
1270	2.414	0.005	3.031	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1280	2.448	0.005	2.936	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1290	2.465	0.005	2.896	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1300	2.489	0.005	2.910	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1310	2.493	0.005	2.901	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1320	2.495	0.005	2.878	0.006	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1330	2.481	0.005	2.858	0.006	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1340	2.479	0.005	2.850	0.006	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1350	2.499	0.005	2.876	0.006	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1360	2.527	0.005	2.960	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.00	0.00
1370	2.570	0.005	3.010	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1380	2.612	0.005	3.016	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1390	2.655	0.005	3.027	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1400	2.683	0.005	3.046	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1410	2.701	0.005	3.104	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.03	0.02	0.00	0.00
1420	2.718	0.006	3.088	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1430	2.707	0.005	3.005	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1440	2.666	0.005	2.923	0.006	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1450	2.609	0.005	2.825	0.006	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1460	2.560	0.005	2.737	0.005	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1470	2.548	0.005	2.651	0.005	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.02	0.02	0.00	0.00
1480	2.268	0.005	2.361	0.005	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.02	0.02	0.00	0.00
1490	1.988	0.004	2.071	0.004	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.03	0.02	0.02	0.00	0.00
1500	1.708	0.003	1.781	0.004	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.00
1510	1.428	0.003	1.491	0.003	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.00
1520	1.148	0.002	1.201	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.00	0.00
1530	0.868	0.002	0.911	0.002	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
1540	0.588	0.001	0.621	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
1550	0.308	0.001	0.331	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.028	0.000	0.041	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix C
Alternative 2A
Scenario III Calm Wave Condition
Sediment Transport Model Predictions
Spring and Fall
Years 1 to 5, Year 10

DM-0565	South Del Mar	0	0	Avg. Net SL	0.00	0.00	0.00	0.00	0.00	-0.01						
DM-0565	251.646	0	149.46	1770			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	9.672	0.038	3.985	0.027	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	7.710	0.031	2.281	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	6.092	0.024	1.144	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	4.460	0.018	1.082	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	2.848	0.011	1.022	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	2.565	0.010	1.035	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	2.598	0.010	1.008	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	2.670	0.011	1.018	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	2.768	0.011	1.074	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	2.711	0.011	1.050	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	2.576	0.010	0.954	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	2.502	0.010	0.873	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	2.538	0.010	0.845	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	2.600	0.010	0.830	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	2.662	0.011	0.815	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	2.752	0.011	0.799	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	2.871	0.011	0.802	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	2.961	0.012	0.789	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	2.951	0.012	0.701	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	2.950	0.012	0.624	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	3.017	0.012	0.638	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	3.254	0.013	0.841	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	3.521	0.014	1.067	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	3.772	0.015	1.296	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	3.990	0.016	1.502	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	4.080	0.016	1.532	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	4.011	0.016	1.266	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	3.928	0.016	0.961	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	3.961	0.016	0.774	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	4.328	0.017	0.918	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	4.576	0.018	0.999	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	4.487	0.018	0.887	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	4.383	0.017	0.815	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	4.111	0.016	0.781	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	3.578	0.014	0.669	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	2.882	0.011	0.467	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	2.369	0.009	0.421	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	2.264	0.009	0.814	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	2.167	0.009	1.286	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	1.959	0.008	1.582	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	1.844	0.007	1.853	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	1.676	0.007	1.956	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	1.262	0.005	1.740	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	1.019	0.004	1.634	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	1.091	0.004	1.650	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	1.034	0.004	1.421	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	1.044	0.004	1.225	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	1.114	0.004	1.094	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	1.135	0.005	0.972	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	1.091	0.004	0.885	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	1.078	0.004	0.800	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	1.043	0.004	0.707	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	1.125	0.004	0.681	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	1.493	0.006	0.686	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	2.125	0.008	0.997	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	1.804	0.007	0.748	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	1.711	0.007	0.792	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	2.098	0.008	1.125	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	2.131	0.008	1.371	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	1.930	0.008	1.410	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	2.055	0.008	1.125	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	2.077	0.008	0.979	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	1.912	0.008	0.792	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	1.617	0.006	0.643	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	1.671	0.007	0.826	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	1.692	0.007	1.319	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	1.416	0.006	1.444	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	1.406	0.006	1.216	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	1.565	0.006	1.620	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	1.029	0.004	1.658	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	1.348	0.005	1.996	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	0.781	0.003	1.142	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	0.784	0.003	0.743	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	0.748	0.003	0.839	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	0.976	0.004	0.850	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	1.687	0.007	1.042	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	1.070	0.004	1.443	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	0.687	0.003	1.469	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	1.787	0.007	2.283	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	2.892	0.011	2.749	0.018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	2.983	0.012	2.355	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	2.332	0.009	2.037	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	1.943	0.008	1.755	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	2.006	0.008	1.437	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	2.234	0.009	1.665	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	1.840	0.007	1.985	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	1.721	0.007	2.162	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	1.339	0.005	2.246	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	1.036	0.004	1.966	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	0.673	0.003	1.930	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	0.698	0.003	2.104	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	0.997	0.004	2.198	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	1.471	0.006	2.303	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	2.367	0.009	2.898	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	1.931	0.008	2.032	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.551	0.002	1.363	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.769	0.003	1.126	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	0.483	0.002	0.668	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	0.693	0.003	0.676	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	0.683	0.003	0.666	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	0.673	0.003	0.656	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	0.663	0.003	0.646	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.653	0.003	0.636	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	0.643	0.003	0.626	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.633	0.003	0.616	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.623	0.002	0.606	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.613	0.002	0.596	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.603	0.002	0.586	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.593	0.002	0.576	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.583	0.002	0.566	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.573	0.002	0.556	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.563	0.002	0.546	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.553	0.002	0.536	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.543	0.002	0.526	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.533	0.002	0.516	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.523	0.002	0.506	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.513	0.002	0.496	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.503	0.002	0.486	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.493	0.002	0.476	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.483	0.002	0.466	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.473	0.002	0.456	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.463	0.002	0.446	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.453	0.002	0.436	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.443	0.002	0.426	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.433	0.002	0.416	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.423	0.002	0.406	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.413	0.002	0.396	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.403	0.002	0.386	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.393	0.002	0.376	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.383	0.002	0.366	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.373	0.001	0.356	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.363	0.001	0.346	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.353	0.001	0.336	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.343	0.001	0.326	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	0.333	0.001	0.316	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	0.323	0.001	0.306	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.313	0.001	0.296	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.303	0.001	0.286	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.293	0.001	0.276	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.283	0.001	0.266	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1570	0.273	0.001	0.256	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1580	0.263	0.001	0.246	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1590	0.253	0.001	0.236	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.243	0.001	0.226	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1610	0.233	0.001	0.216	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1620	0.223	0.001	0.206	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630	0.213	0.001	0.196	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1640	0.203	0.001	0.186	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1650	0.193	0.001	0.176	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1660	0.183	0.001	0.166	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1670	0.173	0.001	0.156	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1680	0.163	0.001	0.146	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1690	0.153	0.001	0.136	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1700	0.143	0.001	0.126	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1710	0.133	0.001	0.116	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1720	0.123	0.000	0.106	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730	0.113	0.000	0.096	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1740	0.103	0.000	0.086	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1750	0.093	0.000	0.076	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1760	0.083	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1770	0.073	0.000	0.056	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DM-560	Del Mar	0	0	Avg. Net SL	0.00	0.00	0.00	-0.02	-0.05	0.06						
DM-0560	242.943	0	328.557	1800			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.571	0.002	0.553	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.204	0.005	1.921	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	3.535	0.015	3.567	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
30	4.270	0.018	4.278	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
40	3.862	0.016	3.380	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
50	4.049	0.017	2.298	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
60	3.839	0.016	1.639	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
70	3.266	0.013	1.314	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
80	2.918	0.012	1.161	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
90	2.701	0.011	1.114	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
100	2.492	0.010	1.147	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
110	2.287	0.009	1.188	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
120	2.151	0.009	1.191	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
130	2.137	0.009	1.235	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
140	2.163	0.009	1.316	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
150	2.185	0.009	1.402	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
160	2.228	0.009	1.516	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
170	2.190	0.009	1.553	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
180	2.024	0.008	1.453	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
190	1.966	0.008	1.428	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
200	2.069	0.009	1.530	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
210	2.276	0.009	1.716	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
220	2.600	0.011	2.009	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
230	2.768	0.011	2.170	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
240	2.598	0.011	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
250	2.355	0.010	1.835	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
260	2.114	0.009	1.644	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
270	1.868	0.008	1.452	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
280	1.626	0.007	1.258	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	1.399	0.006	1.060	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	1.286	0.005	0.968	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	1.312	0.005	0.994	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	1.283	0.005	0.944	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	1.204	0.005	0.848	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	1.091	0.004	0.756	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	0.954	0.004	0.657	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	0.829	0.003	0.568	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	0.814	0.003	0.579	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	0.932	0.004	0.696	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	1.121	0.005	0.846	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	1.408	0.006	1.065	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	1.688	0.007	1.280	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	1.938	0.008	1.471	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
430	2.041	0.008	1.552	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
440	1.960	0.008	1.486	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
450	1.696	0.007	1.313	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	1.553	0.006	1.326	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	1.716	0.007	1.649	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	1.769	0.007	1.847	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
490	1.769	0.007	1.943	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
500	1.779	0.007	1.986	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
510	1.812	0.007	2.035	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
520	1.789	0.007	2.045	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
530	1.681	0.007	1.999	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	1.563	0.006	1.979	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	1.467	0.006	1.985	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	1.451	0.006	2.080	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	1.624	0.007	2.359	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	1.828	0.008	2.666	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
590	1.780	0.007	2.712	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
600	1.587	0.007	2.629	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
610	1.487	0.006	2.676	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
620	1.412	0.006	2.738	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
630	1.311	0.005	2.764	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
640	1.231	0.005	2.787	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
650	1.155	0.005	2.789	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
660	1.184	0.005	2.830	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
670	1.163	0.005	2.837	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
680	1.043	0.004	2.760	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
690	0.969	0.004	2.746	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
700	0.908	0.004	2.699	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
710	0.796	0.003	2.586	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
720	0.779	0.003	2.600	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
730	0.805	0.003	2.627	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
740	0.809	0.003	2.701	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
750	0.834	0.003	2.826	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
760	0.828	0.003	2.902	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
770	0.796	0.003	2.946	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
780	0.771	0.003	2.993	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
790	0.802	0.003	3.098	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
800	0.820	0.003	3.177	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
810	0.814	0.003	3.227	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
820	0.804	0.003	3.342	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
830	0.813	0.003	3.408	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
840	0.881	0.004	3.525	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
850	0.996	0.004	3.678	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
860	1.111	0.005	3.768	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
870	1.185	0.005	3.773	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
880	1.237	0.005	3.703	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
890	1.195	0.005	3.602	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
900	1.130	0.005	3.425	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
910	1.032	0.004	3.168	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
920	0.986	0.004	2.967	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
930	1.068	0.004	2.923	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
940	1.248	0.005	2.961	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
950	1.432	0.006	3.069	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
960	1.498	0.006	3.047	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
970	1.397	0.006	2.913	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
980	1.266	0.005	2.770	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
990	1.163	0.005	2.665	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1000	1.116	0.005	2.583	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1010	1.052	0.004	2.466	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1020	1.014	0.004	2.410	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1030	0.996	0.004	2.379	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1040	1.061	0.004	2.443	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1050	1.206	0.005	2.525	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1060	1.210	0.005	2.476	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1070	1.242	0.005	2.444	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1080	1.338	0.006	2.457	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1090	1.348	0.006	2.371	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	1.340	0.006	2.260	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	1.347	0.006	2.191	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	1.288	0.005	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	1.190	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	1.248	0.005	1.934	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	1.284	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	1.184	0.005	1.843	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	1.113	0.005	1.749	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	1.113	0.005	1.787	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	1.255	0.005	1.931	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	1.342	0.006	2.003	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	1.340	0.006	1.984	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	1.345	0.006	1.949	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	1.378	0.006	1.929	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	1.305	0.005	1.820	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	1.205	0.005	1.708	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	1.205	0.005	1.632	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	1.267	0.005	1.668	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	1.491	0.006	1.799	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	1.617	0.007	1.903	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	1.643	0.007	1.900	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	1.645	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	1.688	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	1.576	0.006	1.719	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	1.319	0.005	1.480	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	1.081	0.004	1.289	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	1.078	0.004	1.274	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.999	0.004	1.222	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.889	0.004	1.080	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.820	0.003	0.985	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.832	0.003	0.913	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.730	0.003	0.773	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.984	0.004	1.008	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	1.140	0.005	1.194	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.821	0.003	0.928	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.896	0.004	1.009	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	1.117	0.005	1.175	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	1.290	0.005	1.329	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	1.360	0.006	1.413	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	1.208	0.005	1.308	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	1.143	0.005	1.333	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	1.083	0.004	1.239	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	1.017	0.004	1.182	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	1.131	0.005	1.306	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.904	0.004	1.066	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.819	0.003	1.001	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.874	0.004	1.073	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1570	0.987	0.004	1.120	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1580	1.002	0.004	1.139	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1590	0.768	0.003	0.914	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.681	0.003	0.788	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1610	0.838	0.003	0.873	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1620	1.118	0.005	1.041	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630	0.982	0.004	0.870	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1640	0.752	0.003	0.658	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1650	0.596	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1660	0.524	0.002	0.378	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1670	0.500	0.002	0.442	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1680	0.453	0.002	0.432	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1690	0.390	0.002	0.455	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1700	0.525	0.002	0.655	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1710	0.550	0.002	0.706	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1720	0.304	0.001	0.449	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730	0.369	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1740	0.399	0.002	0.552	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1750	0.409	0.002	0.597	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1760	0.374	0.002	0.567	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1770	0.361	0.001	0.525	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1780	0.348	0.001	0.488	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1790	0.307	0.001	0.464	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1800	0.284	0.001	0.456	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DM-580	Del Mar	0	0	Avg. Net SL	-0.001	0.009	-0.052	-0.083	-0.057	0.148						
DM-0580	427.197	0	422.914	1899			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring rati	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	3.615	0.008	3.265	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
20	2.757	0.006	2.138	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
30	2.818	0.007	1.975	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
40	3.146	0.007	1.892	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
50	3.882	0.009	2.057	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
60	4.365	0.010	1.994	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
70	4.912	0.011	1.997	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
80	5.309	0.012	1.877	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
90	5.529	0.013	1.723	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
100	5.464	0.013	1.581	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
110	5.187	0.012	1.466	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
120	4.946	0.012	1.537	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
130	5.075	0.012	1.876	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
140	5.015	0.012	2.044	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
150	4.995	0.012	2.249	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
160	4.999	0.012	2.489	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
170	4.877	0.011	2.568	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
180	4.754	0.011	2.644	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
190	4.627	0.011	2.717	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
200	4.537	0.011	2.918	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
210	4.481	0.010	3.079	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
220	4.486	0.011	3.262	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
230	4.565	0.011	3.438	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
240	4.662	0.011	3.584	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
250	4.776	0.011	3.741	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
260	4.939	0.012	3.918	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
270	5.128	0.012	4.077	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
280	5.050	0.012	3.951	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
290	4.801	0.011	3.655	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
300	4.544	0.011	3.356	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
310	4.320	0.010	3.008	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
320	4.106	0.010	2.575	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
330	3.798	0.009	2.033	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
340	3.742	0.009	1.759	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
350	3.598	0.008	1.496	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
360	3.251	0.008	1.075	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
370	3.671	0.009	1.442	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
380	4.175	0.010	1.816	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
390	4.518	0.011	2.027	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
400	4.547	0.011	2.014	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
410	4.559	0.011	2.073	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
420	4.558	0.011	2.083	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
430	4.773	0.011	2.315	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
440	5.074	0.012	2.635	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
450	5.379	0.013	3.003	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
460	5.672	0.013	3.389	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
470	5.960	0.014	3.840	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
480	6.253	0.015	4.236	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
490	6.468	0.015	4.521	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
500	6.277	0.015	4.418	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
510	6.086	0.014	4.334	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
520	5.855	0.014	4.299	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
530	5.622	0.013	4.262	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
540	5.352	0.013	4.213	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
550	5.054	0.012	4.155	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
560	4.665	0.011	4.032	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
570	4.259	0.010	3.904	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
580	3.845	0.009	3.863	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
590	3.409	0.008	3.817	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
600	3.257	0.008	4.034	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
610	3.227	0.008	4.387	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
620	3.266	0.008	4.708	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
630	3.325	0.008	4.964	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
640	3.354	0.008	5.247	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
650	3.401	0.008	5.477	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
660	3.437	0.008	5.682	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
670	3.371	0.008	5.855	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
680	3.210	0.008	5.806	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
690	3.002	0.007	5.837	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
700	2.892	0.007	5.698	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
710	2.791	0.007	5.569	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
720	2.527	0.006	5.362	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
730	2.298	0.005	5.154	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
740	2.095	0.005	4.962	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
750	1.895	0.004	4.765	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
760	1.709	0.004	4.588	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
770	1.548	0.004	4.370	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
780	1.519	0.004	4.231	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
790	1.468	0.003	4.137	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
800	1.378	0.003	3.994	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
810	1.343	0.003	3.877	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
820	1.308	0.003	3.749	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
830	1.293	0.003	3.633	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
840	1.281	0.003	3.611	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
850	1.287	0.003	3.486	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
860	1.248	0.003	3.412	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
870	1.211	0.003	3.339	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
880	1.168	0.003	3.273	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
890	1.128	0.003	3.208	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
900	1.084	0.003	3.144	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
910	1.048	0.002	3.107	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
920	1.033	0.002	2.903	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
930	1.033	0.002	2.815	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
940	1.046	0.002	2.789	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
950	1.093	0.003	2.674	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
960	1.178	0.003	2.603	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
970	1.292	0.003	2.608	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
980	1.404	0.003	2.597	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
990	1.412	0.003	2.574	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1000	1.477	0.003	2.560	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1010	1.558	0.004	2.537	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1020	1.559	0.004	2.462	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1030	1.448	0.003	2.302	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1040	1.424	0.003	2.190	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1050	1.449	0.003	2.184	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1060	1.450	0.003	2.161	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1070	1.463	0.003	2.167	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1080	1.390	0.003	2.095	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1090	1.291	0.003	1.985	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1100	1.208	0.003	1.894	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1110	1.133	0.003	1.840	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1120	1.048	0.002	1.816	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1130	1.011	0.002	1.745	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1140	1.005	0.002	1.633	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1150	1.025	0.002	1.639	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1160	0.979	0.002	1.460	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1170	0.898	0.002	1.279	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1180	0.927	0.002	1.306	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1190	0.885	0.002	1.223	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1200	0.807	0.002	1.122	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.763	0.002	1.030	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.823	0.002	1.000	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.830	0.002	1.027	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.655	0.002	0.853	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.718	0.002	0.902	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.586	0.001	0.739	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.617	0.001	0.721	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.515	0.001	0.669	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.573	0.001	0.672	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.610	0.001	0.657	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.773	0.002	0.839	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.725	0.002	0.750	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.682	0.002	0.745	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.633	0.001	0.725	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.626	0.001	0.742	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.713	0.002	0.817	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.594	0.001	0.682	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.551	0.001	0.623	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.731	0.002	0.750	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.818	0.002	0.742	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.680	0.002	0.647	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.690	0.002	0.657	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.861	0.002	0.834	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.974	0.002	0.971	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.896	0.002	0.863	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.724	0.002	0.651	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.723	0.002	0.597	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.739	0.002	0.581	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.644	0.002	0.538	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.491	0.001	0.506	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	0.563	0.001	0.618	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	0.546	0.001	0.627	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.611	0.001	0.644	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.669	0.002	0.659	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.758	0.002	0.738	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.770	0.002	0.736	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1570	0.824	0.002	0.802	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1580	0.805	0.002	0.768	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1590	0.799	0.002	0.809	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.817	0.002	0.823	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1610	0.732	0.002	0.818	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1620	0.750	0.002	0.797	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630	0.757	0.002	0.781	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1640	0.633	0.001	0.718	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1650	0.655	0.002	0.711	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1660	0.605	0.001	0.697	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1670	0.613	0.001	0.748	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1680	0.652	0.002	0.771	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1690	0.657	0.002	0.780	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1700	0.635	0.001	0.750	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1710	0.636	0.001	0.739	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1720	0.670	0.002	0.789	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730	0.717	0.002	0.812	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1740	0.676	0.002	0.827	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1750	0.588	0.001	0.722	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1760	0.523	0.001	0.699	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1770	0.519	0.001	0.645	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1780	0.520	0.001	0.654	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1790	0.499	0.001	0.642	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1800	0.580	0.001	0.747	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1810	0.620	0.001	0.754	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1820	0.651	0.002	0.742	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1830	0.669	0.002	0.720	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1840	0.663	0.002	0.703	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1850	0.630	0.001	0.663	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1860	0.621	0.001	0.677	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1870	0.569	0.001	0.648	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1880	0.571	0.001	0.667	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1890	0.531	0.001	0.595	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1900	0.553	0.001	0.610	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DM-590	Del Mar	0	0	Avg. Net SL	0.01	-0.08	-0.12	-0.01	0.19	0.17						
DM-0590	283.419	0	200.363	1900			**Sand Depth (ft)**									
					Year 1	Year 1	Year 2	Year 2	Year 3	Year 3	Year 4	Year 4	Year 5	Year 5	Year 10	Year 10
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
0	0.12	0.000	0.130	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.476	0.002	0.470	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
20	0.768	0.003	0.983	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
30	1.862	0.007	2.304	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.01
40	2.153	0.008	2.543	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.03	0.02
50	2.416	0.009	2.754	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.03	0.02
60	2.301	0.008	2.567	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.03	0.02
70	2.211	0.008	2.410	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
80	2.144	0.008	2.312	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
90	2.145	0.008	2.257	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
100	2.173	0.008	2.214	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
110	2.216	0.008	2.233	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
120	2.333	0.008	2.286	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
130	2.348	0.008	2.247	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
140	2.406	0.008	2.217	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
150	2.469	0.009	2.208	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.02
160	2.322	0.008	1.976	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
170	2.071	0.007	1.627	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.01
180	1.829	0.006	1.301	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.01
190	1.64	0.006	1.026	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
200	1.819	0.006	1.108	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
210	1.997	0.007	1.189	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01
220	1.949	0.007	1.084	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01
230	1.823	0.006	0.926	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
240	1.692	0.006	0.770	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
250	1.877	0.007	0.936	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01
260	2.079	0.007	1.105	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01
270	2.282	0.008	1.262	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02
280	2.482	0.009	1.382	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.01	0.02
290	2.745	0.010	1.569	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
300	3.088	0.011	1.848	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.02
310	3.424	0.012	2.133	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.02
320	3.754	0.013	2.424	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.02	0.03
330	4.093	0.014	2.702	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03
340	4.441	0.016	2.975	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.03
350	4.797	0.017	3.245	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.03	0.03
360	5.009	0.018	3.358	0.017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.03	0.04
370	4.816	0.017	3.063	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.03	0.03
380	4.621	0.016	2.746	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.03
390	4.412	0.016	2.411	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.02	0.03
400	4.199	0.015	2.094	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
410	4.066	0.014	1.866	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
420	4.038	0.014	1.771	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
430	4.076	0.014	1.750	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
440	4.116	0.015	1.727	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
450	4.108	0.014	1.704	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
460	4.091	0.014	1.687	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
470	4.067	0.014	1.682	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
480	4.012	0.014	1.677	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
490	4.055	0.014	1.761	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
500	4.286	0.015	2.035	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
510	4.513	0.016	2.287	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.02	0.03
520	4.727	0.017	2.517	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.03
530	4.892	0.017	2.738	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.03
540	5.045	0.018	2.958	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.04
550	5.197	0.018	3.163	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.03	0.04
560	5.034	0.018	3.017	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.04
570	4.764	0.017	2.752	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.03
580	4.45	0.016	2.460	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.02	0.03
590	4.109	0.014	2.157	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
600	3.752	0.013	1.865	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
610	3.581	0.013	1.743	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03
620	3.392	0.012	1.614	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.02
630	3.186	0.011	1.482	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.01	0.02
640	2.963	0.010	1.357	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.01	0.02
650	2.734	0.010	1.220	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02
660	2.466	0.009	1.094	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02
670	2.233	0.008	1.000	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.02
680	2.126	0.008	1.000	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01
690	2.249	0.008	1.359	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.01	0.02
700	2.454	0.009	1.832	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02
710	1.972	0.007	1.659	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.01
720	1.677	0.006	1.662	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
730	1.698	0.006	1.878	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
740	1.742	0.006	2.088	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
750	1.684	0.006	2.108	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
760	1.457	0.005	1.940	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
770	1.272	0.004	1.791	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
780	1.229	0.004	1.659	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
790	1.1	0.004	1.334	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.01
800	1.013	0.004	1.168	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
810	1.057	0.004	1.289	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
820	1.298	0.005	1.609	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
830	1.433	0.005	1.860	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
840	1.335	0.005	1.775	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
850	1.577	0.006	2.071	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
860	1.236	0.004	1.766	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
870	0.998	0.004	1.654	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
880	0.88	0.003	1.555	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
890	1.422	0.005	1.955	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
900	1.249	0.004	1.593	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01
910	0.863	0.003	0.971	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
920	0.932	0.003	0.889	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
930	0.764	0.003	0.668	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
940	0.938	0.003	0.861	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
950	0.659	0.002	0.537	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
960	0.659	0.002	0.550	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
970	0.652	0.002	0.544	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
980	0.645	0.002	0.538	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
990	0.638	0.002	0.533	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
1000	0.631	0.002	0.527	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
1010	0.624	0.002	0.521	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
1020	0.617	0.002	0.515	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
1030	0.61	0.002	0.509	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
1040	0.603	0.002	0.504	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
1050	0.596	0.002	0.498	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1060	0.589	0.002	0.492	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1070	0.582	0.002	0.486	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1080	0.575	0.002	0.480	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1090	0.568	0.002	0.475	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1100	0.561	0.002	0.469	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1110	0.554	0.002	0.463	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1120	0.547	0.002	0.457	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1130	0.54	0.002	0.451	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1140	0.533	0.002	0.446	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1150	0.526	0.002	0.440	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1160	0.519	0.002	0.434	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1170	0.512	0.002	0.428	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	0.505	0.002	0.422	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.498	0.002	0.417	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	0.491	0.002	0.411	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.484	0.002	0.405	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.477	0.002	0.399	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.47	0.002	0.393	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.463	0.002	0.388	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.456	0.002	0.382	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.449	0.002	0.376	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.442	0.002	0.370	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.435	0.002	0.364	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.428	0.002	0.359	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.421	0.001	0.353	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.414	0.001	0.347	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.407	0.001	0.341	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.4	0.001	0.335	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.393	0.001	0.330	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.386	0.001	0.324	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.379	0.001	0.318	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.372	0.001	0.312	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.365	0.001	0.306	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.358	0.001	0.301	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.351	0.001	0.295	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.344	0.001	0.289	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.337	0.001	0.283	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.33	0.001	0.277	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.323	0.001	0.272	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.316	0.001	0.266	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.309	0.001	0.260	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.302	0.001	0.254	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.295	0.001	0.248	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.288	0.001	0.243	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.281	0.001	0.237	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	0.274	0.001	0.231	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	0.267	0.001	0.225	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.26	0.001	0.219	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.253	0.001	0.214	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.246	0.001	0.208	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.239	0.001	0.202	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1570	0.232	0.001	0.196	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1580	0.225	0.001	0.190	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1590	0.218	0.001	0.185	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.211	0.001	0.179	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1610	0.204	0.001	0.173	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1620	0.197	0.001	0.167	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630	0.19	0.001	0.161	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1640	0.183	0.001	0.156	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1650	0.176	0.001	0.150	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1660	0.169	0.001	0.144	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1670	0.162	0.001	0.138	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1680	0.155	0.001	0.132	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1690	0.148	0.001	0.127	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1700	0.141	0.000	0.121	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1710	0.134	0.000	0.115	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1720	0.127	0.000	0.109	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730	0.12	0.000	0.103	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1740	0.113	0.000	0.098	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1750	0.106	0.000	0.092	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1760	0.099	0.000	0.086	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1770	0.092	0.000	0.080	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1780	0.085	0.000	0.074	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1790	0.078	0.000	0.069	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1800	0.071	0.000	0.063	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1810	0.064	0.000	0.057	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1820	0.057	0.000	0.051	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1830	0.05	0.000	0.045	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1840	0.043	0.000	0.040	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1850	0.036	0.000	0.034	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1860	0.029	0.000	0.028	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1870	0.022	0.000	0.022	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1880	0.015	0.000	0.016	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1890	0.008	0.000	0.011	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1900	0.001	0.000	0.005	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-595	Seascape Surf	0	0	Avg. Net SL	-0.05	-0.12	0.29	0.60	0.69	0.22						
SD-0595	245.066	0	270.779	1900			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.067	0.000	0.087	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.388	0.002	0.192	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00
20	0.709	0.003	0.298	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.00	0.01
30	1.030	0.004	0.403	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.01	0.03	0.00	0.01
40	1.350	0.006	0.508	0.002	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.04	0.02	0.05	0.00	0.01
50	1.672	0.007	0.614	0.002	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.02	0.06	0.01	0.02
60	1.356	0.006	0.595	0.002	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04	0.02	0.05	0.01	0.01
70	1.463	0.006	0.657	0.002	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04	0.02	0.05	0.01	0.02
80	1.813	0.007	0.727	0.003	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.05	0.02	0.06	0.01	0.02
90	1.804	0.007	0.788	0.003	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.05	0.02	0.06	0.01	0.02
100	1.799	0.007	0.770	0.003	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.02	0.06	0.01	0.02
110	1.801	0.007	0.790	0.003	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.02	0.06	0.01	0.02
120	1.909	0.008	0.883	0.003	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.06	0.03	0.06	0.01	0.02
130	1.994	0.008	0.952	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.07	0.01	0.02
140	1.932	0.008	0.920	0.003	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.06	0.03	0.06	0.01	0.02
150	1.889	0.008	0.908	0.003	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.05	0.03	0.06	0.01	0.02
160	1.877	0.008	0.930	0.003	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.05	0.03	0.06	0.01	0.02
170	1.951	0.008	0.999	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.07	0.01	0.02
180	2.041	0.008	1.108	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.07	0.01	0.02
190	1.998	0.008	1.114	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.07	0.01	0.02
200	1.943	0.008	1.123	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.07	0.01	0.02
210	1.919	0.008	1.139	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.06	0.01	0.02
220	1.910	0.008	1.180	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.04	0.06	0.01	0.02
230	1.906	0.008	1.221	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.06	0.04	0.06	0.01	0.02
240	1.857	0.008	1.231	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05	0.04	0.06	0.01	0.02
250	1.820	0.007	1.246	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05	0.04	0.06	0.01	0.02
260	1.803	0.007	1.226	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05	0.04	0.06	0.01	0.02
270	1.734	0.007	1.177	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.04	0.06	0.01	0.02
280	1.657	0.007	1.108	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.03	0.06	0.01	0.02
290	1.581	0.006	1.046	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.03	0.05	0.01	0.02
300	1.510	0.006	0.960	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.03	0.05	0.01	0.02
310	1.555	0.006	0.963	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.03	0.05	0.01	0.02
320	1.605	0.007	0.952	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.03	0.05	0.01	0.02
330	1.668	0.007	0.917	0.003	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.06	0.01	0.02
340	1.673	0.007	0.835	0.003	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.06	0.01	0.02
350	1.564	0.006	0.667	0.002	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.02	0.05	0.01	0.02
360	1.604	0.007	0.662	0.002	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.02	0.05	0.01	0.02
370	1.870	0.008	0.886	0.003	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.05	0.03	0.06	0.01	0.02
380	2.119	0.009	1.021	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.06	0.03	0.07	0.01	0.02
390	2.359	0.010	1.128	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.07	0.03	0.08	0.01	0.03
400	2.530	0.010	1.195	0.004	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.07	0.04	0.08	0.01	0.03
410	2.681	0.011	1.226	0.005	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.08	0.04	0.09	0.01	0.03
420	2.846	0.012	1.182	0.004	0.00	0.00	0.00	0.00	0.01	0.04	0.03	0.08	0.04	0.10	0.01	0.03
430	3.134	0.013	1.230	0.005	0.00	0.00	0.00	0.00	0.02	0.04	0.03	0.09	0.04	0.10	0.01	0.03
440	3.397	0.014	1.372	0.005	0.00	0.00	0.00	0.00	0.02	0.05	0.04	0.10	0.04	0.11	0.01	0.04
450	3.106	0.013	1.086	0.004	0.00	0.00	0.00	0.00	0.01	0.04	0.03	0.09	0.03	0.10	0.01	0.03
460	3.900	0.016	1.754	0.006	0.00	0.00	0.00	0.00	0.02	0.05	0.05	0.11	0.05	0.13	0.02	0.04
470	4.450	0.018	2.205	0.008	0.00	0.00	0.00	0.00	0.03	0.06	0.06	0.13	0.07	0.15	0.02	0.05
480	3.928	0.016	1.745	0.006	0.00	0.00	0.00	0.00	0.02	0.05	0.05	0.11	0.05	0.13	0.02	0.04
490	3.196	0.013	1.124	0.004	0.00	0.00	0.00	0.00	0.01	0.04	0.03	0.09	0.03	0.11	0.01	0.03
500	2.924	0.012	0.965	0.004	0.00	0.00	0.00	0.00	0.01	0.04	0.03	0.09	0.03	0.10	0.01	0.03
510	2.809	0.011	1.013	0.004	0.00	0.00	0.00	0.00	0.01	0.04	0.03	0.08	0.03	0.09	0.01	0.03
520	2.729	0.011	1.139	0.004	0.00	0.00	0.00	0.00	0.01	0.04	0.03	0.08	0.03	0.09	0.01	0.03
530	2.860	0.012	1.435	0.005	0.00	0.00	0.00	0.00	0.02	0.04	0.04	0.08	0.04	0.10	0.01	0.03
540	2.253	0.009	1.162	0.004	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.07	0.04	0.08	0.01	0.02
550	1.988	0.008	1.237	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.06	0.04	0.07	0.01	0.02
560	1.854	0.008	1.396	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.04	0.06	0.01	0.02
570	1.788	0.007	1.605	0.006	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.05	0.05	0.06	0.02	0.02
580	1.704	0.007	1.810	0.007	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.05	0.05	0.06	0.02	0.02
590	1.547	0.006	1.856	0.007	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.05	0.06	0.05	0.02	0.02
600	1.304	0.005	1.898	0.007	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.04	0.06	0.04	0.02	0.01
610	1.105	0.005	1.957	0.007	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.03	0.06	0.04	0.02	0.01
620	1.123	0.005	2.237	0.008	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.03	0.07	0.04	0.02	0.01
630	1.134	0.005	2.523	0.009	0.00	0.00	0.00	0.00	0.03	0.02	0.07	0.03	0.08	0.04	0.02	0.01
640	1.073	0.004	2.671	0.010	0.00	0.00	0.00	0.00	0.03	0.01	0.07	0.03	0.08	0.04	0.03	0.01
650	0.922	0.004	2.712	0.010	0.00	0.00	0.00	0.00	0.03	0.01	0.07	0.03	0.08	0.03	0.03	0.01
660	0.912	0.004	2.888	0.011	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.03	0.09	0.03	0.03	0.01
670	0.878	0.004	3.031	0.011	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.03	0.09	0.03	0.03	0.01
680	0.973	0.004	3.205	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.03	0.10	0.03	0.03	0.01
690	1.042	0.004	3.340	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.09	0.03	0.10	0.03	0.03	0.01
700	1.003	0.004	3.428	0.013	0.00	0.00	0.00	0.00	0.04	0.01	0.09	0.03	0.10	0.03	0.03	0.01
710	0.940	0.004	3.345	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.09	0.03	0.10	0.03	0.03	0.01
720	0.813	0.003	3.311	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.09	0.02	0.10	0.03	0.03	0.01
730	0.845	0.003	3.346	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.09	0.02	0.10	0.03	0.03	0.01
740	0.849	0.003	3.278	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.09	0.02	0.10	0.03	0.03	0.01
750	0.790	0.003	3.229	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.09	0.02	0.10	0.03	0.03	0.01
760	0.658	0.003	3.047	0.011	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.02	0.09	0.02	0.03	0.01
770	0.738	0.003	3.103	0.011	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.02	0.09	0.02	0.03	0.01
780	0.740	0.003	3.036	0.011	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.02	0.09	0.02	0.03	0.01
790	0.655	0.003	2.868	0.011	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.02	0.09	0.02	0.03	0.01
800	0.678	0.003	2.905	0.011	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.02	0.09	0.02	0.03	0.01
810	0.885	0.004	3.167	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.03	0.10	0.03	0.03	0.01
820	0.822	0.003	3.155	0.012	0.00	0.00	0.00	0.00	0.04	0.01	0.08	0.02	0.10	0.03	0.03	0.01
830	1.745	0.007	3.946	0.015	0.00	0.00	0.00	0.00	0.05	0.02	0.10	0.05	0.12	0.06	0.04	0.02
840	1.120	0.005	2.988	0.011	0.00	0.00	0.00	0.00	0.04	0.02	0.08	0.03	0.09	0.04	0.03	0.01
850	0.956	0.004	2.663	0.010	0.00	0.00	0.00	0.00	0.03	0.01	0.07	0.03	0.08	0.03	0.03	0.01
860	0.747	0.003	2.428	0.009	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.07	0.03	0.02	0.01
870	0.727	0.003	2.376	0.009	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.07	0.02	0.02	0.01
880	0.596	0.002	2.224	0.008	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.07	0.02	0.02	0.01
890	0.512	0.002	2.143	0.008	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.01	0.06	0.02	0.02	0.01
900	0.421	0.002	2.022	0.007	0.00	0.00	0.00	0.00	0.03	0.01	0.05	0.01	0.06	0.01	0.02	0.00
910	0.346	0.001	1.943	0.007	0.00	0.00	0.00	0.00	0.02	0.00	0.05	0.01	0.06	0.01	0.02	0.00
920	0.764	0.003	2.483	0.009	0.00	0.00	0.00	0.00	0.03	0.01	0.07	0.02	0.08	0.03	0.02	0.01
930	0.675	0.003	2.312	0.009	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.07	0.02	0.02	0.01
940	0.660	0.003	2.322	0.009	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.07	0.02	0.02	0.01
950	0.741	0.003	2.358	0.009	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.07	0.02	0.02	0.01
960	0.532	0.002	1.997	0.007	0.00	0.00	0.00	0.00	0.03	0.01	0.05	0.02	0.06	0.02	0.02	0.01
970	0.735	0.003	2.154	0.008	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.07	0.02	0.02	0.01
980	0.785	0.003	2.103	0.008	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.02	0.06	0.03	0.02	0.01
990	0.922	0.004	2.154	0.008	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.03	0.07	0.03	0.02	0.01
1000	0.807	0.003	1.912	0.007	0.00	0.00	0.00	0.00	0.02	0.01	0.05	0.02	0.06	0.03	0.02	0.01
1010	1.080	0.004	2.208	0.008	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.03	0.07	0.04	0.02	0.01
1020	1.074	0.004	2.020	0.007	0.00	0.00	0.00	0.00	0.03	0.01	0.05	0.03	0.06	0.04	0.02	0.01
1030	1.500	0.006	2.678	0.010	0.00	0.00	0.00	0.00	0.03	0.02	0.07	0.04	0.08	0.05	0.03	0.02
1040	1.337	0.005	2.109	0.008	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04	0.06	0.04	0.02	0.01
1050	1.027	0.004	1.420	0.005	0.00	0.00	0.00	0.00	0.02	0.01	0.04	0.03	0.04	0.03	0.01	0.01
1060	0.607	0.002	1.013	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.02	0.01	0.01
1070	0.443	0.002	0.953	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.03	0.01	0.01	0.00
1080	0.462	0.002	0.983	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.03	0.02	0.01	0.00
1090	0.498	0.002	1.083	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.03	0.02	0.01	0.01
1100	0.525	0.002	1.198	0.004	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.01	0.01
1110	0.798	0.003	1.241	0.005	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.01	0.01
1120	0.746	0.003	0.860	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.01	0.01
1130	0.603	0.002	0.605	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1140	0.797	0.003	0.705	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.01	0.01
1150	1.351	0.006	1.207	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04	0.04	0.05	0.01	0.01
1160	1.935	0.008	1.796	0.007	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.06	0.05	0.06	0.02	0.02
1170	2.269	0.009	1.916	0.007	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.07	0.06	0.08	0.02	0.02
1180	1.185	0.005	1.116	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.03	0.04	0.01	0.01
1190	1.354	0.006	1.373	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.05	0.01	0.01
1200	1.384	0.006	1.358	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.05	0.01	0.01
1210	1.734	0.007	1.973	0.007	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.05	0.06	0.06	0.02	0.02
1220	1.219	0.005	1.571	0.006	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.05	0.04	0.02	0.01
1230	1.587	0.006	1.677	0.006	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.05	0.05	0.05	0.02	0.02
1240	1.818	0.007	1.881	0.007	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.05	0.06	0.06	0.02	0.02
1250	1.865	0.008	1.926	0.007	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.05	0.06	0.06	0.02	0.02
1260	2.165	0.009	2.215	0.008	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.06	0.07	0.07	0.02	0.02
1270	1.655	0.007	1.770	0.007	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.05	0.05	0.06	0.02	0.02
1280	1.608	0.007	1.740	0.006	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02
1290	1.841	0.008	1.814	0.007	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.05	0.05	0.06	0.02	0.02
1300	0.926	0.004	0.946	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.03	0.01	0.01
1310	0.877	0.004	0.976	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1320	1.071	0.004	1.209	0.004	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.04	0.04	0.01	0.01
1330	1.147	0.005	1.336	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.01	0.01
1340	1.095	0.004	1.403	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.04	0.01	0.01
1350	1.119	0.005	1.485	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
1360	1.087	0.004	1.506	0.006	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
1370	1.149	0.005	1.520	0.006	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
1380	0.917	0.004	1.456	0.005	0.00	0.00	0.00	0.00	0.02	0.01	0.04	0.03	0.04	0.03	0.01	0.01
1390	0.837	0.003	1.265	0.005	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.01	0.01
1400	0.633	0.003	0.926	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.01	0.01
1410	0.632	0.003	0.900	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.01	0.01
1420	0.598	0.002	0.827	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.01	0.01
1430	0.415	0.002	0.672	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00
1440	0.527	0.002	0.688	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1450	0.399	0.002	0.583	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00
1460	0.464	0.002	0.497	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.00
1470	0.387	0.002	0.364	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00
1480	0.602	0.002	0.439	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.02	0.00	0.01
1490	0.779	0.003	0.517	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.00	0.01
1500	1.068	0.004	0.830	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.01	0.01
1510	1.164	0.005	0.728	0.003	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.02	0.04	0.01	0.01
1520	0.893	0.004	0.550	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.02	0.03	0.01	0.01
1530	0.555	0.002	0.378	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.00	0.01
1540	0.705	0.003	0.614	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1550	1.002	0.004	0.772	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
1560	1.079	0.004	0.782	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.04	0.01	0.01
1570	0.726	0.003	0.605	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1580	0.887	0.004	0.842	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.03	0.01	0.01
1590	1.401	0.006	1.216	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04	0.04	0.05	0.01	0.01
1600	1.360	0.006	0.979	0.004	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.03	0.05	0.01	0.01
1610	1.133	0.005	0.608	0.002	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.03	0.02	0.04	0.01	0.01
1620	0.948	0.004	0.449	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.01	0.03	0.00	0.01
1630	1.006	0.004	0.517	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.02	0.03	0.00	0.01
1640	0.979	0.004	0.481	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.01	0.03	0.00	0.01
1650	0.981	0.004	0.580	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
1660	0.990	0.004	0.649	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
1670	0.868	0.004	0.698	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
1680	0.844	0.003	0.954	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.03	0.01	0.01
1690	0.952	0.004	1.154	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1700	0.883	0.004	0.975	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1710	1.093	0.004	1.267	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.01	0.01
1720	1.055	0.004	1.272	0.005	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.04	0.04	0.01	0.01
1730	1.084	0.004	1.207	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.04	0.04	0.01	0.01
1740	0.932	0.004	1.107	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1750	0.907	0.004	1.072	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1760	0.881	0.004	1.024	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1770	0.867	0.004	0.987	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1780	0.946	0.004	1.025	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1790	0.945	0.004	1.016	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
1800	0.846	0.003	0.877	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.01	0.01
1810	0.801	0.003	0.869	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.01	0.01
1820	0.722	0.003	0.848	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.01	0.01
1830	0.618	0.003	0.816	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1840	0.592	0.002	0.776	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1850	0.514	0.002	0.727	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01
1860	0.514	0.002	0.678	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01
1870	0.478	0.002	0.626	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.01	0.01
1880	0.573	0.002	0.751	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
1890	0.427	0.002	0.564	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00
1900	0.922	0.004	1.109	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01

SD-600	Fletcher Cove	0	0	Avg. Net SL	-0.15	0.80	1.36	1.37	0.31	0.37						
SD-600	208.436	0	231.37	1900			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.194	0.001	0.000	0.000	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
20	0.751	0.004	0.000	0.000	0.00	0.00	0.00	0.03	0.00	0.06	0.00	0.06	0.00	0.01	0.00	0.02
30	1.386	0.007	0.002	0.000	0.00	0.00	0.00	0.06	0.00	0.11	0.00	0.11	0.00	0.02	0.00	0.03
40	1.877	0.009	0.601	0.003	0.00	0.00	0.02	0.09	0.04	0.15	0.04	0.15	0.01	0.03	0.01	0.04
50	1.99	0.010	0.907	0.004	0.00	0.00	0.04	0.09	0.06	0.16	0.06	0.16	0.01	0.03	0.02	0.04
60	2.116	0.010	1.176	0.005	0.00	0.00	0.05	0.10	0.08	0.17	0.08	0.17	0.02	0.04	0.02	0.05
70	2.228	0.011	1.339	0.006	0.00	0.00	0.06	0.10	0.09	0.17	0.09	0.17	0.02	0.04	0.03	0.05
80	2.353	0.011	1.449	0.006	0.00	0.00	0.06	0.11	0.10	0.18	0.10	0.18	0.02	0.04	0.03	0.05
90	2.403	0.012	1.483	0.006	0.00	0.00	0.06	0.11	0.10	0.19	0.10	0.19	0.02	0.04	0.03	0.05
100	2.38	0.011	1.446	0.006	0.00	0.00	0.06	0.11	0.10	0.19	0.10	0.19	0.02	0.04	0.03	0.05
110	2.343	0.011	1.439	0.006	0.00	0.00	0.06	0.11	0.10	0.18	0.10	0.18	0.02	0.04	0.03	0.05
120	2.361	0.011	1.497	0.006	0.00	0.00	0.06	0.11	0.11	0.18	0.11	0.18	0.02	0.04	0.03	0.05
130	2.449	0.012	1.591	0.007	0.00	0.00	0.07	0.11	0.11	0.19	0.11	0.19	0.03	0.04	0.03	0.05
140	2.542	0.012	1.681	0.007	0.00	0.00	0.07	0.12	0.12	0.20	0.12	0.20	0.03	0.04	0.03	0.05
150	2.573	0.012	1.685	0.007	0.00	0.00	0.07	0.12	0.12	0.20	0.12	0.20	0.03	0.04	0.03	0.05
160	2.588	0.012	1.656	0.007	0.00	0.00	0.07	0.12	0.12	0.20	0.12	0.20	0.03	0.05	0.03	0.06
170	2.617	0.013	1.683	0.007	0.00	0.00	0.07	0.12	0.12	0.20	0.12	0.20	0.03	0.05	0.03	0.06
180	2.648	0.013	1.702	0.007	0.00	0.00	0.07	0.12	0.12	0.21	0.12	0.21	0.03	0.05	0.03	0.06
190	2.564	0.012	1.571	0.007	0.00	0.00	0.06	0.12	0.11	0.20	0.11	0.20	0.02	0.04	0.03	0.05
200	2.394	0.011	1.350	0.006	0.00	0.00	0.06	0.11	0.09	0.19	0.09	0.19	0.02	0.04	0.03	0.05
210	2.223	0.011	1.128	0.005	0.00	0.00	0.05	0.10	0.08	0.17	0.08	0.17	0.02	0.04	0.02	0.05
220	2.059	0.010	0.926	0.004	0.00	0.00	0.04	0.09	0.07	0.16	0.07	0.16	0.01	0.04	0.02	0.04
230	2.146	0.010	0.973	0.004	0.00	0.00	0.04	0.10	0.07	0.17	0.07	0.17	0.02	0.04	0.02	0.05
240	2.414	0.012	1.212	0.005	0.00	0.00	0.05	0.11	0.09	0.19	0.09	0.19	0.02	0.04	0.02	0.05
250	2.696	0.013	1.470	0.006	0.00	0.00	0.06	0.12	0.10	0.21	0.10	0.21	0.02	0.05	0.03	0.06
260	2.925	0.014	1.700	0.007	0.00	0.00	0.07	0.13	0.12	0.23	0.12	0.23	0.03	0.05	0.03	0.06
270	3.119	0.015	1.920	0.008	0.00	0.00	0.08	0.14	0.13	0.24	0.14	0.24	0.03	0.05	0.04	0.07
280	3.212	0.015	2.061	0.009	0.00	0.00	0.09	0.15	0.14	0.25	0.14	0.25	0.03	0.06	0.04	0.07
290	3.23	0.015	2.150	0.009	0.00	0.00	0.09	0.15	0.15	0.25	0.15	0.25	0.03	0.06	0.04	0.07
300	3.254	0.016	2.229	0.010	0.00	0.00	0.09	0.15	0.16	0.25	0.16	0.25	0.04	0.06	0.04	0.07
310	3.171	0.015	2.226	0.010	0.00	0.00	0.09	0.15	0.16	0.25	0.16	0.25	0.04	0.06	0.04	0.07
320	3.057	0.015	2.200	0.010	0.00	0.00	0.09	0.14	0.15	0.24	0.15	0.24	0.03	0.05	0.04	0.07
330	3.071	0.015	2.308	0.010	0.00	0.00	0.10	0.14	0.16	0.24	0.16	0.24	0.04	0.05	0.04	0.07
340	2.98	0.014	2.333	0.010	0.00	0.00	0.10	0.14	0.16	0.23	0.16	0.23	0.04	0.05	0.04	0.06
350	2.713	0.013	2.143	0.009	0.00	0.00	0.09	0.12	0.15	0.21	0.15	0.21	0.03	0.05	0.04	0.06
360	2.5	0.012	1.975	0.009	0.00	0.00	0.08	0.11	0.14	0.20	0.14	0.20	0.03	0.04	0.04	0.05
370	2.43	0.012	1.921	0.008	0.00	0.00	0.08	0.11	0.14	0.19	0.14	0.19	0.03	0.04	0.04	0.05
380	2.44	0.012	1.942	0.008	0.00	0.00	0.08	0.11	0.14	0.19	0.14	0.19	0.03	0.04	0.04	0.05
390	2.452	0.012	1.938	0.008	0.00	0.00	0.08	0.11	0.14	0.19	0.14	0.19	0.03	0.04	0.04	0.05
400	2.466	0.012	1.930	0.008	0.00	0.00	0.08	0.11	0.14	0.19	0.14	0.19	0.03	0.04	0.04	0.05
410	2.446	0.012	1.943	0.008	0.00	0.00	0.08	0.11	0.14	0.19	0.14	0.19	0.03	0.04	0.04	0.05
420	2.449	0.012	2.027	0.009	0.00	0.00	0.08	0.11	0.14	0.19	0.14	0.19	0.03	0.04	0.04	0.05
430	2.438	0.012	2.096	0.009	0.00	0.00	0.09	0.11	0.15	0.19	0.15	0.19	0.03	0.04	0.04	0.05
440	2.414	0.012	2.142	0.009	0.00	0.00	0.09	0.11	0.15	0.19	0.15	0.19	0.03	0.04	0.04	0.05
450	2.319	0.011	2.152	0.009	0.00	0.00	0.09	0.11	0.15	0.18	0.15	0.18	0.03	0.04	0.04	0.05
460	2.236	0.011	2.211	0.010	0.00	0.00	0.09	0.10	0.16	0.17	0.16	0.17	0.03	0.04	0.04	0.05
470	2.204	0.011	2.324	0.010	0.00	0.00	0.10	0.10	0.16	0.17	0.16	0.17	0.04	0.04	0.04	0.05
480	2.166	0.010	2.438	0.011	0.00	0.00	0.10	0.10	0.17	0.17	0.17	0.17	0.04	0.04	0.05	0.05
490	2.114	0.010	2.563	0.011	0.00	0.00	0.11	0.10	0.18	0.16	0.18	0.17	0.04	0.04	0.05	0.05
500	2.066	0.010	2.654	0.011	0.00	0.00	0.11	0.09	0.19	0.16	0.19	0.16	0.04	0.04	0.05	0.04
510	1.949	0.009	2.716	0.012	0.00	0.00	0.11	0.09	0.19	0.15	0.19	0.15	0.04	0.03	0.05	0.04
520	1.841	0.009	2.765	0.012	0.00	0.00	0.11	0.08	0.19	0.14	0.19	0.14	0.04	0.03	0.05	0.04
530	1.722	0.008	2.792	0.012	0.00	0.00	0.12	0.08	0.20	0.13	0.20	0.13	0.04	0.03	0.05	0.04
540	1.633	0.008	2.802	0.012	0.00	0.00	0.12	0.07	0.20	0.13	0.20	0.13	0.04	0.03	0.05	0.03
550	1.59	0.008	2.849	0.012	0.00	0.00	0.12	0.07	0.20	0.12	0.20	0.12	0.04	0.03	0.05	0.03
560	1.542	0.007	2.860	0.012	0.00	0.00	0.12	0.07	0.20	0.12	0.20	0.12	0.05	0.03	0.05	0.03
570	1.411	0.007	2.837	0.012	0.00	0.00	0.12	0.06	0.20	0.11	0.20	0.11	0.04	0.02	0.05	0.03
580	1.315	0.006	2.767	0.012	0.00	0.00	0.11	0.06	0.19	0.10	0.19	0.10	0.04	0.02	0.05	0.03
590	1.198	0.006	2.689	0.012	0.00	0.00	0.11	0.06	0.19	0.09	0.19	0.09	0.04	0.02	0.05	0.03
600	1.105	0.005	2.576	0.011	0.00	0.00	0.11	0.05	0.18	0.09	0.18	0.09	0.04	0.02	0.05	0.02
610	0.981	0.005	2.435	0.011	0.00	0.00	0.10	0.05	0.17	0.08	0.17	0.08	0.04	0.02	0.05	0.02
620	0.852	0.004	2.285	0.010	0.00	0.00	0.09	0.04	0.16	0.07	0.16	0.07	0.04	0.01	0.04	0.02
630	0.738	0.004	2.175	0.009	0.00	0.00	0.09	0.03	0.15	0.06	0.15	0.06	0.03	0.01	0.04	0.02
640	0.754	0.004	2.182	0.009	0.00	0.00	0.09	0.03	0.15	0.06	0.15	0.06	0.03	0.01	0.04	0.02
650	0.704	0.003	2.133	0.009	0.00	0.00	0.09	0.03	0.15	0.05	0.15	0.05	0.03	0.01	0.04	0.02
660	0.63	0.003	2.018	0.009	0.00	0.00	0.08	0.03	0.14	0.05	0.14	0.05	0.03	0.01	0.04	0.01
670	0.558	0.003	1.960	0.008	0.00	0.00	0.08	0.03	0.14	0.04	0.14	0.04	0.03	0.01	0.04	0.01
680	0.517	0.002	1.858	0.008	0.00	0.00	0.08	0.02	0.13	0.04	0.13	0.04	0.03	0.01	0.04	0.01
690	0.495	0.002	1.747	0.008	0.00	0.00	0.07	0.02	0.12	0.04	0.12	0.04	0.03	0.01	0.03	0.01
700	0.441	0.002	1.683	0.007	0.00	0.00	0.07	0.02	0.12	0.03	0.12	0.03	0.03	0.01	0.03	0.01
710	0.386	0.002	1.615	0.007	0.00	0.00	0.07	0.02	0.11	0.03	0.11	0.03	0.03	0.01	0.03	0.01
720	0.417	0.002	1.607	0.007	0.00	0.00	0.07	0.02	0.11	0.03	0.11	0.03	0.03	0.01	0.03	0.01
730	0.437	0.002	1.604	0.007	0.00	0.00	0.07	0.02	0.11	0.03	0.11	0.03	0.03	0.01	0.03	0.01
740	0.355	0.002	1.528	0.007	0.00	0.00	0.06	0.02	0.11	0.03	0.11	0.03	0.02	0.01	0.03	0.01
750	0.294	0.001	1.469	0.006	0.00	0.00	0.06	0.01	0.10	0.02	0.10	0.02	0.02	0.01	0.03	0.01
760	0.375	0.002	1.544	0.007	0.00	0.00	0.06	0.02	0.11	0.03	0.11	0.03	0.02	0.01	0.03	0.01
770	0.492	0.002	1.612	0.007	0.00	0.00	0.07	0.02	0.11	0.04	0.11	0.04	0.03	0.01	0.03	0.01
780	0.499	0.002	1.591	0.007	0.00	0.00	0.07	0.02	0.11	0.04	0.11	0.04	0.03	0.01	0.03	0.01
790	0.459	0.002	1.560	0.007	0.00	0.00	0.06	0.02	0.11	0.04	0.11	0.04	0.02	0.01	0.03	0.01
800	0.459	0.002	1.532	0.007	0.00	0.00	0.06	0.02	0.11	0.04	0.11	0.04	0.02	0.01	0.03	0.01
810	0.437	0.002	1.483	0.006	0.00	0.00	0.06	0.02	0.10	0.03	0.10	0.03	0.02	0.01	0.03	0.01
820	0.411	0.002	1.441	0.006	0.00	0.00	0.06	0.02	0.10	0.03	0.10	0.03	0.02	0.01	0.03	0.01
830	0.456	0.002	1.422	0.006	0.00	0.00	0.06	0.02	0.10	0.04	0.10	0.04	0.02	0.01	0.03	0.01
840	0.426	0.002	1.427	0.006	0.00	0.00	0.06	0.02	0.10	0.03	0.10	0.03	0.02	0.01	0.03	0.01
850	0.394	0.002	1.364	0.006	0.00	0.00	0.06	0.02	0.10	0.03	0.10	0.03	0.02	0.01	0.03	0.01
860	0.397	0.002	1.295	0.006	0.00	0.00	0.05	0.02	0.09	0.03	0.09	0.03	0.02	0.01	0.02	0.01
870	0.418	0.002	1.254	0.005	0.00	0.00	0.05	0.02	0.09	0.03	0.09	0.03	0.02	0.01	0.02	0.01
880	0.426	0.002	1.232	0.005	0.00	0.00	0.05	0.02	0.09	0.03	0.09	0.03	0.02	0.01	0.02	0.01
890	0.443	0.002	1.264	0.005	0.00	0.00	0.05	0.02	0.09	0.03	0.09	0.03	0.02	0.01	0.02	0.01
900	0.432	0.002	1.239	0.005	0.00	0.00	0.05	0.02	0.09	0.03	0.09	0.03	0.02	0.01	0.02	0.01
910	0.424	0.002	1.140	0.005	0.00	0.00	0.05	0.02	0.08	0.03	0.08	0.03	0.02	0.01	0.02	0.01
920	0.418	0.002	1.057	0.005	0.00	0.00	0.04	0.02	0.07	0.03	0.07	0.03	0.02	0.01	0.02	0.01
930	0.492	0.002	1.069	0.005	0.00	0.00	0.04	0.02	0.08	0.04	0.08	0.04	0.02	0.01	0.02	0.01
940	0.557	0.003	1.149	0.005	0.00	0.00	0.05	0.03	0.08	0.04	0.08	0.04	0.02	0.01	0.02	0.01
950	0.614	0.003	1.177	0.005	0.00	0.00	0.05	0.03	0.08	0.05	0.08	0.05	0.02	0.01	0.02	0.01
960	0.537	0.003	1.131	0.005	0.00	0.00	0.05	0.02	0.08	0.04	0.08	0.04	0.02	0.01	0.02	0.01
970	0.582	0.003	1.225	0.005	0.00	0.00	0.05	0.03	0.09	0.05	0.09	0.05	0.02	0.01	0.02	0.01
980	0.593	0.003	1.193	0.005	0.00	0.00	0.05	0.03	0.08	0.05	0.08	0.05	0.02	0.01	0.02	0.01
990	0.545	0.003	1.152	0.005	0.00	0.00	0.05	0.03	0.08	0.04	0.08	0.04	0.02	0.01	0.02	0.01
1000	0.449	0.002	1.025	0.004	0.00	0.00	0.04	0.02	0.07	0.04	0.07	0.04	0.02	0.01	0.02	0.01
1010	0.468	0.002	1.033	0.004	0.00	0.00	0.04	0.02	0.07	0.04	0.07	0.04	0.02	0.01	0.02	0.01
1020	0.56	0.003	1.111	0.005	0.00	0.00	0.05	0.03	0.08	0.04	0.08	0.04	0.02	0.01	0.02	0.01
1030	0.665	0.003	1.168	0.005	0.00	0.00	0.05	0.03	0.08	0.05	0.08	0.05	0.02	0.01	0.02	0.01
1040	0.789	0.004	1.212	0.005	0.00	0.00	0.05	0.04	0.09	0.06	0.09	0.06	0.02	0.01	0.02	0.02
1050	0.828	0.004	1.208	0.005	0.00	0.00	0.05	0.04	0.08	0.06	0.08	0.06	0.02	0.01	0.02	0.02
1060	0.926	0.004	1.245	0.005	0.00	0.00	0.05	0.04	0.09	0.07	0.09	0.07	0.02	0.02	0.02	0.02
1070	0.893	0.004	1.154	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.08	0.07	0.02	0.02	0.02	0.02
1080	0.906	0.004	1.147	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.08	0.07	0.02	0.02	0.02	0.02
1090	0.893	0.004	1.067	0.005	0.00	0.00	0.04	0.04	0.08	0.07	0.08	0.07	0.02	0.02	0.02	0.02
1100	0.829	0.004	1.025	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.07	0.06	0.02	0.01	0.02	0.02
1110	0.747	0.004	0.970	0.004	0.00	0.00	0.04	0.03	0.07	0.06	0.07	0.06	0.02	0.01	0.02	0.02
1120	0.666	0.003	0.928	0.004	0.00	0.00	0.04	0.03	0.07	0.05	0.07	0.05	0.01	0.01	0.02	0.01
1130	0.603	0.003	0.853	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1140	0.655	0.003	0.898	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1150	0.7	0.003	0.950	0.004	0.00	0.00	0.04	0.03	0.07	0.05	0.07	0.05	0.01	0.01	0.02	0.01
1160	0.691	0.003	0.940	0.004	0.00	0.00	0.04	0.03	0.07	0.05	0.07	0.05	0.01	0.01	0.02	0.01
1170	0.695	0.003	0.901	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1180	0.706	0.003	0.961	0.004	0.00	0.00	0.04	0.03	0.07	0.06	0.07	0.06	0.02	0.01	0.02	0.02
1190	0.7	0.003	1.016	0.004	0.00	0.00	0.04	0.03	0.07	0.05	0.07	0.05	0.02	0.01	0.02	0.01
1200	0.709	0.003	0.953	0.004	0.00	0.00	0.04	0.03	0.07	0.06	0.07	0.06	0.02	0.01	0.02	0.02
1210	0.753	0.004	1.004	0.004	0.00	0.00	0.04	0.03	0.07	0.06	0.07	0.06	0.02	0.01	0.02	0.02
1220	0.73	0.004	0.932	0.004	0.00	0.00	0.04	0.03	0.07	0.06	0.07	0.06	0.01	0.01	0.02	0.02
1230	0.69	0.003	0.887	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1240	0.691	0.003	0.843	0.004	0.00	0.00	0.03	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1250	0.638	0.003	0.810	0.004	0.00	0.00	0.03	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1260	0.606	0.003	0.751	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.01	0.01	0.01	0.01
1270	0.583	0.003	0.742	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.01	0.01	0.01	0.01
1280	0.597	0.003	0.753	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.01	0.01	0.01	0.01
1290	0.604	0.003	0.725	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.01	0.01	0.01	0.01
1300	0.575	0.003	0.740	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.01	0.01	0.01	0.01
1310	0.504	0.002	0.647	0.003	0.00	0.00	0.03	0.02	0.05	0.04	0.05	0.04	0.01	0.01	0.01	0.01
1320	0.501	0.002	0.647	0.003	0.00	0.00	0.03	0.02	0.05	0.04	0.05	0.04	0.01	0.01	0.01	0.01
1330	0.492	0.002	0.657	0.003	0.00	0.00	0.03	0.02	0.05	0.04	0.05	0.04	0.01	0.01	0.01	0.01
1340	0.459	0.002	0.579	0.003	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1350	0.474	0.002	0.586	0.003	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1360	0.466	0.002	0.582	0.003	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1370	0.483	0.002	0.574	0.002	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1380	0.506	0.002	0.579	0.003	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1390	0.515	0.002	0.587	0.003	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1400	0.413	0.002	0.527	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.01	0.01
1410	0.409	0.002	0.499	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.01	0.01
1420	0.37	0.002	0.421	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
1430	0.349	0.002	0.447	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
1440	0.604	0.003	0.841	0.004	0.00	0.00	0.03	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1450	0.699	0.003	0.853	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.01	0.01	0.02	0.01
1460	0.584	0.003	0.665	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.01	0.01	0.01	0.01
1470	0.517	0.002	0.616	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1480	0.448	0.002	0.569	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.01	0.01
1490	0.453	0.002	0.591	0.003	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1500	0.368	0.002	0.483	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
1510	0.314	0.002	0.451	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.01	0.01	0.01	0.01
1520	0.324	0.002	0.475	0.002	0.00	0.00	0.02	0.01	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
1530	0.366	0.002	0.509	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.01	0.01
1540	0.428	0.002	0.567	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.01	0.01
1550	0.454	0.002	0.584	0.003	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1560	0.452	0.002	0.522	0.002	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1570	0.456	0.002	0.521	0.002	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1580	0.446	0.002	0.527	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.01	0.01
1590	0.343	0.002	0.393	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
1600	0.351	0.002	0.432	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01
1610	0.451	0.002	0.466	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1620	0.454	0.002	0.496	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1630	0.467	0.002	0.529	0.002	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1640	0.479	0.002	0.535	0.002	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1650	0.504	0.002	0.543	0.002	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1660	0.477	0.002	0.521	0.002	0.00	0.00	0.02	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01
1670	0.484	0.002	0.494	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1680	0.455	0.002	0.452	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1690	0.465	0.002	0.444	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1700	0.531	0.003	0.481	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1710	0.487	0.002	0.414	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1720	0.382	0.002	0.351	0.002	0.00	0.00	0.01	0.02	0.02	0.03	0.02	0.03	0.01	0.01	0.01	0.01
1730	0.41	0.002	0.319	0.001	0.00	0.00	0.01	0.02	0.02	0.03	0.02	0.03	0.01	0.01	0.01	0.01
1740	0.534	0.003	0.367	0.002	0.00	0.00	0.02	0.02	0.03	0.04	0.03	0.04	0.01	0.01	0.01	0.01
1750	0.555	0.003	0.293	0.001	0.00	0.00	0.01	0.03	0.02	0.04	0.02	0.04	0.00	0.01	0.01	0.01
1760	0.555	0.003	0.257	0.001	0.00	0.00	0.01	0.03	0.02	0.04	0.02	0.04	0.00	0.01	0.00	0.01
1770	0.55	0.003	0.232	0.001	0.00	0.00	0.01	0.03	0.02	0.04	0.02	0.04	0.00	0.01	0.00	0.01
1780	0.602	0.003	0.288	0.001	0.00	0.00	0.01	0.03	0.02	0.05	0.02	0.05	0.00	0.01	0.01	0.01
1790	0.661	0.003	0.299	0.001	0.00	0.00	0.01	0.03	0.02	0.05	0.02	0.05	0.00	0.01	0.01	0.01
1800	0.672	0.003	0.264	0.001	0.00	0.00	0.01	0.03	0.02	0.05	0.02	0.05	0.00	0.01	0.01	0.01
1810	0.731	0.004	0.336	0.001	0.00	0.00	0.01	0.03	0.02	0.06	0.02	0.06	0.01	0.01	0.01	0.02
1820	0.85	0.004	0.484	0.002	0.00	0.00	0.02	0.04	0.03	0.07	0.03	0.07	0.01	0.01	0.01	0.02
1830	0.844	0.004	0.560	0.002	0.00	0.00	0.02	0.04	0.04	0.07	0.04	0.07	0.01	0.01	0.01	0.02
1840	0.769	0.004	0.532	0.002	0.00	0.00	0.02	0.04	0.04	0.06	0.04	0.06	0.01	0.01	0.01	0.02
1850	0.791	0.004	0.566	0.002	0.00	0.00	0.02	0.04	0.04	0.06	0.04	0.06	0.01	0.01	0.01	0.02
1860	0.755	0.004	0.575	0.002	0.00	0.00	0.02	0.03	0.04	0.06	0.04	0.06	0.01	0.01	0.01	0.02
1870	0.718	0.003	0.573	0.002	0.00	0.00	0.02	0.03	0.04	0.06	0.04	0.06	0.01	0.01	0.01	0.02
1880	0.752	0.004	0.563	0.002	0.00	0.00	0.02	0.03	0.04	0.06	0.04	0.06	0.01	0.01	0.01	0.02
1890	0.809	0.004	0.611	0.003	0.00	0.00	0.03	0.04	0.04	0.06	0.04	0.06	0.01	0.01	0.01	0.02
1900	0.831	0.004	0.644	0.003	0.00	0.00	0.03	0.04	0.05	0.06	0.05	0.06	0.01	0.01	0.01	0.02

SD-610	Tide Park	0	0	Avg. Net SL Change	0.73	2.47	2.00	0.86	-0.41	-0.52						
SD-610	314.556	0	229.886	1900			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
-50	3.421	0.011	0.737	0.003	0.03	0.09	0.09	0.32	0.08	0.26	0.03	0.11	0.00	0.00	0.00	0.00
-40	4.195	0.013	0.898	0.004	0.03	0.12	0.11	0.39	0.09	0.32	0.04	0.14	0.00	0.00	0.00	0.00
-30	4.407	0.014	0.862	0.004	0.03	0.12	0.11	0.41	0.09	0.33	0.04	0.14	0.00	0.00	0.00	0.00
-20	4.396	0.014	0.867	0.004	0.03	0.12	0.11	0.41	0.09	0.33	0.04	0.14	0.00	0.00	0.00	0.00
-10	4.367	0.014	0.877	0.004	0.03	0.12	0.11	0.41	0.09	0.33	0.04	0.14	0.00	0.00	0.00	0.00
0	4.338	0.014	0.885	0.004	0.03	0.12	0.11	0.41	0.09	0.33	0.04	0.14	0.00	0.00	0.00	0.00
10	4.309	0.014	0.894	0.004	0.03	0.12	0.11	0.40	0.09	0.33	0.04	0.14	0.00	0.00	0.00	0.00
20	4.217	0.013	0.904	0.004	0.03	0.12	0.12	0.39	0.09	0.32	0.04	0.14	0.00	0.00	0.00	0.00
30	4.099	0.013	0.943	0.004	0.04	0.11	0.12	0.38	0.10	0.31	0.04	0.13	0.00	0.00	0.00	0.00
40	3.936	0.013	0.991	0.004	0.04	0.11	0.13	0.37	0.10	0.30	0.04	0.13	0.00	0.00	0.00	0.00
50	3.616	0.011	0.948	0.004	0.04	0.10	0.12	0.34	0.10	0.27	0.04	0.12	0.00	0.00	0.00	0.00
60	3.316	0.011	0.920	0.004	0.03	0.09	0.12	0.31	0.10	0.25	0.04	0.11	0.00	0.00	0.00	0.00
70	3.109	0.010	0.907	0.004	0.03	0.09	0.12	0.29	0.09	0.24	0.04	0.10	0.00	0.00	0.00	0.00
80	2.953	0.009	0.877	0.004	0.03	0.08	0.11	0.28	0.09	0.22	0.04	0.10	0.00	0.00	0.00	0.00
90	2.784	0.009	0.827	0.004	0.03	0.08	0.11	0.26	0.09	0.21	0.04	0.09	0.00	0.00	0.00	0.00
100	2.621	0.008	0.784	0.003	0.03	0.07	0.10	0.25	0.08	0.20	0.03	0.09	0.00	0.00	0.00	0.00
110	2.469	0.008	0.734	0.003	0.03	0.07	0.09	0.23	0.08	0.19	0.03	0.08	0.00	0.00	0.00	0.00
120	2.396	0.008	0.675	0.003	0.03	0.07	0.09	0.22	0.07	0.18	0.03	0.08	0.00	0.00	0.00	0.00
130	2.346	0.007	0.644	0.003	0.02	0.06	0.08	0.22	0.07	0.18	0.03	0.08	0.00	0.00	0.00	0.00
140	2.29	0.007	0.618	0.003	0.02	0.06	0.08	0.21	0.06	0.17	0.03	0.07	0.00	0.00	0.00	0.00
150	2.348	0.007	0.645	0.003	0.02	0.06	0.08	0.22	0.07	0.18	0.03	0.08	0.00	0.00	0.00	0.00
160	2.247	0.007	0.594	0.003	0.02	0.06	0.08	0.21	0.06	0.17	0.03	0.07	0.00	0.00	0.00	0.00
170	2.203	0.007	0.652	0.003	0.02	0.06	0.08	0.21	0.07	0.17	0.03	0.07	0.00	0.00	0.00	0.00
180	2.102	0.007	0.599	0.003	0.02	0.06	0.08	0.20	0.06	0.16	0.03	0.07	0.00	0.00	0.00	0.00
190	1.984	0.006	0.537	0.002	0.02	0.05	0.07	0.19	0.06	0.15	0.02	0.06	0.00	0.00	0.00	0.00
200	1.868	0.006	0.483	0.002	0.02	0.05	0.06	0.17	0.05	0.14	0.02	0.06	0.00	0.00	0.00	0.00
210	1.777	0.006	0.460	0.002	0.02	0.05	0.06	0.17	0.05	0.13	0.02	0.06	0.00	0.00	0.00	0.00
220	1.744	0.006	0.479	0.002	0.02	0.05	0.06	0.16	0.05	0.13	0.02	0.06	0.00	0.00	0.00	0.00
230	1.801	0.006	0.566	0.002	0.02	0.05	0.07	0.17	0.06	0.14	0.03	0.06	0.00	0.00	0.00	0.00
240	1.876	0.006	0.664	0.003	0.03	0.05	0.08	0.18	0.07	0.14	0.03	0.06	0.00	0.00	0.00	0.00
250	1.945	0.006	0.745	0.003	0.03	0.05	0.10	0.18	0.08	0.15	0.03	0.06	0.00	0.00	0.00	0.00
260	2.002	0.006	0.811	0.004	0.03	0.06	0.10	0.19	0.08	0.15	0.04	0.07	0.00	0.00	0.00	0.00
270	2.177	0.007	0.988	0.004	0.04	0.06	0.13	0.20	0.10	0.17	0.04	0.07	0.00	0.00	0.00	0.00
280	2.352	0.007	1.169	0.005	0.04	0.07	0.15	0.22	0.12	0.18	0.05	0.08	0.00	0.00	0.00	0.00
290	2.489	0.008	1.344	0.006	0.05	0.07	0.17	0.23	0.14	0.19	0.06	0.08	0.00	0.00	0.00	0.00
300	2.573	0.008	1.471	0.006	0.06	0.07	0.19	0.24	0.15	0.20	0.07	0.08	0.00	0.00	0.00	0.00
310	2.556	0.008	1.470	0.006	0.06	0.07	0.19	0.24	0.15	0.19	0.07	0.08	0.00	0.00	0.00	0.00
320	2.499	0.008	1.444	0.006	0.05	0.07	0.18	0.23	0.15	0.19	0.06	0.08	0.00	0.00	0.00	0.00
330	2.523	0.008	1.539	0.007	0.06	0.07	0.20	0.24	0.16	0.19	0.07	0.08	0.00	0.00	0.00	0.00
340	2.276	0.007	1.414	0.006	0.05	0.06	0.18	0.21	0.15	0.17	0.06	0.07	0.00	0.00	0.00	0.00
350	2.118	0.007	1.374	0.006	0.05	0.06	0.18	0.20	0.14	0.16	0.06	0.07	0.00	0.00	0.00	0.00
360	2.01	0.006	1.295	0.006	0.05	0.06	0.17	0.19	0.13	0.15	0.06	0.07	0.00	0.00	0.00	0.00
370	2.181	0.007	1.460	0.006	0.06	0.06	0.19	0.20	0.15	0.17	0.07	0.07	0.00	0.00	0.00	0.00
380	2.282	0.007	1.529	0.007	0.06	0.06	0.20	0.21	0.16	0.17	0.07	0.07	0.00	0.00	0.00	0.00
390	2.576	0.008	1.885	0.008	0.07	0.07	0.24	0.24	0.20	0.20	0.08	0.08	0.00	0.00	0.00	0.00
400	2.778	0.009	2.073	0.009	0.08	0.08	0.27	0.26	0.22	0.21	0.09	0.09	0.00	0.00	0.00	0.00
410	2.168	0.007	1.602	0.007	0.06	0.06	0.20	0.20	0.17	0.16	0.07	0.07	0.00	0.00	0.00	0.00
420	1.395	0.004	1.055	0.005	0.04	0.04	0.13	0.13	0.11	0.11	0.05	0.05	0.00	0.00	0.00	0.00
430	1.892	0.006	1.556	0.007	0.06	0.05	0.20	0.18	0.16	0.14	0.07	0.06	0.00	0.00	0.00	0.00
440	1.562	0.005	1.113	0.005	0.04	0.04	0.14	0.15	0.12	0.12	0.05	0.05	0.00	0.00	0.00	0.00
450	2.061	0.007	1.524	0.007	0.06	0.06	0.19	0.19	0.16	0.16	0.07	0.07	0.00	0.00	0.00	0.00
460	2.514	0.008	1.886	0.008	0.07	0.07	0.24	0.24	0.20	0.19	0.08	0.08	0.00	0.00	0.00	0.00
470	2.322	0.007	1.717	0.007	0.06	0.06	0.22	0.22	0.18	0.18	0.08	0.08	0.00	0.00	0.00	0.00
480	2.092	0.007	1.496	0.007	0.06	0.06	0.19	0.20	0.16	0.16	0.07	0.07	0.00	0.00	0.00	0.00
490	1.656	0.005	1.154	0.005	0.04	0.05	0.15	0.15	0.12	0.13	0.05	0.05	0.00	0.00	0.00	0.00
500	1.848	0.006	1.531	0.007	0.06	0.05	0.20	0.17	0.16	0.14	0.07	0.06	0.00	0.00	0.00	0.00
510	1.485	0.005	1.397	0.006	0.05	0.04	0.18	0.14	0.14	0.11	0.06	0.05	0.00	0.00	0.00	0.00
520	0.971	0.003	1.077	0.005	0.04	0.03	0.14	0.09	0.11	0.07	0.05	0.03	0.00	0.00	0.00	0.00
530	1.324	0.004	1.389	0.006	0.05	0.04	0.18	0.12	0.14	0.10	0.06	0.04	0.00	0.00	0.00	0.00
540	1.008	0.003	1.020	0.004	0.04	0.03	0.13	0.09	0.11	0.08	0.05	0.03	0.00	0.00	0.00	0.00
550	1.047	0.003	1.002	0.004	0.04	0.03	0.13	0.10	0.10	0.08	0.04	0.03	0.00	0.00	0.00	0.00
560	0.746	0.002	0.722	0.003	0.03	0.02	0.09	0.07	0.07	0.06	0.03	0.02	0.00	0.00	0.00	0.00
570	1.18	0.004	1.290	0.006	0.05	0.03	0.17	0.11	0.13	0.09	0.06	0.04	0.00	0.00	0.00	0.00
580	0.911	0.003	1.072	0.005	0.04	0.03	0.14	0.09	0.11	0.07	0.05	0.03	0.00	0.00	0.00	0.00
590	0.859	0.003	0.966	0.004	0.04	0.02	0.12	0.08	0.10	0.07	0.04	0.03	0.00	0.00	0.00	0.00
600	0.733	0.002	0.933	0.004	0.04	0.02	0.12	0.07	0.10	0.06	0.04	0.02	0.00	0.00	0.00	0.00
610	0.981	0.003	1.248	0.005	0.05	0.03	0.16	0.09	0.13	0.07	0.06	0.03	0.00	0.00	0.00	0.00
620	1.392	0.004	1.575	0.007	0.06	0.04	0.20	0.13	0.16	0.11	0.07	0.05	0.00	0.00	0.00	0.00
630	1.265	0.004	1.115	0.005	0.04	0.03	0.14	0.12	0.12	0.10	0.05	0.04	0.00	0.00	0.00	0.00
640	1.099	0.003	0.786	0.003	0.03	0.03	0.10	0.10	0.08	0.08	0.04	0.04	0.00	0.00	0.00	0.00
650	2.601	0.008	2.434	0.011	0.09	0.07	0.31	0.24	0.25	0.20	0.11	0.08	0.00	0.00	0.00	0.00
660	2.111	0.007	1.977	0.009	0.07	0.06	0.25	0.20	0.21	0.16	0.09	0.07	0.00	0.00	0.00	0.00
670	1.962	0.006	1.784	0.008	0.07	0.05	0.23	0.18	0.19	0.15	0.08	0.06	0.00	0.00	0.00	0.00
680	1.628	0.005	1.691	0.007	0.06	0.05	0.22	0.15	0.18	0.12	0.08	0.05	0.00	0.00	0.00	0.00
690	1.843	0.006	1.763	0.008	0.07	0.05	0.23	0.17	0.18	0.14	0.08	0.06	0.00	0.00	0.00	0.00
700	1.465	0.005	1.539	0.007	0.06	0.04	0.20	0.14	0.16	0.11	0.07	0.05	0.00	0.00	0.00	0.00
710	1.327	0.004	1.402	0.006	0.05	0.04	0.18	0.12	0.15	0.10	0.06	0.04	0.00	0.00	0.00	0.00
720	1.477	0.005	1.497	0.007	0.06	0.04	0.19	0.14	0.16	0.11	0.07	0.05	0.00	0.00	0.00	0.00
730	1.534	0.005	1.515	0.007	0.06	0.04	0.19	0.14	0.16	0.12	0.07	0.05	0.00	0.00	0.00	0.00
740	1.396	0.004	1.368	0.006	0.05	0.04	0.17	0.13	0.14	0.11	0.06	0.05	0.00	0.00	0.00	0.00
750	1.095	0.003	1.174	0.005	0.04	0.03	0.15	0.10	0.12	0.08	0.05	0.04	0.00	0.00	0.00	0.00
760	0.92	0.003	1.080	0.005	0.04	0.03	0.14	0.09	0.11	0.07	0.05	0.03	0.00	0.00	0.00	0.00
770	1.148	0.004	1.022	0.004	0.04	0.03	0.13	0.11	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00
780	0.852	0.003	0.862	0.004	0.03	0.02	0.11	0.08	0.09	0.06	0.04	0.03	0.00	0.00	0.00	0.00
790	0.992	0.003	0.943	0.004	0.04	0.03	0.12	0.09	0.10	0.08	0.04	0.03	0.00	0.00	0.00	0.00
800	1.06	0.003	0.950	0.004	0.04	0.03	0.12	0.10	0.10	0.08	0.04	0.03	0.00	0.00	0.00	0.00
810	0.985	0.003	0.835	0.004	0.03	0.03	0.11	0.09	0.09	0.07	0.04	0.03	0.00	0.00	0.00	0.00
820	1.046	0.003	0.874	0.004	0.03	0.03	0.11	0.10	0.09	0.08	0.04	0.03	0.00	0.00	0.00	0.00
830	1.109	0.004	0.907	0.004	0.03	0.03	0.12	0.10	0.09	0.08	0.04	0.04	0.00	0.00	0.00	0.00
840	1.194	0.004	0.989	0.004	0.04	0.03	0.13	0.11	0.10	0.09	0.04	0.04	0.00	0.00	0.00	0.00
850	1.178	0.004	0.992	0.004	0.04	0.03	0.13	0.11	0.10	0.09	0.04	0.04	0.00	0.00	0.00	0.00
860	1.377	0.004	1.230	0.005	0.05	0.04	0.16	0.13	0.13	0.10	0.05	0.04	0.00	0.00	0.00	0.00
870	1.819	0.006	1.669	0.007	0.06	0.05	0.21	0.17	0.17	0.14	0.07	0.06	0.00	0.00	0.00	0.00
880	2.025	0.006	1.841	0.008	0.07	0.06	0.24	0.19	0.19	0.15	0.08	0.07	0.00	0.00	0.00	0.00
890	1.811	0.006	1.696	0.007	0.06	0.05	0.22	0.17	0.18	0.14	0.08	0.06	0.00	0.00	0.00	0.00
900	1.422	0.005	1.485	0.006	0.06	0.04	0.19	0.13	0.15	0.11	0.07	0.05	0.00	0.00	0.00	0.00
910	1.583	0.005	1.676	0.007	0.06	0.04	0.21	0.15	0.17	0.12	0.07	0.05	0.00	0.00	0.00	0.00
920	1.37	0.004	1.536	0.007	0.06	0.04	0.20	0.13	0.16	0.10	0.07	0.04	0.00	0.00	0.00	0.00
930	1.474	0.005	1.587	0.007	0.06	0.04	0.20	0.14	0.16	0.11	0.07	0.05	0.00	0.00	0.00	0.00
940	1.539	0.005	1.569	0.007	0.06	0.04	0.20	0.14	0.16	0.12	0.07	0.05	0.00	0.00	0.00	0.00
950	1.641	0.005	1.579	0.007	0.06	0.05	0.20	0.15	0.16	0.12	0.07	0.05	0.00	0.00	0.00	0.00
960	1.549	0.005	1.458	0.006	0.06	0.04	0.19	0.14	0.15	0.12	0.07	0.05	0.00	0.00	0.00	0.00
970	1.349	0.004	1.220	0.005	0.05	0.04	0.16	0.13	0.13	0.10	0.05	0.04	0.00	0.00	0.00	0.00
980	1.196	0.004	1.009	0.004	0.04	0.03	0.13	0.11	0.10	0.09	0.05	0.04	0.00	0.00	0.00	0.00
990	1.234	0.004	1.064	0.005	0.04	0.03	0.14	0.12	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1000	1.195	0.004	1.032	0.004	0.04	0.03	0.13	0.11	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1010	1.181	0.004	1.015	0.004	0.04	0.03	0.13	0.11	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1020	1.314	0.004	1.133	0.005	0.04	0.04	0.14	0.12	0.12	0.10	0.05	0.04	0.00	0.00	0.00	0.00
1030	1.435	0.005	1.221	0.005	0.05	0.04	0.16	0.13	0.13	0.11	0.05	0.05	0.00	0.00	0.00	0.00
1040	1.559	0.005	1.453	0.006	0.05	0.04	0.19	0.15	0.15	0.12	0.06	0.05	0.00	0.00	0.00	0.00
1050	1.205	0.004	1.184	0.005	0.04	0.03	0.15	0.11	0.12	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1060	1.147	0.004	1.186	0.005	0.04	0.03	0.15	0.11	0.12	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1070	1.169	0.004	1.173	0.005	0.04	0.03	0.15	0.11	0.12	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1080	1.139	0.004	1.089	0.005	0.04	0.03	0.14	0.11	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1090	1.081	0.003	0.942	0.004	0.04	0.03	0.12	0.10	0.10	0.08	0.04	0.04	0.00	0.00	0.00	0.00
1100	1.04	0.003	1.042	0.005	0.04	0.03	0.13	0.10	0.11	0.08	0.05	0.03	0.00	0.00	0.00	0.00
1110	0.677	0.002	0.852	0.004	0.03	0.02	0.11	0.06	0.09	0.05	0.04	0.02	0.00	0.00	0.00	0.00
1120	0.469	0.001	0.700	0.003	0.03	0.01	0.09	0.04	0.07	0.04	0.03	0.02	0.00	0.00	0.00	0.00
1130	0.557	0.002	0.854	0.004	0.03	0.02	0.11	0.05	0.09	0.04	0.04	0.02	0.00	0.00	0.00	0.00
1140	0.723	0.002	1.068	0.005	0.04	0.02	0.14	0.07	0.11	0.05	0.05	0.02	0.00	0.00	0.00	0.00
1150	0.656	0.002	0.918	0.004	0.03	0.02	0.12	0.06	0.10	0.05	0.04	0.02	0.00	0.00	0.00	0.00
1160	1.106	0.004	1.389	0.006	0.05	0.03	0.18	0.10	0.14	0.08	0.06	0.04	0.00	0.00	0.00	0.00
1170	1.104	0.004	1.435	0.006	0.05	0.03	0.18	0.10	0.15	0.08	0.06	0.04	0.00	0.00	0.00	0.00
1180	1.101	0.004	1.512	0.007	0.06	0.03	0.19	0.10	0.16	0.08	0.07	0.04	0.00	0.00	0.00	0.00
1190	0.96	0.003	1.373	0.006	0.05	0.03	0.18	0.09	0.14	0.07	0.06	0.03	0.00	0.00	0.00	0.00
1200	0.905	0.003	1.216	0.005	0.05	0.03	0.16	0.08	0.13	0.07	0.05	0.03	0.00	0.00	0.00	0.00
1210	0.726	0.002	0.924	0.004	0.03	0.02	0.12	0.07	0.10	0.06	0.04	0.02	0.00	0.00	0.00	0.00
1220	0.834	0.003	0.846	0.004	0.03	0.02	0.11	0.08	0.09	0.06	0.04	0.03	0.00	0.00	0.00	0.00
1230	0.946	0.003	0.903	0.004	0.03	0.03	0.12	0.09	0.09	0.07	0.04	0.03	0.00	0.00	0.00	0.00
1240	0.897	0.003	0.757	0.003	0.03	0.02	0.10	0.08	0.08	0.07	0.03	0.03	0.00	0.00	0.00	0.00
1250	0.875	0.003	0.662	0.003	0.03	0.02	0.08	0.08	0.07	0.07	0.03	0.03	0.00	0.00	0.00	0.00
1260	1.015	0.003	0.844	0.004	0.03	0.03	0.11	0.09	0.09	0.08	0.04	0.03	0.00	0.00	0.00	0.00
1270	0.727	0.002	0.651	0.003	0.02	0.02	0.08	0.07	0.07	0.06	0.03	0.02	0.00	0.00	0.00	0.00
1280	0.896	0.003	0.892	0.004	0.03	0.02	0.11	0.08	0.09	0.07	0.04	0.03	0.00	0.00	0.00	0.00
1290	0.821	0.003	0.822	0.004	0.03	0.02	0.11	0.08	0.09	0.06	0.04	0.03	0.00	0.00	0.00	0.00
1300	0.603	0.002	0.585	0.003	0.02	0.02	0.07	0.06	0.06	0.05	0.03	0.02	0.00	0.00	0.00	0.00
1310	0.548	0.002	0.452	0.002	0.02	0.02	0.06	0.05	0.05	0.04	0.02	0.02	0.00	0.00	0.00	0.00
1320	0.675	0.002	0.481	0.002	0.02	0.02	0.06	0.06	0.05	0.05	0.02	0.02	0.00	0.00	0.00	0.00
1330	0.926	0.003	0.770	0.003	0.03	0.03	0.10	0.09	0.08	0.07	0.03	0.03	0.00	0.00	0.00	0.00
1340	0.918	0.003	0.624	0.003	0.02	0.03	0.08	0.09	0.06	0.07	0.03	0.03	0.00	0.00	0.00	0.00
1350	0.947	0.003	0.635	0.003	0.02	0.03	0.08	0.09	0.07	0.07	0.03	0.03	0.00	0.00	0.00	0.00
1360	1.047	0.003	0.666	0.003	0.03	0.03	0.09	0.10	0.07	0.08	0.03	0.03	0.00	0.00	0.00	0.00
1370	0.831	0.003	0.510	0.002	0.02	0.02	0.07	0.08	0.05	0.06	0.02	0.03	0.00	0.00	0.00	0.00
1380	0.731	0.002	0.441	0.002	0.02	0.02	0.06	0.07	0.05	0.06	0.02	0.02	0.00	0.00	0.00	0.00
1390	0.615	0.002	0.380	0.002	0.01	0.02	0.05	0.06	0.04	0.05	0.02	0.02	0.00	0.00	0.00	0.00
1400	0.85	0.003	0.598	0.003	0.02	0.02	0.08	0.08	0.06	0.06	0.03	0.03	0.00	0.00	0.00	0.00
1410	1.051	0.003	0.833	0.004	0.03	0.03	0.11	0.10	0.09	0.08	0.04	0.03	0.00	0.00	0.00	0.00
1420	1.09	0.003	1.003	0.004	0.04	0.03	0.13	0.10	0.10	0.08	0.04	0.04	0.00	0.00	0.00	0.00
1430	0.917	0.003	0.941	0.004	0.04	0.03	0.12	0.09	0.10	0.07	0.04	0.03	0.00	0.00	0.00	0.00
1440	1.94	0.006	2.130	0.009	0.08	0.05	0.27	0.18	0.22	0.15	0.10	0.06	0.00	0.00	0.00	0.00
1450	2.469	0.008	2.775	0.012	0.10	0.07	0.35	0.23	0.29	0.19	0.12	0.08	0.00	0.00	0.00	0.00
1460	2.753	0.009	3.088	0.013	0.12	0.08	0.39	0.26	0.32	0.21	0.14	0.09	0.00	0.00	0.00	0.00
1470	2.98	0.009	3.254	0.014	0.12	0.08	0.42	0.28	0.34	0.23	0.15	0.10	0.00	0.00	0.00	0.00
1480	2.246	0.007	2.784	0.012	0.11	0.06	0.36	0.21	0.29	0.17	0.12	0.07	0.00	0.00	0.00	0.00
1490	1.104	0.004	1.759	0.008	0.07	0.03	0.22	0.10	0.18	0.08	0.08	0.04	0.00	0.00	0.00	0.00
1500	0.616	0.002	1.045	0.005	0.04	0.02	0.13	0.06	0.11	0.05	0.05	0.02	0.00	0.00	0.00	0.00
1510	0.809	0.003	1.042	0.005	0.04	0.02	0.13	0.08	0.11	0.06	0.05	0.03	0.00	0.00	0.00	0.00
1520	0.736	0.002	0.911	0.004	0.03	0.02	0.12	0.07	0.09	0.06	0.04	0.02	0.00	0.00	0.00	0.00
1530	0.517	0.002	0.563	0.002	0.02	0.01	0.07	0.05	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00
1540	0.428	0.001	0.361	0.002	0.01	0.01	0.05	0.04	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00
1550	0.748	0.002	0.478	0.002	0.02	0.02	0.06	0.07	0.05	0.06	0.02	0.02	0.00	0.00	0.00	0.00
1560	0.851	0.003	0.432	0.002	0.02	0.02	0.06	0.08	0.04	0.06	0.02	0.03	0.00	0.00	0.00	0.00
1570	1.082	0.003	0.635	0.003	0.02	0.03	0.08	0.10	0.07	0.08	0.03	0.04	0.00	0.00	0.00	0.00
1580	1.411	0.004	0.907	0.004	0.03	0.04	0.12	0.13	0.09	0.11	0.04	0.05	0.00	0.00	0.00	0.00
1590	1.791	0.006	1.840	0.008	0.07	0.05	0.24	0.17	0.19	0.14	0.08	0.06	0.00	0.00	0.00	0.00
1600	2.34	0.007	2.864	0.012	0.11	0.06	0.37	0.22	0.30	0.18	0.13	0.08	0.00	0.00	0.00	0.00
1610	2.256	0.007	2.943	0.013	0.11	0.06	0.38	0.21	0.31	0.17	0.13	0.07	0.00	0.00	0.00	0.00
1620	1.221	0.004	2.446	0.011	0.09	0.03	0.31	0.11	0.25	0.09	0.11	0.04	0.00	0.00	0.00	0.00
1630	0.977	0.003	1.995	0.009	0.08	0.03	0.26	0.09	0.21	0.07	0.09	0.03	0.00	0.00	0.00	0.00
1640	1.147	0.004	1.841	0.008	0.07	0.03	0.24	0.11	0.19	0.09	0.08	0.04	0.00	0.00	0.00	0.00
1650	1.037	0.003	1.755	0.008	0.07	0.03	0.22	0.10	0.18	0.08	0.08	0.03	0.00	0.00	0.00	0.00
1660	0.943	0.003	1.686	0.007	0.06	0.03	0.22	0.09	0.17	0.07	0.08	0.03	0.00	0.00	0.00	0.00
1670	1.049	0.003	1.464	0.006	0.06	0.03	0.19	0.10	0.15	0.08	0.07	0.03	0.00	0.00	0.00	0.00
1680	1.148	0.004	1.245	0.005	0.05	0.03	0.16	0.11	0.13	0.09	0.06	0.04	0.00	0.00	0.00	0.00
1690	0.832	0.003	0.779	0.003	0.03	0.02	0.10	0.08	0.08	0.06	0.03	0.03	0.00	0.00	0.00	0.00
1700	1.219	0.004	1.079	0.005	0.04	0.03	0.14	0.11	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00
1710	2.045	0.007	1.975	0.009	0.07	0.06	0.25	0.19	0.20	0.16	0.09	0.07	0.00	0.00	0.00	0.00
1720	1.542	0.005	1.564	0.007	0.06	0.04	0.20	0.14	0.16	0.12	0.07	0.05	0.00	0.00	0.00	0.00
1730	1.368	0.004	1.221	0.005	0.05	0.04	0.16	0.13	0.13	0.10	0.05	0.04	0.00	0.00	0.00	0.00
1740	2.265	0.007	1.904	0.008	0.07	0.06	0.24	0.21	0.20	0.17	0.08	0.07	0.00	0.00	0.00	0.00
1750	1.12	0.004	0.804	0.003	0.03	0.03	0.10	0.10	0.08	0.08	0.04	0.04	0.00	0.00	0.00	0.00
1760	1.237	0.004	0.963	0.004	0.04	0.03	0.12	0.12	0.10	0.09	0.04	0.04	0.00	0.00	0.00	0.00
1770	1.754	0.006	1.557	0.007	0.06	0.05	0.20	0.16	0.16	0.13	0.07	0.06	0.00	0.00	0.00	0.00
1780	1.847	0.006	1.381	0.006	0.05	0.05	0.18	0.17	0.14	0.14	0.06	0.06	0.00	0.00	0.00	0.00
1790	1.946	0.006	1.743	0.008	0.07	0.05	0.22	0.18	0.18	0.15	0.08	0.06	0.00	0.00	0.00	0.00
1800	2.111	0.007	2.135	0.009	0.08	0.06	0.27	0.20	0.22	0.16	0.10	0.07	0.00	0.00	0.00	0.00
1810	1.619	0.005	1.594	0.007	0.06	0.04	0.20	0.15	0.17	0.12	0.07	0.05	0.00	0.00	0.00	0.00
1820	0.9	0.003	0.963	0.004	0.04	0.02	0.12	0.08	0.10	0.07	0.04	0.03	0.00	0.00	0.00	0.00
1830	0.668	0.002	0.686	0.003	0.03	0.02	0.09	0.06	0.07	0.05	0.03	0.02	0.00	0.00	0.00	0.00
1840	0.391	0.001	0.471	0.002	0.02	0.01	0.06	0.04	0.05	0.03	0.02	0.01	0.00	0.00	0.00	0.00
1850	0.514	0.002	0.523	0.002	0.02	0.01	0.07	0.05	0.05	0.04	0.02	0.02	0.00	0.00	0.00	0.00
1860	0.327	0.001	0.376	0.002	0.01	0.01	0.05	0.03	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00
1870	0.261	0.001	0.330	0.001	0.01	0.01	0.04	0.02	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
1880	0.729	0.002	0.645	0.003	0.02	0.02	0.08	0.07	0.07	0.06	0.03	0.02	0.00	0.00	0.00	0.00
1890	1.148	0.004	0.948	0.004	0.04	0.03	0.12	0.11	0.10	0.09	0.04	0.04	0.00	0.00	0.00	0.00
1900	1.21	0.004	1.070	0.005	0.04	0.03	0.14	0.11	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00

SD-620	Seaside Park	0	0	Avg. Net SL	3.94	3.72	1.60	-1.14	0.83	-2.68						
SD-620	189.094	0	325.048	1935			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.089	0.000	0.028	0.000	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
10	1.827	0.010	2.419	0.007	0.35	0.45	0.33	0.43	0.14	0.18	0.00	0.00	0.07	0.10	0.00	0.00
20	2.564	0.014	3.709	0.011	0.54	0.64	0.51	0.60	0.22	0.26	0.00	0.00	0.11	0.13	0.00	0.00
30	2.032	0.011	2.911	0.009	0.42	0.50	0.40	0.48	0.17	0.20	0.00	0.00	0.09	0.11	0.00	0.00
40	1.262	0.007	1.482	0.005	0.21	0.31	0.20	0.30	0.09	0.13	0.00	0.00	0.05	0.07	0.00	0.00
50	1.173	0.006	0.884	0.003	0.13	0.29	0.12	0.28	0.05	0.12	0.00	0.00	0.03	0.06	0.00	0.00
60	1.447	0.008	1.371	0.004	0.20	0.36	0.19	0.34	0.08	0.15	0.00	0.00	0.04	0.08	0.00	0.00
70	2.315	0.012	2.136	0.007	0.31	0.57	0.29	0.54	0.13	0.23	0.00	0.00	0.07	0.12	0.00	0.00
80	2.205	0.012	1.785	0.005	0.26	0.55	0.24	0.52	0.10	0.22	0.00	0.00	0.05	0.12	0.00	0.00
90	2.725	0.014	2.384	0.007	0.34	0.68	0.33	0.64	0.14	0.27	0.00	0.00	0.07	0.14	0.00	0.00
100	3.193	0.017	2.978	0.009	0.43	0.79	0.41	0.75	0.17	0.32	0.00	0.00	0.09	0.17	0.00	0.00
110	2.709	0.014	2.635	0.008	0.38	0.67	0.36	0.64	0.15	0.27	0.00	0.00	0.08	0.14	0.00	0.00
120	2.446	0.013	2.297	0.007	0.33	0.61	0.31	0.57	0.13	0.25	0.00	0.00	0.07	0.13	0.00	0.00
130	2.217	0.012	2.051	0.006	0.30	0.55	0.28	0.52	0.12	0.22	0.00	0.00	0.06	0.12	0.00	0.00
140	2.079	0.011	1.828	0.006	0.26	0.52	0.25	0.49	0.11	0.21	0.00	0.00	0.06	0.11	0.00	0.00
150	1.997	0.011	1.633	0.005	0.24	0.50	0.22	0.47	0.10	0.20	0.00	0.00	0.05	0.10	0.00	0.00
160	1.931	0.010	1.478	0.005	0.21	0.48	0.20	0.45	0.09	0.19	0.00	0.00	0.05	0.10	0.00	0.00
170	1.869	0.010	1.394	0.004	0.20	0.46	0.19	0.44	0.08	0.19	0.00	0.00	0.04	0.10	0.00	0.00
180	1.810	0.010	1.324	0.004	0.19	0.45	0.18	0.42	0.08	0.18	0.00	0.00	0.04	0.09	0.00	0.00
190	1.785	0.009	1.303	0.004	0.19	0.44	0.18	0.42	0.08	0.18	0.00	0.00	0.04	0.09	0.00	0.00
200	1.766	0.009	1.280	0.004	0.18	0.44	0.17	0.41	0.08	0.18	0.00	0.00	0.04	0.09	0.00	0.00
210	1.751	0.009	1.270	0.004	0.18	0.43	0.17	0.41	0.07	0.18	0.00	0.00	0.04	0.09	0.00	0.00
220	1.741	0.009	1.289	0.004	0.19	0.43	0.18	0.41	0.08	0.18	0.00	0.00	0.04	0.09	0.00	0.00
230	1.734	0.009	1.309	0.004	0.19	0.43	0.18	0.41	0.08	0.17	0.00	0.00	0.04	0.09	0.00	0.00
240	1.747	0.009	1.349	0.004	0.19	0.43	0.18	0.41	0.08	0.18	0.00	0.00	0.04	0.09	0.00	0.00
250	1.772	0.009	1.426	0.004	0.21	0.44	0.19	0.42	0.08	0.18	0.00	0.00	0.04	0.09	0.00	0.00
260	1.827	0.010	1.497	0.005	0.22	0.45	0.20	0.43	0.09	0.18	0.00	0.00	0.05	0.10	0.00	0.00
270	1.896	0.010	1.562	0.005	0.23	0.47	0.21	0.44	0.09	0.19	0.00	0.00	0.05	0.10	0.00	0.00
280	1.953	0.010	1.636	0.005	0.24	0.48	0.22	0.46	0.10	0.20	0.00	0.00	0.05	0.10	0.00	0.00
290	2.005	0.011	1.716	0.005	0.25	0.50	0.23	0.47	0.10	0.20	0.00	0.00	0.05	0.10	0.00	0.00
300	2.055	0.011	1.796	0.006	0.26	0.51	0.25	0.48	0.11	0.21	0.00	0.00	0.05	0.11	0.00	0.00
310	2.098	0.011	1.858	0.006	0.27	0.52	0.25	0.49	0.11	0.21	0.00	0.00	0.06	0.11	0.00	0.00
320	2.144	0.011	1.899	0.006	0.27	0.53	0.26	0.50	0.11	0.22	0.00	0.00	0.06	0.11	0.00	0.00
330	2.188	0.012	1.920	0.006	0.28	0.54	0.26	0.51	0.11	0.22	0.00	0.00	0.06	0.11	0.00	0.00
340	2.227	0.012	1.933	0.006	0.28	0.55	0.26	0.52	0.11	0.22	0.00	0.00	0.06	0.12	0.00	0.00
350	2.273	0.012	1.904	0.006	0.27	0.56	0.26	0.53	0.11	0.23	0.00	0.00	0.06	0.12	0.00	0.00
360	2.322	0.012	1.867	0.006	0.27	0.58	0.25	0.54	0.11	0.23	0.00	0.00	0.06	0.12	0.00	0.00
370	2.369	0.013	1.837	0.006	0.27	0.59	0.25	0.56	0.11	0.24	0.00	0.00	0.06	0.12	0.00	0.00
380	2.427	0.013	1.805	0.006	0.26	0.60	0.25	0.57	0.11	0.24	0.00	0.00	0.05	0.13	0.00	0.00
390	2.483	0.013	1.773	0.005	0.26	0.62	0.24	0.58	0.10	0.25	0.00	0.00	0.05	0.13	0.00	0.00
400	2.533	0.013	1.904	0.006	0.27	0.63	0.26	0.59	0.11	0.26	0.00	0.00	0.06	0.13	0.00	0.00
410	2.581	0.014	2.035	0.006	0.29	0.64	0.28	0.61	0.12	0.26	0.00	0.00	0.06	0.14	0.00	0.00
420	2.624	0.014	2.167	0.007	0.31	0.65	0.30	0.62	0.13	0.26	0.00	0.00	0.07	0.14	0.00	0.00
430	2.648	0.014	2.268	0.007	0.33	0.66	0.31	0.62	0.13	0.27	0.00	0.00	0.07	0.14	0.00	0.00
440	2.605	0.014	2.307	0.007	0.33	0.65	0.31	0.61	0.14	0.26	0.00	0.00	0.07	0.14	0.00	0.00
450	2.547	0.013	2.322	0.007	0.34	0.63	0.32	0.60	0.14	0.26	0.00	0.00	0.07	0.13	0.00	0.00
460	2.492	0.013	2.315	0.007	0.33	0.62	0.32	0.58	0.14	0.25	0.00	0.00	0.07	0.13	0.00	0.00
470	2.439	0.013	2.305	0.007	0.33	0.61	0.31	0.57	0.14	0.25	0.00	0.00	0.07	0.13	0.00	0.00
480	2.369	0.013	2.295	0.007	0.33	0.59	0.31	0.56	0.13	0.24	0.00	0.00	0.07	0.12	0.00	0.00
490	2.287	0.012	2.292	0.007	0.33	0.57	0.31	0.54	0.13	0.23	0.00	0.00	0.07	0.12	0.00	0.00
500	2.204	0.012	2.302	0.007	0.33	0.55	0.31	0.52	0.13	0.22	0.00	0.00	0.07	0.12	0.00	0.00
510	2.125	0.011	2.314	0.007	0.33	0.53	0.32	0.50	0.14	0.21	0.00	0.00	0.07	0.11	0.00	0.00
520	2.046	0.011	2.333	0.007	0.34	0.51	0.32	0.48	0.14	0.21	0.00	0.00	0.07	0.11	0.00	0.00
530	1.991	0.011	2.368	0.007	0.34	0.49	0.32	0.47	0.14	0.20	0.00	0.00	0.07	0.10	0.00	0.00
540	1.935	0.010	2.405	0.007	0.35	0.48	0.33	0.45	0.14	0.19	0.00	0.00	0.07	0.10	0.00	0.00
550	1.867	0.010	2.444	0.008	0.35	0.46	0.33	0.44	0.14	0.19	0.00	0.00	0.07	0.10	0.00	0.00
560	1.775	0.009	2.468	0.008	0.36	0.44	0.34	0.42	0.14	0.18	0.00	0.00	0.08	0.09	0.00	0.00
570	1.672	0.009	2.487	0.008	0.36	0.42	0.34	0.39	0.15	0.17	0.00	0.00	0.08	0.09	0.00	0.00
580	1.573	0.008	2.496	0.008	0.36	0.39	0.34	0.37	0.15	0.16	0.00	0.00	0.08	0.08	0.00	0.00
590	1.476	0.008	2.513	0.008	0.36	0.37	0.34	0.35	0.15	0.15	0.00	0.00	0.08	0.08	0.00	0.00
600	1.350	0.007	2.498	0.008	0.36	0.34	0.34	0.32	0.15	0.14	0.00	0.00	0.08	0.07	0.00	0.00
610	1.205	0.006	2.468	0.008	0.36	0.30	0.34	0.28	0.14	0.12	0.00	0.00	0.08	0.06	0.00	0.00
620	1.079	0.006	2.439	0.008	0.35	0.27	0.33	0.25	0.14	0.11	0.00	0.00	0.07	0.06	0.00	0.00
630	0.998	0.005	2.415	0.007	0.35	0.25	0.33	0.23	0.14	0.10	0.00	0.00	0.07	0.05	0.00	0.00
640	1.032	0.005	2.551	0.008	0.37	0.26	0.35	0.24	0.15	0.10	0.00	0.00	0.08	0.05	0.00	0.00
650	1.058	0.006	2.686	0.008	0.39	0.26	0.37	0.25	0.16	0.11	0.00	0.00	0.08	0.06	0.00	0.00
660	1.039	0.005	2.764	0.009	0.40	0.26	0.38	0.24	0.16	0.10	0.00	0.00	0.08	0.05	0.00	0.00
670	1.007	0.005	2.816	0.009	0.41	0.25	0.38	0.24	0.17	0.10	0.00	0.00	0.09	0.05	0.00	0.00
680	1.009	0.005	2.868	0.009	0.41	0.25	0.39	0.24	0.17	0.10	0.00	0.00	0.09	0.05	0.00	0.00
690	1.076	0.006	3.006	0.009	0.43	0.27	0.41	0.25	0.18	0.11	0.00	0.00	0.09	0.06	0.00	0.00
700	1.204	0.006	3.245	0.010	0.47	0.30	0.44	0.28	0.19	0.12	0.00	0.00	0.10	0.06	0.00	0.00
710	1.429	0.008	3.562	0.011	0.51	0.35	0.49	0.34	0.21	0.14	0.00	0.00	0.11	0.07	0.00	0.00
720	1.614	0.009	3.746	0.012	0.54	0.40	0.51	0.38	0.22	0.16	0.00	0.00	0.11	0.08	0.00	0.00
730	1.635	0.009	3.792	0.012	0.55	0.41	0.52	0.38	0.22	0.16	0.00	0.00	0.12	0.09	0.00	0.00
740	1.595	0.008	3.795	0.012	0.55	0.40	0.52	0.37	0.22	0.16	0.00	0.00	0.12	0.08	0.00	0.00
750	1.388	0.007	3.643	0.011	0.53	0.34	0.50	0.33	0.21	0.14	0.00	0.00	0.11	0.07	0.00	0.00
760	1.249	0.007	3.606	0.011	0.52	0.31	0.49	0.29	0.21	0.13	0.00	0.00	0.11	0.07	0.00	0.00
770	1.142	0.006	3.567	0.011	0.52	0.28	0.49	0.27	0.21	0.12	0.00	0.00	0.11	0.06	0.00	0.00
780	1.113	0.006	3.500	0.011	0.51	0.28	0.48	0.26	0.21	0.11	0.00	0.00	0.11	0.06	0.00	0.00
790	1.069	0.006	3.424	0.011	0.49	0.27	0.47	0.25	0.20	0.11	0.00	0.00	0.10	0.06	0.00	0.00
800	0.982	0.005	3.317	0.010	0.48	0.24	0.45	0.23	0.19	0.10	0.00	0.00	0.10	0.05	0.00	0.00
810	1.024	0.005	3.377	0.010	0.49	0.25	0.46	0.24	0.20	0.10	0.00	0.00	0.10	0.05	0.00	0.00
820	1.091	0.006	3.483	0.011	0.50	0.27	0.48	0.26	0.20	0.11	0.00	0.00	0.11	0.06	0.00	0.00
830	1.142	0.006	3.526	0.011	0.51	0.28	0.48	0.27	0.21	0.12	0.00	0.00	0.11	0.06	0.00	0.00
840	1.120	0.006	3.362	0.010	0.49	0.28	0.46	0.26	0.20	0.11	0.00	0.00	0.10	0.06	0.00	0.00
850	1.089	0.006	3.217	0.010	0.46	0.27	0.44	0.26	0.19	0.11	0.00	0.00	0.10	0.06	0.00	0.00
860	1.033	0.005	3.117	0.010	0.45	0.26	0.43	0.24	0.18	0.10	0.00	0.00	0.09	0.05	0.00	0.00
870	0.943	0.005	2.979	0.009	0.43	0.23	0.41	0.22	0.17	0.10	0.00	0.00	0.09	0.05	0.00	0.00
880	0.875	0.005	2.958	0.009	0.43	0.22	0.40	0.21	0.17	0.09	0.00	0.00	0.09	0.05	0.00	0.00
890	0.727	0.004	2.943	0.009	0.43	0.18	0.40	0.17	0.17	0.07	0.00	0.00	0.09	0.04	0.00	0.00
900	0.613	0.003	2.927	0.009	0.42	0.15	0.40	0.14	0.17	0.06	0.00	0.00	0.09	0.03	0.00	0.00
910	0.673	0.004	3.005	0.009	0.43	0.17	0.41	0.16	0.18	0.07	0.00	0.00	0.09	0.04	0.00	0.00
920	0.676	0.004	3.019	0.009	0.44	0.17	0.41	0.16	0.18	0.07	0.00	0.00	0.09	0.04	0.00	0.00
930	0.694	0.004	3.091	0.010	0.45	0.17	0.42	0.16	0.18	0.07	0.00	0.00	0.09	0.04	0.00	0.00
940	0.638	0.003	3.116	0.010	0.45	0.16	0.43	0.15	0.18	0.06	0.00	0.00	0.09	0.03	0.00	0.00
950	0.558	0.003	3.076	0.009	0.44	0.14	0.42	0.13	0.18	0.06	0.00	0.00	0.09	0.03	0.00	0.00
960	0.513	0.003	2.824	0.009	0.41	0.13	0.39	0.12	0.17	0.05	0.00	0.00	0.09	0.03	0.00	0.00
970	0.465	0.002	2.540	0.008	0.37	0.12	0.35	0.11	0.15	0.05	0.00	0.00	0.08	0.02	0.00	0.00
980	0.433	0.002	2.284	0.007	0.33	0.11	0.31	0.10	0.13	0.04	0.00	0.00	0.07	0.02	0.00	0.00
990	0.430	0.002	2.202	0.007	0.32	0.11	0.30	0.10	0.13	0.04	0.00	0.00	0.07	0.02	0.00	0.00
1000	0.426	0.002	1.888	0.006	0.27	0.11	0.26	0.10	0.11	0.04	0.00	0.00	0.06	0.02	0.00	0.00
1010	0.423	0.002	1.694	0.005	0.24	0.10	0.23	0.10	0.10	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1020	0.419	0.002	1.744	0.005	0.25	0.10	0.24	0.10	0.10	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1030	0.416	0.002	1.685	0.005	0.24	0.10	0.23	0.10	0.10	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1040	0.412	0.002	1.667	0.005	0.24	0.10	0.23	0.10	0.10	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1050	0.409	0.002	1.649	0.005	0.24	0.10	0.23	0.10	0.10	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1060	0.405	0.002	1.631	0.005	0.24	0.10	0.22	0.09	0.10	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1070	0.402	0.002	1.613	0.005	0.23	0.10	0.22	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1080	0.398	0.002	1.595	0.005	0.23	0.10	0.22	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1090	0.395	0.002	1.577	0.005	0.23	0.10	0.22	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1100	0.391	0.002	1.559	0.005	0.23	0.10	0.21	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1110	0.388	0.002	1.541	0.005	0.22	0.10	0.21	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1120	0.384	0.002	1.523	0.005	0.22	0.10	0.21	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1130	0.381	0.002	1.505	0.005	0.22	0.09	0.21	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1140	0.377	0.002	1.487	0.005	0.21	0.09	0.20	0.09	0.09	0.04	0.00	0.00	0.05	0.02	0.00	0.00
1150	0.374	0.002	1.469	0.005	0.21	0.09	0.20	0.09	0.09	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1160	0.370	0.002	1.451	0.004	0.21	0.09	0.20	0.09	0.09	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1170	0.367	0.002	1.433	0.004	0.21	0.09	0.20	0.09	0.08	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1180	0.363	0.002	1.415	0.004	0.20	0.09	0.19	0.09	0.08	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1190	0.360	0.002	1.397	0.004	0.20	0.09	0.19	0.08	0.08	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1200	0.356	0.002	1.379	0.004	0.20	0.09	0.19	0.08	0.08	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1210	0.353	0.002	1.361	0.004	0.20	0.09	0.19	0.08	0.08	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1220	0.349	0.002	1.343	0.004	0.19	0.09	0.18	0.08	0.08	0.04	0.00	0.00	0.04	0.02	0.00	0.00
1230	0.346	0.002	1.325	0.004	0.19	0.09	0.18	0.08	0.08	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1240	0.342	0.002	1.307	0.004	0.19	0.08	0.18	0.08	0.08	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1250	0.339	0.002	1.289	0.004	0.19	0.08	0.18	0.08	0.08	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1260	0.335	0.002	1.271	0.004	0.18	0.08	0.17	0.08	0.07	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1270	0.332	0.002	1.253	0.004	0.18	0.08	0.17	0.08	0.07	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1280	0.328	0.002	1.235	0.004	0.18	0.08	0.17	0.08	0.07	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1290	0.325	0.002	1.217	0.004	0.18	0.08	0.17	0.08	0.07	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1300	0.321	0.002	1.199	0.004	0.17	0.08	0.16	0.08	0.07	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1310	0.318	0.002	1.181	0.004	0.17	0.08	0.16	0.07	0.07	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1320	0.314	0.002	1.163	0.004	0.17	0.08	0.16	0.07	0.07	0.03	0.00	0.00	0.04	0.02	0.00	0.00
1330	0.311	0.002	1.145	0.004	0.17	0.08	0.16	0.07	0.07	0.03	0.00	0.00	0.03	0.02	0.00	0.00
1340	0.307	0.002	1.127	0.003	0.16	0.08	0.15	0.07	0.07	0.03	0.00	0.00	0.03	0.02	0.00	0.00
1350	0.304	0.002	1.109	0.003	0.16	0.08	0.15	0.07	0.06	0.03	0.00	0.00	0.03	0.02	0.00	0.00
1360	0.300	0.002	1.091	0.003	0.16	0.07	0.15	0.07	0.06	0.03	0.00	0.00	0.03	0.02	0.00	0.00
1370	0.297	0.002	1.073	0.003	0.15	0.07	0.15	0.07	0.06	0.03	0.00	0.00	0.03	0.02	0.00	0.00
1380	0.293	0.002	1.055	0.003	0.15	0.07	0.14	0.07	0.06	0.03	0.00	0.00	0.03	0.02	0.00	0.00
1390	0.290	0.002	1.037	0.003	0.15	0.07	0.14	0.07	0.06	0.03	0.00	0.00	0.03	0.02	0.00	0.00
1400	0.286	0.002	1.019	0.003	0.15	0.07	0.14	0.07	0.06	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1410	0.283	0.001	1.001	0.003	0.14	0.07	0.14	0.07	0.06	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1420	0.279	0.001	0.983	0.003	0.14	0.07	0.13	0.07	0.06	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1430	0.276	0.001	0.965	0.003	0.14	0.07	0.13	0.06	0.06	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1440	0.272	0.001	0.947	0.003	0.14	0.07	0.13	0.06	0.06	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1450	0.269	0.001	0.929	0.003	0.13	0.07	0.13	0.06	0.05	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1460	0.265	0.001	0.911	0.003	0.13	0.07	0.12	0.06	0.05	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1470	0.262	0.001	0.893	0.003	0.13	0.06	0.12	0.06	0.05	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1480	0.258	0.001	0.875	0.003	0.13	0.06	0.12	0.06	0.05	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1490	0.255	0.001	0.857	0.003	0.12	0.06	0.12	0.06	0.05	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1500	0.251	0.001	0.839	0.003	0.12	0.06	0.11	0.06	0.05	0.03	0.00	0.00	0.03	0.01	0.00	0.00
1510	0.248	0.001	0.821	0.003	0.12	0.06	0.11	0.06	0.05	0.02	0.00	0.00	0.03	0.01	0.00	0.00
1520	0.244	0.001	0.803	0.002	0.12	0.06	0.11	0.06	0.05	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1530	0.241	0.001	0.785	0.002	0.11	0.06	0.11	0.06	0.05	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1540	0.237	0.001	0.767	0.002	0.11	0.06	0.10	0.06	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1550	0.234	0.001	0.749	0.002	0.11	0.06	0.10	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1560	0.230	0.001	0.731	0.002	0.11	0.06	0.10	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1570	0.227	0.001	0.713	0.002	0.10	0.06	0.10	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1580	0.223	0.001	0.695	0.002	0.10	0.06	0.09	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1590	0.220	0.001	0.677	0.002	0.10	0.05	0.09	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1600	0.216	0.001	0.659	0.002	0.10	0.05	0.09	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1610	0.213	0.001	0.641	0.002	0.09	0.05	0.09	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1620	0.209	0.001	0.623	0.002	0.09	0.05	0.09	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1630	0.206	0.001	0.605	0.002	0.09	0.05	0.08	0.05	0.04	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1640	0.202	0.001	0.587	0.002	0.08	0.05	0.08	0.05	0.03	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1650	0.199	0.001	0.569	0.002	0.08	0.05	0.08	0.05	0.03	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1660	0.195	0.001	0.551	0.002	0.08	0.05	0.08	0.05	0.03	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1670	0.192	0.001	0.533	0.002	0.08	0.05	0.07	0.04	0.03	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1680	0.188	0.001	0.515	0.002	0.07	0.05	0.07	0.04	0.03	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1690	0.185	0.001	0.497	0.002	0.07	0.05	0.07	0.04	0.03	0.02	0.00	0.00	0.02	0.01	0.00	0.00
1700	0.181	0.001	0.479	0.001	0.07	0.04	0.07	0.04	0.03	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1710	0.178	0.001	0.461	0.001	0.07	0.04	0.06	0.04	0.03	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1720	0.174	0.001	0.443	0.001	0.06	0.04	0.06	0.04	0.03	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1730	0.171	0.001	0.425	0.001	0.06	0.04	0.06	0.04	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1740	0.167	0.001	0.407	0.001	0.06	0.04	0.06	0.04	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1750	0.164	0.001	0.389	0.001	0.06	0.04	0.05	0.04	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1760	0.160	0.001	0.371	0.001	0.05	0.04	0.05	0.04	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1770	0.157	0.001	0.353	0.001	0.05	0.04	0.05	0.04	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1780	0.153	0.001	0.335	0.001	0.05	0.04	0.05	0.04	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1790	0.150	0.001	0.317	0.001	0.05	0.04	0.04	0.04	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00
1800	0.146	0.001	0.299	0.001	0.04	0.04	0.04	0.03	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1810	0.143	0.001	0.281	0.001	0.04	0.04	0.04	0.03	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1820	0.139	0.001	0.263	0.001	0.04	0.03	0.04	0.03	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1830	0.136	0.001	0.245	0.001	0.04	0.03	0.03	0.03	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1840	0.132	0.001	0.227	0.001	0.03	0.03	0.03	0.03	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1850	0.129	0.001	0.209	0.001	0.03	0.03	0.03	0.03	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1860	0.125	0.001	0.191	0.001	0.03	0.03	0.03	0.03	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1870	0.122	0.001	0.173	0.001	0.02	0.03	0.02	0.03	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
1880	0.118	0.001	0.155	0.000	0.02	0.03	0.02	0.03	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
1890	0.115	0.001	0.137	0.000	0.02	0.03	0.02	0.03	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
1900	0.111	0.001	0.119	0.000	0.02	0.03	0.02	0.03	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
1910	0.108	0.001	0.101	0.000	0.01	0.03	0.01	0.03	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
1920	0.104	0.001	0.083	0.000	0.01	0.03	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
1930	0.101	0.001	0.065	0.000	0.01	0.02	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
1940	0.097	0.001	0.047	0.000	0.01	0.02	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00

SD-625	San Elijo	0	0	Avg. Net Sl	9.38	3.89	0.20	-3.71	5.61	-2.66						
SD-625	278.039	0	308.566	1800			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.221	0.001	0.316	0.001	0.11	0.09	0.05	0.04	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
10	1.978	0.007	2.904	0.009	1.05	0.80	0.44	0.33	0.02	0.02	0.00	0.00	0.63	0.48	0.00	0.00
20	2.906	0.010	2.985	0.010	1.08	1.17	0.45	0.48	0.02	0.02	0.00	0.00	0.65	0.70	0.00	0.00
30	1.755	0.006	1.517	0.005	0.55	0.71	0.23	0.29	0.01	0.01	0.00	0.00	0.33	0.42	0.00	0.00
40	2.335	0.008	1.527	0.005	0.55	0.94	0.23	0.39	0.01	0.02	0.00	0.00	0.33	0.56	0.00	0.00
50	2.300	0.008	1.113	0.004	0.40	0.92	0.17	0.38	0.01	0.02	0.00	0.00	0.24	0.55	0.00	0.00
60	2.676	0.010	0.825	0.003	0.30	1.08	0.12	0.45	0.01	0.02	0.00	0.00	0.18	0.64	0.00	0.00
70	4.186	0.015	2.188	0.007	0.79	1.68	0.33	0.70	0.02	0.04	0.00	0.00	0.47	1.01	0.00	0.00
80	4.817	0.017	2.734	0.009	0.99	1.94	0.41	0.80	0.02	0.04	0.00	0.00	0.59	1.16	0.00	0.00
90	5.257	0.019	3.058	0.010	1.11	2.11	0.46	0.88	0.02	0.04	0.00	0.00	0.66	1.27	0.00	0.00
100	5.526	0.020	3.406	0.011	1.23	2.22	0.51	0.92	0.03	0.05	0.00	0.00	0.74	1.33	0.00	0.00
110	5.121	0.018	3.220	0.010	1.17	2.06	0.48	0.85	0.02	0.04	0.00	0.00	0.70	1.23	0.00	0.00
120	4.646	0.017	2.872	0.009	1.04	1.87	0.43	0.78	0.02	0.04	0.00	0.00	0.62	1.12	0.00	0.00
130	4.190	0.015	2.558	0.008	0.93	1.68	0.38	0.70	0.02	0.04	0.00	0.00	0.55	1.01	0.00	0.00
140	3.802	0.014	2.384	0.008	0.86	1.53	0.36	0.63	0.02	0.03	0.00	0.00	0.52	0.92	0.00	0.00
150	3.521	0.013	2.245	0.007	0.81	1.42	0.34	0.59	0.02	0.03	0.00	0.00	0.49	0.85	0.00	0.00
160	3.269	0.012	2.132	0.007	0.77	1.31	0.32	0.55	0.02	0.03	0.00	0.00	0.46	0.79	0.00	0.00
170	3.061	0.011	2.058	0.007	0.75	1.23	0.31	0.51	0.02	0.03	0.00	0.00	0.45	0.74	0.00	0.00
180	2.898	0.010	2.030	0.007	0.74	1.17	0.31	0.48	0.02	0.02	0.00	0.00	0.44	0.70	0.00	0.00
190	2.778	0.010	2.018	0.007	0.73	1.12	0.30	0.46	0.02	0.02	0.00	0.00	0.44	0.67	0.00	0.00
200	2.667	0.010	2.006	0.007	0.73	1.07	0.30	0.44	0.02	0.02	0.00	0.00	0.44	0.64	0.00	0.00
210	2.578	0.009	1.991	0.006	0.72	1.04	0.30	0.43	0.02	0.02	0.00	0.00	0.43	0.62	0.00	0.00
220	2.530	0.009	1.954	0.006	0.71	1.02	0.29	0.42	0.01	0.02	0.00	0.00	0.42	0.61	0.00	0.00
230	2.496	0.009	1.917	0.006	0.69	1.00	0.29	0.42	0.01	0.02	0.00	0.00	0.42	0.60	0.00	0.00
240	2.483	0.009	1.874	0.006	0.68	1.00	0.28	0.41	0.01	0.02	0.00	0.00	0.41	0.60	0.00	0.00
250	2.476	0.009	1.797	0.006	0.65	1.00	0.27	0.41	0.01	0.02	0.00	0.00	0.39	0.60	0.00	0.00
260	2.480	0.009	1.678	0.005	0.61	1.00	0.25	0.41	0.01	0.02	0.00	0.00	0.36	0.60	0.00	0.00
270	2.418	0.009	1.483	0.005	0.54	0.97	0.22	0.40	0.01	0.02	0.00	0.00	0.32	0.58	0.00	0.00
280	2.346	0.008	1.276	0.004	0.46	0.94	0.19	0.39	0.01	0.02	0.00	0.00	0.28	0.56	0.00	0.00
290	2.272	0.008	1.129	0.004	0.41	0.91	0.17	0.38	0.01	0.02	0.00	0.00	0.24	0.55	0.00	0.00
300	2.186	0.008	1.117	0.004	0.40	0.88	0.17	0.36	0.01	0.02	0.00	0.00	0.24	0.53	0.00	0.00
310	2.098	0.008	1.078	0.003	0.39	0.84	0.16	0.35	0.01	0.02	0.00	0.00	0.23	0.50	0.00	0.00
320	2.034	0.007	1.061	0.003	0.38	0.82	0.16	0.34	0.01	0.02	0.00	0.00	0.23	0.49	0.00	0.00
330	2.172	0.008	1.247	0.004	0.45	0.87	0.19	0.36	0.01	0.02	0.00	0.00	0.27	0.52	0.00	0.00
340	2.438	0.009	1.554	0.005	0.56	0.98	0.23	0.41	0.01	0.02	0.00	0.00	0.34	0.59	0.00	0.00
350	2.702	0.010	1.764	0.006	0.64	1.09	0.27	0.45	0.01	0.02	0.00	0.00	0.38	0.65	0.00	0.00
360	2.956	0.011	1.867	0.006	0.68	1.19	0.28	0.49	0.01	0.02	0.00	0.00	0.40	0.71	0.00	0.00
370	3.107	0.011	1.854	0.006	0.67	1.25	0.28	0.52	0.01	0.03	0.00	0.00	0.40	0.75	0.00	0.00
380	3.092	0.011	1.709	0.006	0.62	1.24	0.26	0.52	0.01	0.03	0.00	0.00	0.37	0.74	0.00	0.00
390	3.066	0.011	1.633	0.005	0.59	1.23	0.25	0.51	0.01	0.03	0.00	0.00	0.35	0.74	0.00	0.00
400	3.040	0.011	1.585	0.005	0.57	1.22	0.24	0.51	0.01	0.03	0.00	0.00	0.34	0.73	0.00	0.00
410	2.930	0.011	1.558	0.005	0.56	1.18	0.23	0.49	0.01	0.02	0.00	0.00	0.34	0.71	0.00	0.00
420	2.713	0.010	1.472	0.005	0.53	1.09	0.22	0.45	0.01	0.02	0.00	0.00	0.32	0.65	0.00	0.00
430	2.507	0.009	1.458	0.005	0.53	1.01	0.22	0.42	0.01	0.02	0.00	0.00	0.32	0.60	0.00	0.00
440	2.326	0.008	1.484	0.005	0.54	0.94	0.22	0.39	0.01	0.02	0.00	0.00	0.32	0.56	0.00	0.00
450	2.467	0.009	1.870	0.006	0.68	0.99	0.28	0.41	0.01	0.02	0.00	0.00	0.41	0.59	0.00	0.00
460	2.694	0.010	2.354	0.008	0.85	1.08	0.35	0.45	0.02	0.02	0.00	0.00	0.51	0.65	0.00	0.00
470	2.992	0.011	2.903	0.009	1.05	1.20	0.44	0.50	0.02	0.03	0.00	0.00	0.63	0.72	0.00	0.00
480	3.267	0.012	3.411	0.011	1.24	1.31	0.51	0.55	0.03	0.03	0.00	0.00	0.74	0.79	0.00	0.00
490	3.522	0.013	3.886	0.013	1.41	1.42	0.58	0.59	0.03	0.03	0.00	0.00	0.84	0.85	0.00	0.00
500	3.749	0.013	4.302	0.014	1.56	1.51	0.65	0.63	0.03	0.03	0.00	0.00	0.93	0.90	0.00	0.00
510	3.839	0.014	4.637	0.015	1.68	1.54	0.70	0.64	0.03	0.03	0.00	0.00	1.01	0.92	0.00	0.00
520	3.689	0.013	4.695	0.015	1.70	1.48	0.71	0.62	0.04	0.03	0.00	0.00	1.02	0.89	0.00	0.00
530	3.506	0.013	4.732	0.015	1.71	1.41	0.71	0.58	0.04	0.03	0.00	0.00	1.03	0.84	0.00	0.00
540	3.300	0.012	4.737	0.015	1.72	1.33	0.71	0.55	0.04	0.03	0.00	0.00	1.03	0.79	0.00	0.00
550	3.097	0.011	4.719	0.015	1.71	1.25	0.71	0.52	0.04	0.03	0.00	0.00	1.02	0.75	0.00	0.00
560	2.916	0.010	4.702	0.015	1.70	1.17	0.71	0.49	0.04	0.02	0.00	0.00	1.02	0.70	0.00	0.00
570	2.736	0.010	4.695	0.015	1.70	1.10	0.71	0.46	0.04	0.02	0.00	0.00	1.02	0.66	0.00	0.00
580	2.596	0.009	4.605	0.015	1.67	1.04	0.69	0.43	0.03	0.02	0.00	0.00	1.00	0.62	0.00	0.00
590	2.555	0.009	4.516	0.015	1.64	1.03	0.68	0.43	0.03	0.02	0.00	0.00	0.98	0.61	0.00	0.00
600	2.499	0.009	4.440	0.014	1.61	1.00	0.67	0.42	0.03	0.02	0.00	0.00	0.96	0.60	0.00	0.00
610	2.441	0.009	4.373	0.014	1.58	0.98	0.66	0.41	0.03	0.02	0.00	0.00	0.95	0.59	0.00	0.00
620	2.398	0.009	4.280	0.014	1.55	0.96	0.64	0.40	0.03	0.02	0.00	0.00	0.93	0.58	0.00	0.00
630	2.356	0.008	4.254	0.014	1.54	0.95	0.64	0.39	0.03	0.02	0.00	0.00	0.92	0.57	0.00	0.00
640	2.318	0.008	4.236	0.014	1.53	0.93	0.64	0.39	0.03	0.02	0.00	0.00	0.92	0.56	0.00	0.00
650	2.276	0.008	4.223	0.014	1.53	0.92	0.63	0.38	0.03	0.02	0.00	0.00	0.92	0.55	0.00	0.00
660	2.163	0.008	4.140	0.013	1.50	0.87	0.62	0.36	0.03	0.02	0.00	0.00	0.90	0.52	0.00	0.00
670	2.007	0.007	4.017	0.013	1.46	0.81	0.60	0.33	0.03	0.02	0.00	0.00	0.87	0.48	0.00	0.00
680	1.857	0.007	3.918	0.013	1.42	0.75	0.59	0.31	0.03	0.02	0.00	0.00	0.85	0.45	0.00	0.00
690	1.716	0.006	3.845	0.012	1.39	0.69	0.58	0.29	0.03	0.01	0.00	0.00	0.83	0.41	0.00	0.00
700	1.598	0.006	3.778	0.012	1.37	0.64	0.57	0.27	0.03	0.01	0.00	0.00	0.82	0.38	0.00	0.00
710	1.521	0.005	3.633	0.012	1.32	0.61	0.55	0.25	0.03	0.01	0.00	0.00	0.79	0.37	0.00	0.00
720	1.432	0.005	3.521	0.011	1.28	0.58	0.53	0.24	0.03	0.01	0.00	0.00	0.76	0.34	0.00	0.00
730	1.375	0.005	3.399	0.011	1.23	0.55	0.51	0.23	0.03	0.01	0.00	0.00	0.74	0.33	0.00	0.00
740	1.342	0.005	3.311	0.011	1.20	0.54	0.50	0.22	0.02	0.01	0.00	0.00	0.72	0.32	0.00	0.00
750	1.312	0.005	3.304	0.011	1.20	0.53	0.50	0.22	0.02	0.01	0.00	0.00	0.72	0.32	0.00	0.00
760	1.289	0.005	3.236	0.010	1.17	0.52	0.49	0.22	0.02	0.01	0.00	0.00	0.70	0.31	0.00	0.00
770	1.270	0.005	3.152	0.010	1.14	0.51	0.47	0.21	0.02	0.01	0.00	0.00	0.68	0.31	0.00	0.00
780	1.278	0.005	3.050	0.010	1.10	0.51	0.46	0.21	0.02	0.01	0.00	0.00	0.66	0.31	0.00	0.00
790	1.286	0.005	2.971	0.010	1.08	0.52	0.45	0.21	0.02	0.01	0.00	0.00	0.64	0.31	0.00	0.00
800	1.321	0.005	2.955	0.010	1.07	0.53	0.44	0.22	0.02	0.01	0.00	0.00	0.64	0.32	0.00	0.00
810	1.368	0.005	2.895	0.009	1.05	0.55	0.44	0.23	0.02	0.01	0.00	0.00	0.63	0.33	0.00	0.00
820	1.399	0.005	2.813	0.009	1.02	0.56	0.42	0.23	0.02	0.01	0.00	0.00	0.61	0.34	0.00	0.00
830	1.427	0.005	2.733	0.009	0.99	0.57	0.41	0.24	0.02	0.01	0.00	0.00	0.59	0.34	0.00	0.00
840	1.419	0.005	2.633	0.009	0.95	0.57	0.40	0.24	0.02	0.01	0.00	0.00	0.57	0.34	0.00	0.00
850	1.371	0.005	2.529	0.008	0.92	0.55	0.38	0.23	0.02	0.01	0.00	0.00	0.55	0.33	0.00	0.00
860	1.341	0.005	2.459	0.008	0.89	0.54	0.37	0.22	0.02	0.01	0.00	0.00	0.53	0.32	0.00	0.00
870	1.331	0.005	2.366	0.008	0.86	0.54	0.36	0.22	0.02	0.01	0.00	0.00	0.51	0.32	0.00	0.00
880	1.303	0.005	2.323	0.008	0.84	0.52	0.35	0.22	0.02	0.01	0.00	0.00	0.50	0.31	0.00	0.00
890	1.255	0.005	2.265	0.007	0.82	0.50	0.34	0.21	0.02	0.01	0.00	0.00	0.49	0.30	0.00	0.00
900	1.311	0.005	2.228	0.007	0.81	0.53	0.33	0.22	0.02	0.01	0.00	0.00	0.48	0.32	0.00	0.00
910	1.315	0.005	2.228	0.007	0.81	0.53	0.33	0.22	0.02	0.01	0.00	0.00	0.48	0.32	0.00	0.00
920	1.274	0.005	2.265	0.007	0.82	0.51	0.34	0.21	0.02	0.01	0.00	0.00	0.49	0.31	0.00	0.00
930	1.301	0.005	2.266	0.007	0.82	0.52	0.34	0.22	0.02	0.01	0.00	0.00	0.49	0.31	0.00	0.00
940	1.307	0.005	2.178	0.007	0.79	0.53	0.33	0.22	0.02	0.01	0.00	0.00	0.47	0.31	0.00	0.00
950	1.298	0.005	2.030	0.007	0.74	0.52	0.31	0.22	0.02	0.01	0.00	0.00	0.44	0.31	0.00	0.00
960	1.295	0.005	1.904	0.006	0.69	0.52	0.29	0.22	0.01	0.01	0.00	0.00	0.41	0.31	0.00	0.00
970	1.285	0.005	1.817	0.006	0.66	0.52	0.27	0.21	0.01	0.01	0.00	0.00	0.39	0.31	0.00	0.00
980	1.257	0.005	1.739	0.006	0.63	0.51	0.26	0.21	0.01	0.01	0.00	0.00	0.38	0.30	0.00	0.00
990	1.203	0.004	1.670	0.005	0.60	0.48	0.25	0.20	0.01	0.01	0.00	0.00	0.36	0.29	0.00	0.00
1000	1.164	0.004	1.622	0.005	0.59	0.47	0.24	0.19	0.01	0.01	0.00	0.00	0.35	0.28	0.00	0.00
1010	1.156	0.004	1.475	0.005	0.53	0.46	0.22	0.19	0.01	0.01	0.00	0.00	0.32	0.28	0.00	0.00
1020	1.122	0.004	1.318	0.004	0.48	0.45	0.20	0.19	0.01	0.01	0.00	0.00	0.29	0.27	0.00	0.00
1030	1.095	0.004	1.235	0.004	0.45	0.44	0.19	0.18	0.01	0.01	0.00	0.00	0.27	0.26	0.00	0.00
1040	1.091	0.004	1.156	0.004	0.42	0.44	0.17	0.18	0.01	0.01	0.00	0.00	0.25	0.26	0.00	0.00
1050	1.038	0.004	1.096	0.004	0.40	0.42	0.16	0.17	0.01	0.01	0.00	0.00	0.24	0.25	0.00	0.00
1060	0.968	0.003	1.034	0.003	0.37	0.39	0.16	0.16	0.01	0.01	0.00	0.00	0.22	0.23	0.00	0.00
1070	0.943	0.003	0.970	0.003	0.35	0.38	0.15	0.16	0.01	0.01	0.00	0.00	0.21	0.23	0.00	0.00
1080	0.931	0.003	0.940	0.003	0.34	0.37	0.14	0.16	0.01	0.01	0.00	0.00	0.20	0.22	0.00	0.00
1090	0.872	0.003	0.911	0.003	0.33	0.35	0.14	0.15	0.01	0.01	0.00	0.00	0.20	0.21	0.00	0.00
1100	0.827	0.003	0.893	0.003	0.32	0.33	0.13	0.14	0.01	0.01	0.00	0.00	0.19	0.20	0.00	0.00
1110	0.774	0.003	0.884	0.003	0.32	0.31	0.13	0.13	0.01	0.01	0.00	0.00	0.19	0.19	0.00	0.00
1120	0.772	0.003	0.908	0.003	0.33	0.31	0.14	0.13	0.01	0.01	0.00	0.00	0.20	0.19	0.00	0.00
1130	0.725	0.003	0.794	0.003	0.29	0.29	0.12	0.12	0.01	0.01	0.00	0.00	0.17	0.17	0.00	0.00
1140	0.669	0.002	0.724	0.002	0.26	0.27	0.11	0.11	0.01	0.01	0.00	0.00	0.16	0.16	0.00	0.00
1150	0.681	0.002	0.764	0.002	0.28	0.27	0.11	0.11	0.01	0.01	0.00	0.00	0.17	0.16	0.00	0.00
1160	0.671	0.002	0.753	0.002	0.27	0.27	0.11	0.11	0.01	0.01	0.00	0.00	0.16	0.16	0.00	0.00
1170	0.661	0.002	0.742	0.002	0.27	0.27	0.11	0.11	0.01	0.01	0.00	0.00	0.16	0.16	0.00	0.00
1180	0.651	0.002	0.731	0.002	0.26	0.26	0.11	0.11	0.01	0.01	0.00	0.00	0.16	0.16	0.00	0.00
1190	0.641	0.002	0.720	0.002	0.26	0.26	0.11	0.11	0.01	0.01	0.00	0.00	0.16	0.15	0.00	0.00
1200	0.631	0.002	0.709	0.002	0.26	0.25	0.11	0.11	0.01	0.01	0.00	0.00	0.15	0.15	0.00	0.00
1210	0.621	0.002	0.698	0.002	0.25	0.25	0.10	0.10	0.01	0.01	0.00	0.00	0.15	0.15	0.00	0.00
1220	0.611	0.002	0.687	0.002	0.25	0.25	0.10	0.10	0.01	0.01	0.00	0.00	0.15	0.15	0.00	0.00
1230	0.601	0.002	0.676	0.002	0.24	0.24	0.10	0.10	0.01	0.01	0.00	0.00	0.15	0.14	0.00	0.00
1240	0.591	0.002	0.665	0.002	0.24	0.24	0.10	0.10	0.01	0.00	0.00	0.00	0.14	0.14	0.00	0.00
1250	0.581	0.002	0.654	0.002	0.24	0.23	0.10	0.10	0.00	0.00	0.00	0.00	0.14	0.14	0.00	0.00
1260	0.571	0.002	0.643	0.002	0.23	0.23	0.10	0.10	0.00	0.00	0.00	0.00	0.14	0.14	0.00	0.00
1270	0.561	0.002	0.632	0.002	0.23	0.23	0.10	0.09	0.00	0.00	0.00	0.00	0.14	0.14	0.00	0.00
1280	0.551	0.002	0.621	0.002	0.22	0.22	0.09	0.09	0.00	0.00	0.00	0.00	0.13	0.13	0.00	0.00
1290	0.541	0.002	0.610	0.002	0.22	0.22	0.09	0.09	0.00	0.00	0.00	0.00	0.13	0.13	0.00	0.00
1300	0.531	0.002	0.599	0.002	0.22	0.21	0.09	0.09	0.00	0.00	0.00	0.00	0.13	0.13	0.00	0.00
1310	0.521	0.002	0.588	0.002	0.21	0.21	0.09	0.09	0.00	0.00	0.00	0.00	0.13	0.13	0.00	0.00
1320	0.511	0.002	0.577	0.002	0.21	0.21	0.09	0.09	0.00	0.00	0.00	0.00	0.13	0.12	0.00	0.00
1330	0.501	0.002	0.566	0.002	0.21	0.20	0.09	0.08	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00
1340	0.491	0.002	0.555	0.002	0.20	0.20	0.08	0.08	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00
1350	0.481	0.002	0.544	0.002	0.20	0.19	0.08	0.08	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00
1360	0.471	0.002	0.533	0.002	0.19	0.19	0.08	0.08	0.00	0.00	0.00	0.00	0.12	0.11	0.00	0.00
1370	0.461	0.002	0.522	0.002	0.19	0.19	0.08	0.08	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.00
1380	0.451	0.002	0.511	0.002	0.19	0.18	0.08	0.08	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.00
1390	0.441	0.002	0.500	0.002	0.18	0.18	0.08	0.07	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.00
1400	0.431	0.002	0.489	0.002	0.18	0.17	0.07	0.07	0.00	0.00	0.00	0.00	0.11	0.10	0.00	0.00
1410	0.421	0.002	0.478	0.002	0.17	0.17	0.07	0.07	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00
1420	0.411	0.001	0.467	0.002	0.17	0.17	0.07	0.07	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00
1430	0.401	0.001	0.456	0.001	0.17	0.16	0.07	0.07	0.00	0.00	0.00	0.00	0.10	0.10	0.00	0.00
1440	0.391	0.001	0.445	0.001	0.16	0.16	0.07	0.07	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1450	0.381	0.001	0.434	0.001	0.16	0.15	0.07	0.06	0.00	0.00	0.00	0.00	0.09	0.09	0.00	0.00
1460	0.371	0.001	0.423	0.001	0.15	0.15	0.06	0.06	0.00	0.00	0.00	0.00	0.09	0.09	0.00	0.00
1470	0.361	0.001	0.412	0.001	0.15	0.15	0.06	0.06	0.00	0.00	0.00	0.00	0.09	0.09	0.00	0.00
1480	0.351	0.001	0.401	0.001	0.15	0.14	0.06	0.06	0.00	0.00	0.00	0.00	0.09	0.08	0.00	0.00
1490	0.341	0.001	0.390	0.001	0.14	0.14	0.06	0.06	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00
1500	0.331	0.001	0.379	0.001	0.14	0.13	0.06	0.06	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00
1510	0.321	0.001	0.368	0.001	0.13	0.13	0.06	0.05	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00
1520	0.311	0.001	0.357	0.001	0.13	0.13	0.05	0.05	0.00	0.00	0.00	0.00	0.08	0.07	0.00	0.00
1530	0.301	0.001	0.346	0.001	0.13	0.12	0.05	0.05	0.00	0.00	0.00	0.00	0.08	0.07	0.00	0.00
1540	0.291	0.001	0.335	0.001	0.12	0.12	0.05	0.05	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00
1550	0.281	0.001	0.324	0.001	0.12	0.11	0.05	0.05	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00
1560	0.271	0.001	0.313	0.001	0.11	0.11	0.05	0.05	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00
1570	0.261	0.001	0.302	0.001	0.11	0.10	0.05	0.04	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.00
1580	0.251	0.001	0.291	0.001	0.11	0.10	0.04	0.04	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.00
1590	0.241	0.001	0.280	0.001	0.10	0.10	0.04	0.04	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.00
1600	0.231	0.001	0.269	0.001	0.10	0.09	0.04	0.04	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.00
1610	0.221	0.001	0.258	0.001	0.09	0.09	0.04	0.04	0.00	0.00	0.00	0.00	0.06	0.05	0.00	0.00
1620	0.211	0.001	0.247	0.001	0.09	0.08	0.04	0.04	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00
1630	0.201	0.001	0.236	0.001	0.09	0.08	0.04	0.03	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00
1640	0.191	0.001	0.225	0.001	0.08	0.08	0.03	0.03	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00
1650	0.181	0.001	0.214	0.001	0.08	0.07	0.03	0.03	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00
1660	0.171	0.001	0.203	0.001	0.07	0.07	0.03	0.03	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00
1670	0.161	0.001	0.192	0.001	0.07	0.06	0.03	0.03	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00
1680	0.151	0.001	0.181	0.001	0.07	0.06	0.03	0.03	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00
1690	0.141	0.001	0.170	0.001	0.06	0.06	0.03	0.02	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1700	0.131	0.000	0.159	0.001	0.06	0.05	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00
1710	0.121	0.000	0.148	0.000	0.05	0.05	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00
1720	0.111	0.000	0.137	0.000	0.05	0.04	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00
1730	0.101	0.000	0.126	0.000	0.05	0.04	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1740	0.091	0.000	0.115	0.000	0.04	0.04	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1750	0.081	0.000	0.104	0.000	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1760	0.071	0.000	0.093	0.000	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1770	0.061	0.000	0.082	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1780	0.051	0.000	0.071	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1790	0.041	0.000	0.060	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1800	0.031	0.000	0.049	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00

SD-630	Cardiff	0	0	Avg. Net SL	5.42	2.93	0.28	-2.22	6.15	-0.93						
SD-630	513.913	0	488.544	1808			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	1.123	0.002	1.209	0.002	0.16	0.14	0.09	0.08	0.01	0.01	0.00	0.00	0.18	0.16	0.00	0.00
10	1.475	0.003	1.577	0.003	0.21	0.19	0.11	0.10	0.01	0.01	0.00	0.00	0.24	0.21	0.00	0.00
20	3.577	0.007	3.748	0.008	0.50	0.45	0.27	0.24	0.03	0.02	0.00	0.00	0.56	0.51	0.00	0.00
30	5.485	0.011	5.785	0.012	0.76	0.69	0.41	0.37	0.04	0.04	0.00	0.00	0.87	0.78	0.00	0.00
40	6.164	0.012	6.451	0.013	0.85	0.77	0.46	0.42	0.04	0.04	0.00	0.00	0.97	0.88	0.00	0.00
50	6.742	0.013	6.470	0.013	0.86	0.85	0.46	0.46	0.04	0.04	0.00	0.00	0.97	0.96	0.00	0.00
60	7.154	0.014	5.793	0.012	0.77	0.90	0.41	0.49	0.04	0.05	0.00	0.00	0.87	1.02	0.00	0.00
70	7.416	0.014	5.270	0.011	0.70	0.93	0.38	0.50	0.04	0.05	0.00	0.00	0.79	1.06	0.00	0.00
80	7.705	0.015	5.198	0.011	0.69	0.97	0.37	0.52	0.04	0.05	0.00	0.00	0.78	1.10	0.00	0.00
90	7.892	0.015	5.150	0.011	0.68	0.99	0.37	0.54	0.04	0.05	0.00	0.00	0.77	1.13	0.00	0.00
100	8.461	0.016	5.535	0.011	0.73	1.06	0.40	0.58	0.04	0.05	0.00	0.00	0.83	1.21	0.00	0.00
110	9.379	0.018	6.359	0.013	0.84	1.18	0.46	0.64	0.04	0.06	0.00	0.00	0.95	1.34	0.00	0.00
120	9.517	0.019	6.490	0.013	0.86	1.20	0.46	0.65	0.04	0.06	0.00	0.00	0.97	1.36	0.00	0.00
130	9.208	0.018	6.186	0.013	0.82	1.16	0.44	0.63	0.04	0.06	0.00	0.00	0.93	1.31	0.00	0.00
140	8.831	0.017	5.932	0.012	0.78	1.11	0.42	0.60	0.04	0.06	0.00	0.00	0.89	1.26	0.00	0.00
150	8.367	0.016	5.742	0.012	0.76	1.05	0.41	0.57	0.04	0.05	0.00	0.00	0.86	1.19	0.00	0.00
160	7.888	0.015	5.569	0.011	0.74	0.99	0.40	0.54	0.04	0.05	0.00	0.00	0.84	1.12	0.00	0.00
170	7.344	0.014	5.232	0.011	0.69	0.92	0.37	0.50	0.04	0.05	0.00	0.00	0.78	1.05	0.00	0.00
180	6.820	0.013	4.804	0.010	0.63	0.86	0.34	0.46	0.03	0.04	0.00	0.00	0.72	0.97	0.00	0.00
190	6.470	0.013	4.479	0.009	0.59	0.81	0.32	0.44	0.03	0.04	0.00	0.00	0.67	0.92	0.00	0.00
200	6.488	0.013	4.555	0.009	0.60	0.82	0.33	0.44	0.03	0.04	0.00	0.00	0.68	0.93	0.00	0.00
210	6.673	0.013	4.851	0.010	0.64	0.84	0.35	0.45	0.03	0.04	0.00	0.00	0.73	0.95	0.00	0.00
220	6.690	0.013	4.944	0.010	0.65	0.84	0.35	0.46	0.03	0.04	0.00	0.00	0.74	0.95	0.00	0.00
230	6.557	0.013	4.896	0.010	0.65	0.82	0.35	0.45	0.03	0.04	0.00	0.00	0.73	0.93	0.00	0.00
240	6.399	0.012	4.831	0.010	0.64	0.80	0.35	0.44	0.03	0.04	0.00	0.00	0.72	0.91	0.00	0.00
250	6.244	0.012	4.760	0.010	0.63	0.78	0.34	0.42	0.03	0.04	0.00	0.00	0.71	0.89	0.00	0.00
260	5.990	0.012	4.599	0.009	0.61	0.75	0.33	0.41	0.03	0.04	0.00	0.00	0.69	0.85	0.00	0.00
270	5.685	0.011	4.385	0.009	0.58	0.71	0.31	0.39	0.03	0.04	0.00	0.00	0.66	0.81	0.00	0.00
280	5.389	0.010	4.132	0.008	0.55	0.68	0.30	0.37	0.03	0.03	0.00	0.00	0.62	0.77	0.00	0.00
290	5.105	0.010	3.844	0.008	0.51	0.64	0.28	0.35	0.03	0.03	0.00	0.00	0.58	0.73	0.00	0.00
300	4.841	0.009	3.547	0.007	0.47	0.61	0.25	0.33	0.02	0.03	0.00	0.00	0.53	0.69	0.00	0.00
310	4.759	0.009	3.417	0.007	0.45	0.60	0.24	0.32	0.02	0.03	0.00	0.00	0.51	0.68	0.00	0.00
320	4.795	0.009	3.403	0.007	0.45	0.60	0.24	0.33	0.02	0.03	0.00	0.00	0.51	0.68	0.00	0.00
330	4.892	0.010	3.454	0.007	0.46	0.61	0.25	0.33	0.02	0.03	0.00	0.00	0.52	0.70	0.00	0.00
340	5.029	0.010	3.538	0.007	0.47	0.63	0.25	0.34	0.02	0.03	0.00	0.00	0.53	0.72	0.00	0.00
350	5.179	0.010	3.676	0.008	0.49	0.65	0.26	0.35	0.03	0.03	0.00	0.00	0.55	0.74	0.00	0.00
360	5.312	0.010	3.840	0.008	0.51	0.67	0.27	0.36	0.03	0.03	0.00	0.00	0.58	0.76	0.00	0.00
370	5.414	0.011	3.975	0.008	0.53	0.68	0.28	0.37	0.03	0.04	0.00	0.00	0.60	0.77	0.00	0.00
380	5.510	0.011	4.087	0.008	0.54	0.69	0.29	0.38	0.03	0.04	0.00	0.00	0.61	0.79	0.00	0.00
390	5.606	0.011	4.198	0.009	0.55	0.70	0.30	0.38	0.03	0.04	0.00	0.00	0.63	0.80	0.00	0.00
400	5.679	0.011	4.327	0.009	0.57	0.71	0.31	0.39	0.03	0.04	0.00	0.00	0.65	0.81	0.00	0.00
410	5.744	0.011	4.433	0.009	0.59	0.72	0.32	0.39	0.03	0.04	0.00	0.00	0.66	0.82	0.00	0.00
420	5.829	0.011	4.521	0.009	0.60	0.73	0.32	0.40	0.03	0.04	0.00	0.00	0.68	0.83	0.00	0.00
430	5.971	0.012	4.647	0.010	0.61	0.75	0.33	0.41	0.03	0.04	0.00	0.00	0.70	0.85	0.00	0.00
440	6.134	0.012	4.784	0.010	0.63	0.77	0.34	0.42	0.03	0.04	0.00	0.00	0.72	0.87	0.00	0.00
450	6.276	0.012	4.918	0.010	0.65	0.79	0.35	0.43	0.03	0.04	0.00	0.00	0.74	0.89	0.00	0.00
460	6.410	0.012	5.044	0.010	0.67	0.81	0.36	0.44	0.03	0.04	0.00	0.00	0.76	0.91	0.00	0.00
470	6.544	0.013	5.128	0.010	0.68	0.82	0.37	0.45	0.03	0.04	0.00	0.00	0.77	0.93	0.00	0.00
480	6.668	0.013	5.213	0.011	0.69	0.84	0.37	0.45	0.04	0.04	0.00	0.00	0.78	0.95	0.00	0.00
490	6.699	0.013	5.297	0.011	0.70	0.84	0.38	0.46	0.04	0.04	0.00	0.00	0.79	0.96	0.00	0.00
500	6.640	0.013	5.338	0.011	0.71	0.83	0.38	0.45	0.04	0.04	0.00	0.00	0.80	0.95	0.00	0.00
510	6.565	0.013	5.364	0.011	0.71	0.82	0.38	0.45	0.04	0.04	0.00	0.00	0.80	0.94	0.00	0.00
520	6.480	0.013	5.387	0.011	0.71	0.81	0.39	0.44	0.04	0.04	0.00	0.00	0.81	0.92	0.00	0.00
530	5.845	0.011	4.897	0.010	0.65	0.73	0.35	0.40	0.03	0.04	0.00	0.00	0.73	0.83	0.00	0.00
540	5.470	0.011	4.677	0.010	0.62	0.69	0.33	0.37	0.03	0.04	0.00	0.00	0.70	0.78	0.00	0.00
550	5.378	0.010	4.746	0.010	0.63	0.68	0.34	0.37	0.03	0.03	0.00	0.00	0.71	0.77	0.00	0.00
560	5.247	0.010	4.806	0.010	0.64	0.66	0.34	0.36	0.03	0.03	0.00	0.00	0.72	0.75	0.00	0.00
570	5.101	0.010	4.866	0.010	0.64	0.64	0.35	0.35	0.03	0.03	0.00	0.00	0.73	0.73	0.00	0.00
580	4.948	0.010	4.921	0.010	0.65	0.62	0.35	0.34	0.03	0.03	0.00	0.00	0.74	0.71	0.00	0.00
590	4.777	0.009	4.953	0.010	0.65	0.60	0.35	0.33	0.03	0.03	0.00	0.00	0.74	0.68	0.00	0.00
600	4.626	0.009	4.967	0.010	0.66	0.58	0.36	0.31	0.03	0.03	0.00	0.00	0.74	0.66	0.00	0.00
610	4.481	0.009	4.956	0.010	0.66	0.56	0.35	0.30	0.03	0.03	0.00	0.00	0.74	0.64	0.00	0.00
620	4.357	0.008	4.924	0.010	0.65	0.55	0.35	0.30	0.03	0.03	0.00	0.00	0.74	0.62	0.00	0.00
630	4.260	0.008	4.854	0.010	0.64	0.54	0.35	0.29	0.03	0.03	0.00	0.00	0.73	0.61	0.00	0.00
640	4.129	0.008	4.755	0.010	0.63	0.52	0.34	0.28	0.03	0.03	0.00	0.00	0.71	0.59	0.00	0.00
650	3.956	0.008	4.656	0.010	0.62	0.50	0.33	0.27	0.03	0.03	0.00	0.00	0.70	0.56	0.00	0.00
660	3.752	0.007	4.561	0.009	0.60	0.47	0.33	0.26	0.03	0.02	0.00	0.00	0.68	0.53	0.00	0.00
670	3.520	0.007	4.452	0.009	0.59	0.44	0.32	0.24	0.03	0.02	0.00	0.00	0.67	0.50	0.00	0.00
680	3.289	0.006	4.327	0.009	0.57	0.41	0.31	0.22	0.03	0.02	0.00	0.00	0.65	0.47	0.00	0.00
690	3.098	0.006	4.219	0.009	0.56	0.39	0.30	0.21	0.03	0.02	0.00	0.00	0.63	0.44	0.00	0.00
700	2.865	0.006	4.039	0.008	0.53	0.36	0.29	0.19	0.03	0.02	0.00	0.00	0.61	0.41	0.00	0.00
710	2.734	0.005	3.924	0.008	0.52	0.34	0.28	0.19	0.03	0.02	0.00	0.00	0.59	0.39	0.00	0.00
720	2.659	0.005	3.866	0.008	0.51	0.33	0.28	0.18	0.03	0.02	0.00	0.00	0.58	0.38	0.00	0.00
730	2.546	0.005	3.815	0.008	0.50	0.32	0.27	0.17	0.03	0.02	0.00	0.00	0.57	0.36	0.00	0.00
740	2.443	0.005	3.801	0.008	0.50	0.31	0.27	0.17	0.03	0.02	0.00	0.00	0.57	0.35	0.00	0.00
750	2.358	0.005	3.785	0.008	0.50	0.30	0.27	0.16	0.03	0.02	0.00	0.00	0.57	0.34	0.00	0.00
760	2.247	0.004	3.753	0.008	0.50	0.28	0.27	0.15	0.03	0.01	0.00	0.00	0.56	0.32	0.00	0.00
770	2.216	0.004	3.717	0.008	0.49	0.28	0.27	0.15	0.03	0.01	0.00	0.00	0.56	0.32	0.00	0.00
780	2.267	0.004	3.686	0.008	0.49	0.28	0.26	0.15	0.03	0.01	0.00	0.00	0.55	0.32	0.00	0.00
790	2.315	0.005	3.689	0.008	0.49	0.29	0.26	0.16	0.03	0.02	0.00	0.00	0.55	0.33	0.00	0.00
800	2.307	0.004	3.645	0.007	0.48	0.29	0.26	0.16	0.02	0.01	0.00	0.00	0.55	0.33	0.00	0.00
810	2.202	0.004	3.530	0.007	0.47	0.28	0.25	0.15	0.02	0.01	0.00	0.00	0.53	0.31	0.00	0.00
820	2.133	0.004	3.384	0.007	0.45	0.27	0.24	0.15	0.02	0.01	0.00	0.00	0.51	0.30	0.00	0.00
830	2.113	0.004	3.268	0.007	0.43	0.27	0.23	0.14	0.02	0.01	0.00	0.00	0.49	0.30	0.00	0.00
840	2.072	0.004	3.173	0.006	0.42	0.26	0.23	0.14	0.02	0.01	0.00	0.00	0.48	0.30	0.00	0.00
850	2.009	0.004	3.063	0.006	0.40	0.25	0.22	0.14	0.02	0.01	0.00	0.00	0.46	0.29	0.00	0.00
860	1.994	0.004	3.045	0.006	0.40	0.25	0.22	0.14	0.02	0.01	0.00	0.00	0.46	0.28	0.00	0.00
870	2.048	0.004	3.125	0.006	0.41	0.26	0.22	0.14	0.02	0.01	0.00	0.00	0.47	0.29	0.00	0.00
880	2.113	0.004	3.197	0.007	0.42	0.27	0.23	0.14	0.02	0.01	0.00	0.00	0.48	0.30	0.00	0.00
890	2.171	0.004	3.252	0.007	0.43	0.27	0.23	0.15	0.02	0.01	0.00	0.00	0.49	0.31	0.00	0.00
900	2.191	0.004	3.246	0.007	0.43	0.28	0.23	0.15	0.02	0.01	0.00	0.00	0.49	0.31	0.00	0.00
910	2.163	0.004	3.170	0.006	0.42	0.27	0.23	0.15	0.02	0.01	0.00	0.00	0.48	0.31	0.00	0.00
920	2.119	0.004	3.071	0.006	0.41	0.27	0.22	0.14	0.02	0.01	0.00	0.00	0.46	0.30	0.00	0.00
930	2.084	0.004	2.977	0.006	0.39	0.26	0.21	0.14	0.02	0.01	0.00	0.00	0.45	0.30	0.00	0.00
940	2.042	0.004	2.865	0.006	0.38	0.26	0.21	0.14	0.02	0.01	0.00	0.00	0.43	0.29	0.00	0.00
950	1.962	0.004	2.742	0.006	0.36	0.25	0.20	0.13	0.02	0.01	0.00	0.00	0.41	0.28	0.00	0.00
960	1.890	0.004	2.634	0.005	0.35	0.24	0.19	0.13	0.02	0.01	0.00	0.00	0.40	0.27	0.00	0.00
970	1.826	0.004	2.570	0.005	0.34	0.23	0.18	0.12	0.02	0.01	0.00	0.00	0.39	0.26	0.00	0.00
980	1.740	0.003	2.524	0.005	0.33	0.22	0.18	0.12	0.02	0.01	0.00	0.00	0.38	0.25	0.00	0.00
990	1.651	0.003	2.470	0.005	0.33	0.21	0.18	0.11	0.02	0.01	0.00	0.00	0.37	0.24	0.00	0.00
1000	1.575	0.003	2.409	0.005	0.32	0.20	0.17	0.11	0.02	0.01	0.00	0.00	0.36	0.22	0.00	0.00
1010	1.512	0.003	2.346	0.005	0.31	0.19	0.17	0.10	0.02	0.01	0.00	0.00	0.35	0.22	0.00	0.00
1020	1.463	0.003	2.269	0.005	0.30	0.18	0.16	0.10	0.02	0.01	0.00	0.00	0.34	0.21	0.00	0.00
1030	1.413	0.003	2.190	0.004	0.29	0.18	0.16	0.10	0.01	0.01	0.00	0.00	0.33	0.20	0.00	0.00
1040	1.353	0.003	2.125	0.004	0.28	0.17	0.15	0.09	0.01	0.01	0.00	0.00	0.32	0.19	0.00	0.00
1050	1.331	0.003	2.078	0.004	0.27	0.17	0.15	0.09	0.01	0.01	0.00	0.00	0.31	0.19	0.00	0.00
1060	1.287	0.003	2.004	0.004	0.26	0.16	0.14	0.09	0.01	0.01	0.00	0.00	0.30	0.18	0.00	0.00
1070	1.170	0.002	1.893	0.004	0.25	0.15	0.14	0.08	0.01	0.01	0.00	0.00	0.28	0.17	0.00	0.00
1080	1.079	0.002	1.805	0.004	0.24	0.14	0.13	0.07	0.01	0.01	0.00	0.00	0.27	0.15	0.00	0.00
1090	1.053	0.002	1.701	0.003	0.22	0.13	0.12	0.07	0.01	0.01	0.00	0.00	0.26	0.15	0.00	0.00
1100	1.050	0.002	1.609	0.003	0.21	0.13	0.12	0.07	0.01	0.01	0.00	0.00	0.24	0.15	0.00	0.00
1110	1.033	0.002	1.551	0.003	0.21	0.13	0.11	0.07	0.01	0.01	0.00	0.00	0.23	0.15	0.00	0.00
1120	0.963	0.002	1.466	0.003	0.19	0.12	0.10	0.07	0.01	0.01	0.00	0.00	0.22	0.14	0.00	0.00
1130	0.912	0.002	1.385	0.003	0.18	0.11	0.10	0.06	0.01	0.01	0.00	0.00	0.21	0.13	0.00	0.00
1140	0.907	0.002	1.305	0.003	0.17	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.20	0.13	0.00	0.00
1150	0.856	0.002	1.255	0.003	0.17	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.19	0.12	0.00	0.00
1160	0.795	0.002	1.234	0.003	0.16	0.10	0.09	0.05	0.01	0.01	0.00	0.00	0.19	0.11	0.00	0.00
1170	0.734	0.001	1.189	0.002	0.16	0.09	0.09	0.05	0.01	0.00	0.00	0.00	0.18	0.10	0.00	0.00
1180	0.674	0.001	1.078	0.002	0.14	0.08	0.08	0.05	0.01	0.00	0.00	0.00	0.16	0.10	0.00	0.00
1190	0.638	0.001	0.965	0.002	0.13	0.08	0.07	0.04	0.01	0.00	0.00	0.00	0.14	0.09	0.00	0.00
1200	0.614	0.001	0.905	0.002	0.12	0.08	0.06	0.04	0.01	0.00	0.00	0.00	0.14	0.09	0.00	0.00
1210	0.595	0.001	0.858	0.002	0.11	0.07	0.06	0.04	0.01	0.00	0.00	0.00	0.13	0.08	0.00	0.00
1220	0.603	0.001	0.800	0.002	0.11	0.08	0.06	0.04	0.01	0.00	0.00	0.00	0.12	0.09	0.00	0.00
1230	0.695	0.001	0.825	0.002	0.11	0.09	0.06	0.05	0.01	0.00	0.00	0.00	0.12	0.10	0.00	0.00
1240	0.688	0.001	0.793	0.002	0.10	0.09	0.06	0.05	0.01	0.00	0.00	0.00	0.12	0.10	0.00	0.00
1250	0.648	0.001	0.709	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.00
1260	0.638	0.001	0.699	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1270	0.692	0.001	0.751	0.002	0.10	0.09	0.05	0.05	0.01	0.00	0.00	0.00	0.11	0.10	0.00	0.00
1280	0.657	0.001	0.701	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.00
1290	0.640	0.001	0.695	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1300	0.600	0.001	0.673	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1310	0.549	0.001	0.640	0.001	0.08	0.07	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1320	0.522	0.001	0.617	0.001	0.08	0.07	0.04	0.04	0.00	0.00	0.00	0.00	0.09	0.07	0.00	0.00
1330	0.576	0.001	0.658	0.001	0.09	0.07	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1340	0.581	0.001	0.652	0.001	0.09	0.07	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1350	0.517	0.001	0.624	0.001	0.08	0.06	0.04	0.04	0.00	0.00	0.00	0.00	0.09	0.07	0.00	0.00
1360	0.433	0.001	0.588	0.001	0.08	0.05	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00
1370	0.376	0.001	0.578	0.001	0.08	0.05	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.05	0.00	0.00
1380	0.350	0.001	0.563	0.001	0.07	0.04	0.04	0.02	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
1390	0.338	0.001	0.500	0.001	0.07	0.04	0.04	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1400	0.331	0.001	0.487	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1410	0.324	0.001	0.476	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1420	0.317	0.001	0.465	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1430	0.310	0.001	0.454	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1440	0.303	0.001	0.443	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1450	0.296	0.001	0.432	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1460	0.289	0.001	0.421	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1470	0.282	0.001	0.410	0.001	0.05	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1480	0.275	0.001	0.399	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1490	0.268	0.001	0.388	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1500	0.261	0.001	0.377	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1510	0.254	0.000	0.366	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00
1520	0.247	0.000	0.355	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00
1530	0.240	0.000	0.344	0.001	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1540	0.233	0.000	0.333	0.001	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1550	0.226	0.000	0.322	0.001	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1560	0.219	0.000	0.311	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1570	0.212	0.000	0.300	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1580	0.205	0.000	0.289	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1590	0.198	0.000	0.278	0.001	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1600	0.191	0.000	0.267	0.001	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1610	0.184	0.000	0.256	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1620	0.177	0.000	0.245	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1630	0.170	0.000	0.234	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00
1640	0.163	0.000	0.223	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1650	0.156	0.000	0.212	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1660	0.149	0.000	0.201	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1670	0.142	0.000	0.190	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1680	0.135	0.000	0.179	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1690	0.128	0.000	0.168	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1700	0.121	0.000	0.157	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1710	0.114	0.000	0.146	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1720	0.107	0.000	0.135	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1730	0.100	0.000	0.124	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1740	0.093	0.000	0.113	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1750	0.086	0.000	0.102	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1760	0.079	0.000	0.091	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1770	0.072	0.000	0.080	0.000	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1780	0.065	0.000	0.069	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1790	0.058	0.000	0.058	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1800	0.051	0.000	0.047	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1810	0.044	0.000	0.036	0.000	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00

SD-650	San Elijo Park	0	0	Avg. Net SL	0.081	0.968	1.160	0.792	-0.246	0.622						
SD-650	93.595	0	109.041	1590			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	1.541	0.016	1.133	0.010	0.01	0.02	0.12	0.19	0.14	0.23	0.10	0.16	0.00	0.00	0.08	0.12
40	1.643	0.018	1.061	0.010	0.01	0.02	0.11	0.20	0.13	0.24	0.09	0.17	0.00	0.00	0.07	0.13
50	2.469	0.026	1.874	0.017	0.02	0.03	0.20	0.30	0.24	0.36	0.16	0.25	0.00	0.00	0.13	0.20
60	2.150	0.023	1.612	0.015	0.01	0.02	0.17	0.27	0.20	0.32	0.14	0.22	0.00	0.00	0.11	0.17
70	1.846	0.020	1.415	0.013	0.01	0.02	0.15	0.23	0.18	0.27	0.12	0.19	0.00	0.00	0.10	0.15
80	1.674	0.018	1.327	0.012	0.01	0.02	0.14	0.21	0.17	0.25	0.11	0.17	0.00	0.00	0.09	0.13
90	1.505	0.016	1.169	0.011	0.01	0.02	0.12	0.19	0.15	0.22	0.10	0.15	0.00	0.00	0.08	0.12
100	1.258	0.013	0.944	0.009	0.01	0.01	0.10	0.16	0.12	0.19	0.08	0.13	0.00	0.00	0.06	0.10
110	1.088	0.012	0.804	0.007	0.01	0.01	0.09	0.13	0.10	0.16	0.07	0.11	0.00	0.00	0.05	0.09
120	1.046	0.011	0.718	0.007	0.01	0.01	0.08	0.13	0.09	0.15	0.06	0.11	0.00	0.00	0.05	0.08
130	1.001	0.011	0.646	0.006	0.01	0.01	0.07	0.12	0.08	0.15	0.06	0.10	0.00	0.00	0.04	0.08
140	0.890	0.010	0.537	0.005	0.00	0.01	0.06	0.11	0.07	0.13	0.05	0.09	0.00	0.00	0.04	0.07
150	0.835	0.009	0.502	0.005	0.00	0.01	0.05	0.10	0.06	0.12	0.04	0.08	0.00	0.00	0.03	0.07
160	0.837	0.009	0.545	0.005	0.00	0.01	0.06	0.10	0.07	0.12	0.05	0.08	0.00	0.00	0.04	0.07
170	0.751	0.008	0.476	0.004	0.00	0.01	0.05	0.09	0.06	0.11	0.04	0.08	0.00	0.00	0.03	0.06
180	0.745	0.008	0.487	0.004	0.00	0.01	0.05	0.09	0.06	0.11	0.04	0.08	0.00	0.00	0.03	0.06
190	0.769	0.008	0.560	0.005	0.00	0.01	0.06	0.09	0.07	0.11	0.05	0.08	0.00	0.00	0.04	0.06
200	0.860	0.009	0.700	0.006	0.01	0.01	0.07	0.11	0.09	0.13	0.06	0.09	0.00	0.00	0.05	0.07
210	1.045	0.011	0.912	0.008	0.01	0.01	0.10	0.13	0.12	0.15	0.08	0.11	0.00	0.00	0.06	0.08
220	1.224	0.013	1.064	0.010	0.01	0.01	0.11	0.15	0.13	0.18	0.09	0.12	0.00	0.00	0.07	0.10
230	1.276	0.014	1.116	0.010	0.01	0.01	0.12	0.16	0.14	0.19	0.10	0.13	0.00	0.00	0.08	0.10
240	1.574	0.017	1.359	0.012	0.01	0.02	0.14	0.19	0.17	0.23	0.12	0.16	0.00	0.00	0.09	0.12
250	1.963	0.021	1.670	0.015	0.01	0.02	0.18	0.24	0.21	0.29	0.14	0.20	0.00	0.00	0.11	0.16
260	1.722	0.018	1.480	0.014	0.01	0.02	0.16	0.21	0.19	0.25	0.13	0.17	0.00	0.00	0.10	0.14
270	1.304	0.014	1.150	0.011	0.01	0.01	0.12	0.16	0.15	0.19	0.10	0.13	0.00	0.00	0.08	0.10
280	0.867	0.009	0.844	0.008	0.01	0.01	0.09	0.11	0.11	0.13	0.07	0.09	0.00	0.00	0.06	0.07
290	0.935	0.010	1.017	0.009	0.01	0.01	0.11	0.12	0.13	0.14	0.09	0.09	0.00	0.00	0.07	0.07
300	1.113	0.012	1.250	0.011	0.01	0.01	0.13	0.14	0.16	0.16	0.11	0.11	0.00	0.00	0.09	0.09
310	1.296	0.014	1.460	0.013	0.01	0.01	0.15	0.16	0.19	0.19	0.13	0.13	0.00	0.00	0.10	0.10
320	1.469	0.016	1.637	0.015	0.01	0.02	0.17	0.18	0.21	0.22	0.14	0.15	0.00	0.00	0.11	0.12
330	1.564	0.017	1.795	0.016	0.02	0.02	0.19	0.19	0.23	0.23	0.16	0.16	0.00	0.00	0.12	0.12
340	1.648	0.018	1.946	0.018	0.02	0.02	0.21	0.20	0.25	0.24	0.17	0.17	0.00	0.00	0.13	0.13
350	1.696	0.018	2.077	0.019	0.02	0.02	0.22	0.21	0.26	0.25	0.18	0.17	0.00	0.00	0.14	0.13
360	1.518	0.016	1.956	0.018	0.02	0.02	0.21	0.19	0.25	0.22	0.17	0.15	0.00	0.00	0.13	0.12
370	1.374	0.015	1.836	0.017	0.02	0.01	0.19	0.17	0.23	0.20	0.16	0.14	0.00	0.00	0.12	0.11
380	1.221	0.013	1.713	0.016	0.02	0.01	0.18	0.15	0.22	0.18	0.15	0.12	0.00	0.00	0.12	0.10
390	1.192	0.013	1.720	0.016	0.02	0.01	0.18	0.15	0.22	0.18	0.15	0.12	0.00	0.00	0.12	0.09
400	1.168	0.012	1.742	0.016	0.02	0.01	0.18	0.14	0.22	0.17	0.15	0.12	0.00	0.00	0.12	0.09
410	1.111	0.012	1.757	0.016	0.02	0.01	0.19	0.14	0.22	0.16	0.15	0.11	0.00	0.00	0.12	0.09
420	1.017	0.011	1.751	0.016	0.02	0.01	0.19	0.13	0.22	0.15	0.15	0.10	0.00	0.00	0.12	0.08
430	0.820	0.009	1.653	0.015	0.01	0.01	0.17	0.10	0.21	0.12	0.14	0.08	0.00	0.00	0.11	0.06
440	0.561	0.006	1.545	0.014	0.01	0.01	0.16	0.07	0.20	0.08	0.13	0.06	0.00	0.00	0.11	0.04
450	0.388	0.004	1.557	0.014	0.01	0.00	0.16	0.05	0.20	0.06	0.13	0.04	0.00	0.00	0.11	0.03
460	0.865	0.009	2.181	0.020	0.02	0.01	0.23	0.11	0.28	0.13	0.19	0.09	0.00	0.00	0.15	0.07
470	1.222	0.013	2.518	0.023	0.02	0.01	0.27	0.15	0.32	0.18	0.22	0.12	0.00	0.00	0.17	0.10
480	0.833	0.009	1.905	0.017	0.02	0.01	0.20	0.10	0.24	0.12	0.16	0.08	0.00	0.00	0.13	0.07
490	0.429	0.005	1.286	0.012	0.01	0.00	0.14	0.05	0.16	0.06	0.11	0.04	0.00	0.00	0.09	0.03
500	0.707	0.008	1.362	0.012	0.01	0.01	0.14	0.09	0.17	0.10	0.12	0.07	0.00	0.00	0.09	0.06
510	1.108	0.012	1.599	0.015	0.01	0.01	0.17	0.14	0.20	0.16	0.14	0.11	0.00	0.00	0.11	0.09
520	1.457	0.016	1.828	0.017	0.02	0.02	0.19	0.18	0.23	0.22	0.16	0.15	0.00	0.00	0.12	0.12
530	1.282	0.014	1.383	0.013	0.01	0.01	0.15	0.16	0.18	0.19	0.12	0.13	0.00	0.00	0.09	0.10
540	0.981	0.010	0.942	0.009	0.01	0.01	0.10	0.12	0.12	0.14	0.08	0.10	0.00	0.00	0.06	0.08
550	0.875	0.009	0.782	0.007	0.01	0.01	0.08	0.11	0.10	0.13	0.07	0.09	0.00	0.00	0.05	0.07
560	1.112	0.012	1.209	0.011	0.01	0.01	0.13	0.14	0.15	0.16	0.10	0.11	0.00	0.00	0.08	0.09
570	0.862	0.009	1.011	0.009	0.01	0.01	0.11	0.11	0.13	0.13	0.09	0.09	0.00	0.00	0.07	0.07
580	0.719	0.008	0.764	0.007	0.01	0.01	0.08	0.09	0.10	0.11	0.07	0.07	0.00	0.00	0.05	0.06
590	0.519	0.006	0.654	0.006	0.01	0.01	0.07	0.06	0.08	0.08	0.06	0.05	0.00	0.00	0.04	0.04
600	0.514	0.005	0.648	0.006	0.01	0.01	0.07	0.06	0.08	0.08	0.06	0.05	0.00	0.00	0.04	0.04
610	0.509	0.005	0.642	0.006	0.01	0.01	0.07	0.06	0.08	0.08	0.06	0.05	0.00	0.00	0.04	0.04
620	0.504	0.005	0.636	0.006	0.01	0.01	0.07	0.06	0.08	0.07	0.06	0.05	0.00	0.00	0.04	0.04
630	0.499	0.005	0.630	0.006	0.01	0.01	0.07	0.06	0.08	0.07	0.05	0.05	0.00	0.00	0.04	0.04
640	0.494	0.005	0.624	0.006	0.01	0.01	0.07	0.06	0.08	0.07	0.05	0.05	0.00	0.00	0.04	0.04
650	0.489	0.005	0.618	0.006	0.01	0.01	0.07	0.06	0.08	0.07	0.05	0.05	0.00	0.00	0.04	0.04
660	0.484	0.005	0.612	0.006	0.01	0.01	0.06	0.06	0.08	0.07	0.05	0.05	0.00	0.00	0.04	0.04
670	0.479	0.005	0.606	0.006	0.01	0.00	0.06	0.06	0.08	0.07	0.05	0.05	0.00	0.00	0.04	0.04
680	0.474	0.005	0.600	0.006	0.01	0.00	0.06	0.06	0.08	0.07	0.05	0.05	0.00	0.00	0.04	0.04
690	0.469	0.005	0.594	0.005	0.01	0.00	0.06	0.06	0.08	0.07	0.05	0.05	0.00	0.00	0.04	0.04
700	0.464	0.005	0.588	0.005	0.01	0.00	0.06	0.06	0.07	0.07	0.05	0.05	0.00	0.00	0.04	0.04
710	0.459	0.005	0.582	0.005	0.01	0.00	0.06	0.06	0.07	0.07	0.05	0.05	0.00	0.00	0.04	0.04
720	0.454	0.005	0.576	0.005	0.01	0.00	0.06	0.06	0.07	0.07	0.05	0.05	0.00	0.00	0.04	0.04
730	0.449	0.005	0.570	0.005	0.01	0.00	0.06	0.06	0.07	0.07	0.05	0.05	0.00	0.00	0.04	0.04
740	0.444	0.005	0.564	0.005	0.01	0.00	0.06	0.05	0.07	0.07	0.05	0.04	0.00	0.00	0.04	0.04
750	0.439	0.005	0.558	0.005	0.00	0.00	0.06	0.05	0.07	0.06	0.05	0.04	0.00	0.00	0.04	0.03
760	0.434	0.005	0.552	0.005	0.00	0.00	0.06	0.05	0.07	0.06	0.05	0.04	0.00	0.00	0.04	0.03
770	0.429	0.005	0.546	0.005	0.00	0.00	0.06	0.05	0.07	0.06	0.05	0.04	0.00	0.00	0.04	0.03
780	0.424	0.005	0.540	0.005	0.00	0.00	0.06	0.05	0.07	0.06	0.05	0.04	0.00	0.00	0.04	0.03
790	0.419	0.004	0.534	0.005	0.00	0.00	0.06	0.05	0.07	0.06	0.05	0.04	0.00	0.00	0.04	0.03
800	0.414	0.004	0.528	0.005	0.00	0.00	0.06	0.05	0.07	0.06	0.05	0.04	0.00	0.00	0.04	0.03
810	0.409	0.004	0.522	0.005	0.00	0.00	0.06	0.05	0.07	0.06	0.05	0.04	0.00	0.00	0.04	0.03
820	0.404	0.004	0.516	0.005	0.00	0.00	0.05	0.05	0.07	0.06	0.04	0.04	0.00	0.00	0.04	0.03
830	0.399	0.004	0.510	0.005	0.00	0.00	0.05	0.05	0.06	0.06	0.04	0.04	0.00	0.00	0.03	0.03
840	0.394	0.004	0.504	0.005	0.00	0.00	0.05	0.05	0.06	0.06	0.04	0.04	0.00	0.00	0.03	0.03
850	0.389	0.004	0.498	0.005	0.00	0.00	0.05	0.05	0.06	0.06	0.04	0.04	0.00	0.00	0.03	0.03
860	0.384	0.004	0.492	0.005	0.00	0.00	0.05	0.05	0.06	0.06	0.04	0.04	0.00	0.00	0.03	0.03
870	0.379	0.004	0.486	0.004	0.00	0.00	0.05	0.05	0.06	0.06	0.04	0.04	0.00	0.00	0.03	0.03
880	0.374	0.004	0.480	0.004	0.00	0.00	0.05	0.05	0.06	0.06	0.04	0.04	0.00	0.00	0.03	0.03
890	0.369	0.004	0.474	0.004	0.00	0.00	0.05	0.05	0.06	0.05	0.04	0.04	0.00	0.00	0.03	0.03
900	0.364	0.004	0.468	0.004	0.00	0.00	0.05	0.04	0.06	0.05	0.04	0.04	0.00	0.00	0.03	0.03
910	0.359	0.004	0.462	0.004	0.00	0.00	0.05	0.04	0.06	0.05	0.04	0.04	0.00	0.00	0.03	0.03
920	0.354	0.004	0.456	0.004	0.00	0.00	0.05	0.04	0.06	0.05	0.04	0.04	0.00	0.00	0.03	0.03
930	0.349	0.004	0.450	0.004	0.00	0.00	0.05	0.04	0.06	0.05	0.04	0.04	0.00	0.00	0.03	0.03
940	0.344	0.004	0.444	0.004	0.00	0.00	0.05	0.04	0.06	0.05	0.04	0.03	0.00	0.00	0.03	0.03
950	0.339	0.004	0.438	0.004	0.00	0.00	0.05	0.04	0.06	0.05	0.04	0.03	0.00	0.00	0.03	0.03
960	0.334	0.004	0.432	0.004	0.00	0.00	0.05	0.04	0.05	0.05	0.04	0.03	0.00	0.00	0.03	0.03
970	0.329	0.004	0.426	0.004	0.00	0.00	0.05	0.04	0.05	0.05	0.04	0.03	0.00	0.00	0.03	0.03
980	0.324	0.003	0.420	0.004	0.00	0.00	0.04	0.04	0.05	0.05	0.04	0.03	0.00	0.00	0.03	0.03
990	0.319	0.003	0.414	0.004	0.00	0.00	0.04	0.04	0.05	0.05	0.04	0.03	0.00	0.00	0.03	0.03
1000	0.314	0.003	0.408	0.004	0.00	0.00	0.04	0.04	0.05	0.05	0.04	0.03	0.00	0.00	0.03	0.02
1010	0.309	0.003	0.402	0.004	0.00	0.00	0.04	0.04	0.05	0.05	0.03	0.03	0.00	0.00	0.03	0.02
1020	0.304	0.003	0.396	0.004	0.00	0.00	0.04	0.04	0.05	0.04	0.03	0.03	0.00	0.00	0.03	0.02
1030	0.299	0.003	0.390	0.004	0.00	0.00	0.04	0.04	0.05	0.04	0.03	0.03	0.00	0.00	0.03	0.02
1040	0.294	0.003	0.384	0.004	0.00	0.00	0.04	0.04	0.05	0.04	0.03	0.03	0.00	0.00	0.03	0.02
1050	0.289	0.003	0.378	0.003	0.00	0.00	0.04	0.04	0.05	0.04	0.03	0.03	0.00	0.00	0.03	0.02
1060	0.284	0.003	0.372	0.003	0.00	0.00	0.04	0.04	0.05	0.04	0.03	0.03	0.00	0.00	0.03	0.02
1070	0.279	0.003	0.366	0.003	0.00	0.00	0.04	0.03	0.05	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1080	0.274	0.003	0.360	0.003	0.00	0.00	0.04	0.03	0.05	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1090	0.269	0.003	0.354	0.003	0.00	0.00	0.04	0.03	0.04	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1100	0.264	0.003	0.348	0.003	0.00	0.00	0.04	0.03	0.04	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1110	0.259	0.003	0.342	0.003	0.00	0.00	0.04	0.03	0.04	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1120	0.254	0.003	0.336	0.003	0.00	0.00	0.04	0.03	0.04	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1130	0.249	0.003	0.330	0.003	0.00	0.00	0.03	0.03	0.04	0.04	0.03	0.03	0.00	0.00	0.02	0.02
1140	0.244	0.003	0.324	0.003	0.00	0.00	0.03	0.03	0.04	0.04	0.03	0.02	0.00	0.00	0.02	0.02
1150	0.239	0.003	0.318	0.003	0.00	0.00	0.03	0.03	0.04	0.04	0.03	0.02	0.00	0.00	0.02	0.02
1160	0.234	0.003	0.312	0.003	0.00	0.00	0.03	0.03	0.04	0.03	0.03	0.02	0.00	0.00	0.02	0.02
1170	0.229	0.002	0.306	0.003	0.00	0.00	0.03	0.03	0.04	0.03	0.03	0.02	0.00	0.00	0.02	0.02
1180	0.224	0.002	0.300	0.003	0.00	0.00	0.03	0.03	0.04	0.03	0.03	0.02	0.00	0.00	0.02	0.02
1190	0.219	0.002	0.294	0.003	0.00	0.00	0.03	0.03	0.04	0.03	0.03	0.02	0.00	0.00	0.02	0.02
1200	0.214	0.002	0.288	0.003	0.00	0.00	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00	0.02	0.02
1210	0.209	0.002	0.282	0.003	0.00	0.00	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00	0.02	0.02
1220	0.204	0.002	0.276	0.003	0.00	0.00	0.03	0.03	0.04	0.03	0.02	0.02	0.00	0.00	0.02	0.02
1230	0.199	0.002	0.270	0.002	0.00	0.00	0.03	0.02	0.03	0.03	0.02	0.02	0.00	0.00	0.02	0.02
1240	0.194	0.002	0.264	0.002	0.00	0.00	0.03	0.02	0.03	0.03	0.02	0.02	0.00	0.00	0.02	0.02
1250	0.189	0.002	0.258	0.002	0.00	0.00	0.03	0.02	0.03	0.03	0.02	0.02	0.00	0.00	0.02	0.01
1260	0.184	0.002	0.252	0.002	0.00	0.00	0.03	0.02	0.03	0.03	0.02	0.02	0.00	0.00	0.02	0.01
1270	0.179	0.002	0.246	0.002	0.00	0.00	0.03	0.02	0.03	0.03	0.02	0.02	0.00	0.00	0.02	0.01
1280	0.174	0.002	0.240	0.002	0.00	0.00	0.03	0.02	0.03	0.03	0.02	0.02	0.00	0.00	0.02	0.01
1290	0.169	0.002	0.234	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.02	0.00	0.00	0.02	0.01
1300	0.164	0.002	0.228	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.02	0.00	0.00	0.02	0.01
1310	0.159	0.002	0.222	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.02	0.00	0.00	0.02	0.01
1320	0.154	0.002	0.216	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.02	0.00	0.00	0.01	0.01
1330	0.149	0.002	0.210	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.02	0.00	0.00	0.01	0.01
1340	0.144	0.002	0.204	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.01	0.00	0.00	0.01	0.01
1350	0.139	0.001	0.198	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.02	0.01	0.00	0.00	0.01	0.01
1360	0.134	0.001	0.192	0.002	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.01	0.01
1370	0.129	0.001	0.186	0.002	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.01	0.01
1380	0.124	0.001	0.180	0.002	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.01	0.01
1390	0.119	0.001	0.174	0.002	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.01	0.00	0.00	0.01	0.01
1400	0.114	0.001	0.168	0.002	0.00	0.00	0.02	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.01	0.01
1410	0.109	0.001	0.162	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.01	0.01
1420	0.104	0.001	0.156	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.01	0.01
1430	0.099	0.001	0.150	0.001	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1440	0.094	0.001	0.144	0.001	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1450	0.089	0.001	0.138	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1460	0.084	0.001	0.132	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1470	0.079	0.001	0.126	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1480	0.074	0.001	0.120	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1490	0.069	0.001	0.114	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1500	0.064	0.001	0.108	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01
1510	0.059	0.001	0.102	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00
1520	0.054	0.001	0.096	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00
1530	0.049	0.001	0.090	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00
1540	0.044	0.000	0.084	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00
1550	0.039	0.000	0.078	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00
1560	0.034	0.000	0.072	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
1570	0.029	0.000	0.066	0.001	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
1580	0.024	0.000	0.060	0.001	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
1590	0.019	0.000	0.054	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-660	Swami's	0	0	Avg. Net SL	0.01	-0.09	0.10	0.33	0.32	0.11						
SD-660	123.382	0	130.419	1650			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.020	0.000	0.018	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.817	0.015	1.191	0.009	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.06	0.03	0.06	0.01	0.02
20	1.657	0.013	0.985	0.008	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.05	0.03	0.05	0.01	0.02
30	1.733	0.014	0.955	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.06	0.03	0.05	0.01	0.02
40	2.067	0.017	1.046	0.008	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.07	0.03	0.06	0.01	0.02
50	2.331	0.019	1.025	0.008	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.07	0.03	0.07	0.01	0.03
60	2.459	0.020	0.958	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.08	0.03	0.08	0.01	0.03
70	2.523	0.020	0.954	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.08	0.03	0.08	0.01	0.03
80	2.615	0.021	1.005	0.008	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.08	0.03	0.08	0.01	0.03
90	2.572	0.021	1.067	0.008	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.08	0.03	0.08	0.01	0.03
100	2.285	0.019	0.960	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.07	0.03	0.07	0.01	0.02
110	2.142	0.017	0.888	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.07	0.03	0.07	0.01	0.02
120	2.067	0.017	0.871	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.07	0.03	0.06	0.01	0.02
130	2.017	0.016	0.879	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.06	0.03	0.06	0.01	0.02
140	1.977	0.016	0.855	0.007	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.06	0.02	0.06	0.01	0.02
150	1.811	0.015	0.798	0.006	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.06	0.02	0.06	0.01	0.02
160	1.683	0.014	0.804	0.006	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.05	0.02	0.05	0.01	0.02
170	1.539	0.012	0.804	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.02	0.05	0.01	0.02
180	1.398	0.011	0.803	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.02	0.04	0.01	0.02
190	1.272	0.010	0.786	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.02	0.04	0.01	0.01
200	1.152	0.009	0.761	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.02	0.04	0.01	0.01
210	0.984	0.008	0.673	0.005	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
220	0.893	0.007	0.661	0.005	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
230	0.855	0.007	0.703	0.005	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
240	0.947	0.008	0.855	0.007	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.02	0.03	0.01	0.01
250	1.048	0.008	1.007	0.008	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.03	0.03	0.01	0.01
260	1.285	0.010	1.248	0.010	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.04	0.04	0.04	0.01	0.01
270	1.684	0.014	1.676	0.013	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02
280	1.980	0.016	2.106	0.016	0.00	0.00	0.00	0.00	0.02	0.02	0.06	0.06	0.06	0.06	0.02	0.02
290	2.248	0.018	2.535	0.019	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.07	0.07	0.07	0.03	0.02
300	2.678	0.022	3.141	0.024	0.00	0.00	0.00	0.00	0.03	0.03	0.09	0.09	0.09	0.08	0.03	0.03
310	2.115	0.017	2.742	0.021	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.07	0.08	0.06	0.03	0.02
320	1.577	0.013	2.387	0.018	0.00	0.00	0.00	0.00	0.02	0.01	0.07	0.05	0.07	0.05	0.02	0.02
330	1.620	0.013	2.592	0.020	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.05	0.08	0.05	0.03	0.02
340	1.512	0.012	2.578	0.020	0.00	0.00	0.00	0.00	0.02	0.01	0.08	0.05	0.07	0.05	0.03	0.02
350	1.542	0.012	2.476	0.019	0.00	0.00	0.00	0.00	0.02	0.01	0.07	0.05	0.07	0.05	0.03	0.02
360	1.539	0.012	2.395	0.018	0.00	0.00	0.00	0.00	0.02	0.01	0.07	0.05	0.07	0.05	0.02	0.02
370	1.464	0.012	2.361	0.018	0.00	0.00	0.00	0.00	0.02	0.01	0.07	0.05	0.07	0.04	0.02	0.02
380	1.337	0.011	2.569	0.020	0.00	0.00	0.00	0.00	0.02	0.01	0.08	0.04	0.07	0.04	0.03	0.01
390	1.212	0.010	2.461	0.019	0.00	0.00	0.00	0.00	0.02	0.01	0.07	0.04	0.07	0.04	0.03	0.01
400	1.269	0.010	2.614	0.020	0.00	0.00	0.00	0.00	0.02	0.01	0.08	0.04	0.08	0.04	0.03	0.01
410	1.648	0.013	2.532	0.019	0.00	0.00	0.00	0.00	0.02	0.02	0.08	0.05	0.07	0.05	0.03	0.02
420	1.024	0.008	2.038	0.016	0.00	0.00	0.00	0.00	0.02	0.01	0.06	0.03	0.06	0.03	0.02	0.01
430	0.716	0.006	1.695	0.013	0.00	0.00	0.00	0.00	0.02	0.01	0.05	0.02	0.05	0.02	0.02	0.01
440	0.644	0.005	1.468	0.011	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.02	0.04	0.02	0.02	0.01
450	1.158	0.009	1.615	0.012	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.04	0.05	0.04	0.02	0.01
460	0.842	0.007	1.335	0.010	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.03	0.04	0.03	0.01	0.01
470	1.413	0.011	1.602	0.012	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.04	0.05	0.04	0.02	0.02
480	1.711	0.014	1.716	0.013	0.00	0.00	0.00	0.00	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02
490	1.088	0.009	1.476	0.011	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.03	0.04	0.03	0.02	0.01
500	0.696	0.006	0.574	0.004	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
510	0.949	0.008	0.447	0.003	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.03	0.00	0.01
520	1.179	0.010	0.361	0.003	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.01	0.04	0.00	0.01
530	1.068	0.009	0.332	0.003	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.03	0.00	0.01
540	1.501	0.012	0.665	0.005	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.05	0.02	0.05	0.01	0.02
550	1.490	0.012	0.504	0.004	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.01	0.05	0.01	0.02
560	1.946	0.016	1.877	0.014	0.00	0.00	0.00	0.00	0.02	0.02	0.06	0.06	0.05	0.06	0.02	0.02
570	2.474	0.020	2.860	0.022	0.00	0.00	0.00	0.00	0.03	0.02	0.09	0.08	0.08	0.08	0.03	0.03
580	2.059	0.017	1.870	0.014	0.00	0.00	0.00	0.00	0.02	0.02	0.06	0.07	0.05	0.06	0.02	0.02
590	0.587	0.005	0.831	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
600	0.548	0.004	0.858	0.007	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.02	0.02	0.01	0.01
610	0.543	0.004	0.850	0.007	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.02	0.02	0.01	0.01
620	0.538	0.004	0.842	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.02	0.02	0.01	0.01
630	0.533	0.004	0.834	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.02	0.02	0.01	0.01
640	0.528	0.004	0.826	0.006	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01
650	0.523	0.004	0.818	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.01
660	0.518	0.004	0.810	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.01
670	0.513	0.004	0.802	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.01
680	0.508	0.004	0.794	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.01
690	0.503	0.004	0.786	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.01
700	0.498	0.004	0.778	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.01
710	0.493	0.004	0.770	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.01
720	0.488	0.004	0.762	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.01	0.01	0.01
730	0.483	0.004	0.754	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.01	0.01	0.01
740	0.478	0.004	0.746	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.01	0.01	0.01
750	0.473	0.004	0.738	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.02	0.01	0.01	0.01
760	0.468	0.004	0.730	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.01
770	0.463	0.004	0.722	0.006	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.01
780	0.458	0.004	0.714	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
790	0.453	0.004	0.706	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
800	0.448	0.004	0.698	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
810	0.443	0.004	0.690	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
820	0.438	0.004	0.682	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
830	0.433	0.004	0.674	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
840	0.428	0.003	0.666	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
850	0.423	0.003	0.658	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
860	0.418	0.003	0.650	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
870	0.413	0.003	0.642	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
880	0.408	0.003	0.634	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
890	0.403	0.003	0.626	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
900	0.398	0.003	0.618	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
910	0.393	0.003	0.610	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
920	0.388	0.003	0.602	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
930	0.383	0.003	0.594	0.005	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
940	0.378	0.003	0.586	0.004	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
950	0.373	0.003	0.578	0.004	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
960	0.368	0.003	0.570	0.004	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
970	0.363	0.003	0.562	0.004	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00
980	0.358	0.003	0.554	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
990	0.353	0.003	0.546	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
1000	0.348	0.003	0.538	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
1010	0.343	0.003	0.530	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
1020	0.338	0.003	0.522	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00
1030	0.333	0.003	0.514	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.01	0.00
1040	0.328	0.003	0.506	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.01	0.00
1050	0.323	0.003	0.498	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00
1060	0.318	0.003	0.490	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00
1070	0.313	0.003	0.482	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1080	0.308	0.002	0.474	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1090	0.303	0.002	0.466	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1100	0.298	0.002	0.458	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1110	0.293	0.002	0.450	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1120	0.288	0.002	0.442	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1130	0.283	0.002	0.434	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1140	0.278	0.002	0.426	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1150	0.273	0.002	0.418	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1160	0.268	0.002	0.410	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1170	0.263	0.002	0.402	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1180	0.258	0.002	0.394	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1190	0.253	0.002	0.386	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1200	0.248	0.002	0.378	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1210	0.243	0.002	0.370	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1220	0.238	0.002	0.362	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1230	0.233	0.002	0.354	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1240	0.228	0.002	0.346	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1250	0.223	0.002	0.338	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1260	0.218	0.002	0.330	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1270	0.213	0.002	0.322	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1280	0.208	0.002	0.314	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1290	0.203	0.002	0.306	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1300	0.198	0.002	0.298	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1310	0.193	0.002	0.290	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1320	0.188	0.002	0.282	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1330	0.183	0.001	0.274	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1340	0.178	0.001	0.266	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1350	0.173	0.001	0.258	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1360	0.168	0.001	0.250	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1370	0.163	0.001	0.242	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1380	0.158	0.001	0.234	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1390	0.153	0.001	0.226	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1400	0.148	0.001	0.218	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1410	0.143	0.001	0.210	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1420	0.138	0.001	0.202	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1430	0.133	0.001	0.194	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1440	0.128	0.001	0.186	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1450	0.123	0.001	0.178	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
1460	0.118	0.001	0.170	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
1470	0.113	0.001	0.162	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.108	0.001	0.154	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.103	0.001	0.146	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.098	0.001	0.138	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	0.093	0.001	0.130	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	0.088	0.001	0.122	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.083	0.001	0.114	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.078	0.001	0.106	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.073	0.001	0.098	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.068	0.001	0.090	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1570	0.063	0.001	0.082	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1580	0.058	0.000	0.074	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1590	0.053	0.000	0.066	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.048	0.000	0.058	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1610	0.043	0.000	0.050	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1620	0.038	0.000	0.042	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630	0.033	0.000	0.034	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1640	0.028	0.000	0.026	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1650	0.023	0.000	0.018	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-670	Moonlight	0	0	Avg. Net SL	0.00	0.00	-0.05	-0.05	0.05	0.00						
SD-670	325.763	0	308.756	1639			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.034	0.000	0.023	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.162	0.004	1.487	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	1.676	0.005	2.424	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	1.370	0.004	2.808	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
40	3.433	0.011	3.493	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
50	4.577	0.014	3.212	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
60	4.658	0.014	2.564	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
70	5.139	0.016	2.956	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
80	5.959	0.018	3.605	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
90	6.271	0.019	3.584	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
100	6.669	0.020	3.647	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
110	7.059	0.022	3.925	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
120	6.703	0.021	3.559	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
130	6.357	0.020	3.247	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
140	6.045	0.019	3.002	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
150	5.749	0.018	2.783	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
160	5.418	0.017	2.524	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
170	5.081	0.016	2.162	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
180	4.839	0.015	1.882	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
190	4.694	0.014	1.686	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
200	4.563	0.014	1.551	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
210	4.279	0.013	1.474	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
220	4.091	0.013	1.592	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
230	3.920	0.012	1.711	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
240	3.838	0.012	1.866	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
250	4.034	0.012	2.114	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
260	4.249	0.013	2.371	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
270	4.462	0.014	2.638	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
280	4.478	0.014	2.709	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
290	4.102	0.013	2.427	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
300	3.767	0.012	2.134	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
310	3.449	0.011	1.840	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
320	3.138	0.010	1.543	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
330	2.953	0.009	1.351	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
340	3.102	0.010	1.425	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
350	3.678	0.011	1.897	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
360	4.179	0.013	2.300	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
370	4.272	0.013	2.363	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
380	4.371	0.013	2.422	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
390	4.410	0.014	2.398	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
400	4.636	0.014	2.588	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
410	5.291	0.016	3.282	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
420	5.948	0.018	3.984	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
430	5.817	0.018	3.911	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
440	5.456	0.017	3.617	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
450	5.043	0.015	3.317	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
460	4.617	0.014	2.961	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
470	4.338	0.013	2.808	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
480	4.048	0.012	2.653	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
490	3.754	0.012	2.498	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
500	3.463	0.011	2.382	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
510	3.219	0.010	2.358	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
520	3.006	0.009	2.382	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
530	2.795	0.009	2.401	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
540	2.516	0.008	2.415	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	2.130	0.007	2.429	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	1.826	0.006	2.493	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	1.716	0.005	2.732	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
580	1.655	0.005	3.058	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
590	1.644	0.005	3.319	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
600	1.620	0.005	3.527	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
610	1.602	0.005	3.685	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
620	1.633	0.005	3.862	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
630	1.732	0.005	4.112	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
640	1.825	0.006	4.357	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
650	1.778	0.005	4.391	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
660	1.328	0.004	3.916	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
670	1.241	0.004	3.775	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
680	1.183	0.004	3.715	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
690	1.055	0.003	3.671	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
700	0.912	0.003	3.574	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
710	0.863	0.003	3.522	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
720	0.849	0.003	3.485	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
730	0.775	0.002	3.410	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
740	0.946	0.003	3.549	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
750	1.159	0.004	3.711	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
760	0.922	0.003	3.370	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
770	0.679	0.002	2.777	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
780	0.689	0.002	2.689	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
790	0.753	0.002	2.797	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
800	0.999	0.003	3.001	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
810	0.738	0.002	2.566	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
820	0.859	0.003	2.532	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
830	1.154	0.004	2.761	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
840	1.305	0.004	2.843	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
850	0.927	0.003	2.366	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	1.035	0.003	2.454	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	1.427	0.004	2.863	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
880	0.982	0.003	2.428	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	1.512	0.005	2.347	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	0.710	0.002	1.232	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	0.604	0.002	1.177	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	0.830	0.003	1.603	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	0.531	0.002	1.094	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	0.760	0.002	1.194	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	0.878	0.003	1.246	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	0.973	0.003	1.266	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	0.990	0.003	1.296	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	0.906	0.003	1.280	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	0.781	0.002	1.159	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	0.782	0.002	1.194	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	0.775	0.002	1.226	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	0.783	0.002	1.302	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	0.712	0.002	1.262	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	0.886	0.003	1.608	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	1.141	0.004	1.899	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	1.431	0.004	1.864	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	1.255	0.004	1.777	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	1.059	0.003	1.600	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	0.864	0.003	1.449	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	0.982	0.003	1.579	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	0.726	0.002	1.491	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.636	0.002	1.316	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	1.177	0.004	1.740	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	0.953	0.003	1.430	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	0.745	0.002	1.410	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	0.802	0.002	1.696	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	0.966	0.003	1.837	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	1.101	0.003	1.670	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	1.291	0.004	1.231	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	1.916	0.006	1.352	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	1.570	0.005	0.779	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	1.175	0.004	0.645	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	1.011	0.003	0.588	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	1.018	0.003	0.572	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.917	0.003	0.525	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.818	0.003	0.518	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.715	0.002	0.501	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.599	0.002	0.481	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.516	0.002	0.469	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.520	0.002	0.457	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.476	0.001	0.445	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.462	0.001	0.433	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.448	0.001	0.421	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.434	0.001	0.409	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.420	0.001	0.397	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.406	0.001	0.385	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.392	0.001	0.373	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.378	0.001	0.361	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.364	0.001	0.349	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.350	0.001	0.337	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.336	0.001	0.325	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.322	0.001	0.313	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.308	0.001	0.301	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.294	0.001	0.289	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.280	0.001	0.277	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.266	0.001	0.265	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.252	0.001	0.253	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.238	0.001	0.241	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.224	0.001	0.229	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.210	0.001	0.217	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	0.196	0.001	0.205	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	0.182	0.001	0.193	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.168	0.001	0.181	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.154	0.000	0.169	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.140	0.000	0.157	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.126	0.000	0.145	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1570	0.112	0.000	0.133	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1580	0.098	0.000	0.121	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1590	0.084	0.000	0.109	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.070	0.000	0.097	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1610	0.056	0.000	0.085	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1620	0.042	0.000	0.073	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630	0.028	0.000	0.061	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1640	0.014	0.000	0.049	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0675	Stone Steps	0	0	Avg. Net SL	0.00	0.00	0.00	-0.02	-0.04	0.04						
SD-675	188.01	0	174.875	1230	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
-10	0.434	0.002308	0.606	0.003465	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	2.983	0.015866	3.417	0.01954	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
10	3.43	0.018244	3.368	0.019259	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
20	3.048	0.016212	3.046	0.017418	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
30	2.753	0.014643	2.687	0.015365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
40	2.424	0.012893	2.359	0.01349	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
50	2.172	0.011553	1.99	0.01138	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
60	1.996	0.010616	1.779	0.010173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
70	1.883	0.010015	1.629	0.009315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	1.786	0.009499	1.433	0.008194	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	1.825	0.009707	1.341	0.007668	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	2.285	0.012154	1.634	0.009344	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
110	2.716	0.014446	1.922	0.010991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
120	2.907	0.015462	2.048	0.011711	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
130	3.161	0.016813	2.177	0.012449	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
140	3.484	0.018531	2.313	0.013227	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
150	3.789	0.020153	2.427	0.013878	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
160	3.91	0.020797	2.362	0.013507	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
170	3.627	0.019292	1.935	0.011065	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
180	3.355	0.017845	1.548	0.008852	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
190	3.083	0.016398	1.235	0.007062	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
200	2.866	0.015244	1.084	0.006199	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
210	2.939	0.015632	1.211	0.006925	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
220	2.989	0.015898	1.279	0.007314	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
230	2.846	0.015137	1.188	0.006793	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
240	2.958	0.015733	1.343	0.00768	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
250	3.214	0.017095	1.626	0.009298	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
260	3.423	0.018206	1.843	0.010539	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
270	3.258	0.017329	1.674	0.009573	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
280	2.95	0.015691	1.347	0.007703	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
290	3.176	0.016893	1.535	0.008778	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
300	3.394	0.018052	1.704	0.009744	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
310	3.608	0.01919	1.86	0.010636	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
320	3.725	0.019813	1.937	0.011076	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
330	3.291	0.017504	1.566	0.008955	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
340	2.743	0.01459	1.12	0.006405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
350	2.23	0.011861	0.721	0.004123	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
360	1.967	0.010462	0.574	0.003282	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
370	1.831	0.009739	0.518	0.002962	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	1.702	0.009053	0.474	0.002711	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	1.62	0.008617	0.477	0.002728	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	1.505	0.008005	0.479	0.002739	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	1.371	0.007292	0.509	0.002911	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	1.271	0.00676	0.57	0.003259	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	1.27	0.006755	0.698	0.003991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	1.394	0.007414	0.913	0.005221	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	1.468	0.007808	1.113	0.006365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	1.528	0.008127	1.306	0.007468	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	1.547	0.008228	1.494	0.008543	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	1.585	0.00843	1.654	0.009458	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	1.584	0.008425	1.817	0.01039	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	1.663	0.008845	2.115	0.012094	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
510	1.741	0.00926	2.418	0.013827	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
520	1.542	0.008202	2.352	0.01345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
530	1.143	0.006079	2.02	0.011551	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
540	0.99	0.005266	1.978	0.011311	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
550	0.793	0.004218	1.983	0.01134	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
560	0.898	0.004776	2.342	0.013392	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
570	1.033	0.005494	2.745	0.015697	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
580	1.474	0.00784	3.276	0.018733	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
590	1.822	0.009691	3.306	0.018905	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
600	1.541	0.008196	3.109	0.017778	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
610	1.153	0.006133	2.907	0.016623	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
620	1.097	0.005835	2.819	0.01612	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
630	0.938	0.004989	2.341	0.013387	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
640	0.882	0.004691	2.226	0.012729	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
650	1.16	0.00617	2.173	0.012426	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
660	1.43	0.007606	2.158	0.01234	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
670	1.436	0.007638	2.119	0.012117	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
680	0.943	0.005016	1.856	0.010613	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
690	0.652	0.003468	1.523	0.008709	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	0.774	0.004117	1.373	0.007851	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	0.568	0.003021	1.288	0.007365	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	0.424	0.002255	1.107	0.00633	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	0.721	0.003835	1.083	0.006193	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	0.759	0.004037	1.049	0.005999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	0.683	0.003633	0.762	0.004357	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	0.961	0.005111	0.94	0.005375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	1.002	0.00533	1.234	0.007056	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	0.658	0.0035	1.345	0.007691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	0.563	0.002995	1.383	0.007909	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	0.52	0.002766	0.876	0.005009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	0.485	0.00258	0.704	0.004026	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	0.467	0.002484	0.783	0.004477	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	0.485	0.00258	1.168	0.006679	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	0.615	0.003271	1.266	0.007239	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	0.562	0.002989	1.12	0.006405	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	0.524	0.002787	0.87	0.004975	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	0.451	0.002399	0.843	0.004821	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	0.333	0.001771	0.807	0.004615	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	0.76	0.004042	1.454	0.008315	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	0.348	0.001851	0.931	0.005324	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	0.597	0.003175	1.135	0.00649	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	0.964	0.005127	1.312	0.007503	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	1.392	0.007404	1.67	0.00955	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	1.405	0.007473	1.602	0.009161	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	1.29	0.006861	1.448	0.00828	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	1.102	0.005861	1.13	0.006462	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	1.122	0.005968	0.81	0.004632	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	1.198	0.006372	0.653	0.003734	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	1.046	0.005564	0.697	0.003986	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	1.078	0.005734	0.847	0.004843	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	0.981	0.005218	0.89	0.005089	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	0.871	0.004633	0.886	0.005066	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	0.895	0.00476	1.006	0.005753	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	0.948	0.005042	1.235	0.007062	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	1.046	0.005564	1.528	0.008738	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	1.033	0.005494	1.624	0.009287	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	0.759	0.004037	1.303	0.007451	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	0.872	0.004638	1.273	0.007279	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	0.473	0.002516	0.738	0.00422	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	0.455	0.00242	0.549	0.003139	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	0.425	0.002261	0.509	0.002911	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.395	0.002101	0.469	0.002682	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.365	0.001941	0.429	0.002453	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	0.335	0.001782	0.389	0.002224	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	0.305	0.001622	0.349	0.001996	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	0.275	0.001463	0.309	0.001767	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	0.245	0.001303	0.269	0.001538	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	0.215	0.001144	0.229	0.00131	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.185	0.000984	0.189	0.001081	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	0.155	0.000824	0.149	0.000852	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.125	0.000665	0.109	0.000623	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.095	0.000505	0.069	0.000395	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.065	0.000346	0.029	0.000166	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0680	Beacons	0	0	Avg. Net Sh	0.00	0.00	0.00	0.00	-0.01	0.00						
SD-680	269.71	0	210.742	1357	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.030	0.000	0.023	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	6.439	0.024	6.588	0.031	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	6.008	0.022	6.548	0.031	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	5.776	0.021	5.975	0.028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	5.631	0.021	5.842	0.028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	5.291	0.020	5.651	0.027	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	5.073	0.019	5.112	0.024	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	4.867	0.018	4.607	0.022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	4.740	0.018	4.172	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	4.701	0.017	3.913	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	4.587	0.017	3.725	0.018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	4.312	0.016	3.366	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	4.130	0.015	3.084	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	4.056	0.015	2.950	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	4.007	0.015	2.888	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	3.948	0.015	2.845	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	3.889	0.014	2.824	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	3.879	0.014	2.840	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	3.903	0.014	2.864	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	3.952	0.015	2.898	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	4.007	0.015	2.926	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	3.967	0.015	2.848	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	3.817	0.014	2.656	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	3.686	0.014	2.462	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	3.555	0.013	2.270	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	3.428	0.013	2.076	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	3.301	0.012	1.880	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	3.181	0.012	1.680	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	3.267	0.012	1.686	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	3.500	0.013	1.848	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	3.760	0.014	2.081	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	3.746	0.014	2.053	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	3.274	0.012	1.576	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	3.014	0.011	1.327	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	3.683	0.014	2.024	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	3.063	0.011	1.427	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	2.517	0.009	0.871	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	2.475	0.009	0.761	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	2.788	0.010	1.023	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	3.154	0.012	1.332	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	3.505	0.013	1.595	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	3.843	0.014	1.842	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	4.046	0.015	1.984	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	3.971	0.015	1.921	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	3.890	0.014	1.846	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	3.783	0.014	1.782	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	3.621	0.013	1.719	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	3.458	0.013	1.654	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	3.438	0.013	1.692	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	3.373	0.013	1.724	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	3.047	0.011	1.673	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	2.745	0.010	1.761	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	2.599	0.010	1.945	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	2.178	0.008	1.783	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	1.856	0.007	1.508	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	1.694	0.006	1.593	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	2.406	0.009	2.000	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	2.532	0.009	2.045	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	2.378	0.009	1.988	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	1.942	0.007	1.792	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	1.874	0.007	1.865	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	1.934	0.007	1.859	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	2.065	0.008	1.517	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	2.251	0.008	1.772	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	2.138	0.008	1.193	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	2.007	0.007	1.164	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	2.416	0.009	1.748	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	2.641	0.010	1.764	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	2.367	0.009	1.423	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	2.785	0.010	1.484	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	1.671	0.006	1.062	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	1.797	0.007	2.164	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	1.634	0.006	2.247	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	1.350	0.005	1.860	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	0.823	0.003	1.251	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	0.680	0.003	1.165	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	0.670	0.002	1.555	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	0.660	0.002	1.010	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	0.650	0.002	0.994	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	0.640	0.002	0.978	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	0.630	0.002	0.962	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	0.620	0.002	0.946	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	0.610	0.002	0.930	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	0.600	0.002	0.914	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	0.590	0.002	0.898	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	0.580	0.002	0.882	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	0.570	0.002	0.866	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	0.560	0.002	0.850	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	0.550	0.002	0.834	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	0.540	0.002	0.818	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	0.530	0.002	0.802	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	0.520	0.002	0.786	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	0.510	0.002	0.770	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	0.500	0.002	0.754	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	0.490	0.002	0.738	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	0.480	0.002	0.722	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	0.470	0.002	0.706	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	0.460	0.002	0.690	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	0.450	0.002	0.674	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	0.440	0.002	0.658	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	0.430	0.002	0.642	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	0.420	0.002	0.626	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	0.410	0.002	0.610	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	0.400	0.001	0.594	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	0.390	0.001	0.578	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	0.380	0.001	0.562	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	0.370	0.001	0.546	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	0.360	0.001	0.530	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	0.350	0.001	0.514	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	0.340	0.001	0.498	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	0.330	0.001	0.482	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	0.320	0.001	0.466	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.310	0.001	0.450	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.300	0.001	0.434	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	0.290	0.001	0.418	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	0.280	0.001	0.402	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	0.270	0.001	0.386	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	0.260	0.001	0.370	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	0.250	0.001	0.354	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.240	0.001	0.338	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	0.230	0.001	0.322	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.220	0.001	0.306	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.210	0.001	0.290	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.200	0.001	0.274	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.190	0.001	0.258	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.180	0.001	0.242	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.170	0.001	0.226	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.160	0.001	0.210	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.150	0.001	0.194	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.140	0.001	0.178	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.130	0.000	0.162	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.120	0.000	0.146	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.110	0.000	0.130	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.100	0.000	0.114	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.090	0.000	0.098	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.080	0.000	0.082	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.070	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0690	Leucadia	0	0	Avg. Net Sl	0.00	0.00	0.00	0.00	0.00	0.00						
SD-690	98.1278	0	105.601	1470	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	2.782	0.028	3.016	0.029	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	2.570	0.026	3.304	0.031	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	3.050	0.031	3.749	0.036	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	2.836	0.029	3.376	0.032	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	2.546	0.026	2.914	0.028	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	2.130	0.022	2.434	0.023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	1.736	0.018	2.024	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	1.302	0.013	1.549	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	1.020	0.010	1.179	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.912	0.009	0.963	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.802	0.008	0.777	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.661	0.007	0.592	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.646	0.007	0.547	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.665	0.007	0.533	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.652	0.007	0.506	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.778	0.008	0.612	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.926	0.009	0.704	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	1.085	0.011	0.798	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	1.134	0.012	0.805	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	1.126	0.011	0.756	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	1.153	0.012	0.714	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	1.213	0.012	0.680	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	1.219	0.012	0.613	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	1.361	0.014	0.710	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	1.512	0.015	0.818	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	1.717	0.017	1.010	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	1.942	0.020	1.264	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	1.865	0.019	1.226	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	1.466	0.015	0.848	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	1.108	0.011	0.486	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	1.250	0.013	0.632	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	1.437	0.015	0.842	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	1.587	0.016	1.059	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	1.702	0.017	1.287	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	1.748	0.018	1.454	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	1.750	0.018	1.572	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	1.759	0.018	1.681	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	1.649	0.017	1.697	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	1.349	0.014	1.569	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	1.019	0.010	1.427	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	0.832	0.008	1.364	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	0.794	0.008	1.349	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	0.697	0.007	1.270	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	0.607	0.006	1.172	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	0.521	0.005	1.061	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	0.398	0.004	0.889	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	0.255	0.003	0.658	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	0.472	0.005	0.785	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	0.729	0.007	0.949	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	0.586	0.006	0.712	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	0.579	0.006	0.638	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	0.686	0.007	0.703	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	0.704	0.007	0.678	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	0.691	0.007	0.612	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	0.709	0.007	0.599	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	0.742	0.008	0.647	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	0.599	0.006	0.518	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	0.579	0.006	0.531	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	0.531	0.005	0.487	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	0.601	0.006	0.534	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	0.594	0.006	0.523	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	0.588	0.006	0.548	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	0.581	0.006	0.814	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	0.574	0.006	0.805	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	0.568	0.006	0.795	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	0.561	0.006	0.786	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	0.554	0.006	0.776	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	0.547	0.006	0.767	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	0.541	0.006	0.758	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	0.534	0.005	0.748	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	0.527	0.005	0.739	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	0.521	0.005	0.729	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	0.514	0.005	0.720	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	0.507	0.005	0.711	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	0.500	0.005	0.701	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	0.494	0.005	0.692	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	0.487	0.005	0.682	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	0.480	0.005	0.673	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	0.474	0.005	0.664	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	0.467	0.005	0.654	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	0.460	0.005	0.645	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	0.454	0.005	0.635	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	0.447	0.005	0.626	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	0.440	0.004	0.617	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	0.434	0.004	0.607	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	0.427	0.004	0.598	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	0.420	0.004	0.588	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	0.413	0.004	0.579	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	0.407	0.004	0.570	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	0.400	0.004	0.560	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	0.393	0.004	0.551	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	0.387	0.004	0.541	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	0.380	0.004	0.532	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	0.373	0.004	0.523	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	0.367	0.004	0.513	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	0.360	0.004	0.504	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	0.353	0.004	0.494	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	0.346	0.004	0.485	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	0.340	0.003	0.476	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	0.333	0.003	0.466	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	0.326	0.003	0.457	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	0.320	0.003	0.447	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	0.313	0.003	0.438	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	0.306	0.003	0.429	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	0.300	0.003	0.419	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	0.293	0.003	0.410	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	0.286	0.003	0.400	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	0.279	0.003	0.391	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	0.273	0.003	0.382	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	0.266	0.003	0.372	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	0.259	0.003	0.363	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	0.253	0.003	0.353	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.246	0.003	0.344	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.239	0.002	0.335	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	0.233	0.002	0.325	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	0.226	0.002	0.316	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	0.219	0.002	0.306	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	0.212	0.002	0.297	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	0.206	0.002	0.288	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.199	0.002	0.278	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	0.192	0.002	0.269	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.186	0.002	0.259	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.179	0.002	0.250	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.172	0.002	0.241	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.166	0.002	0.231	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.159	0.002	0.222	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.152	0.002	0.212	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.145	0.001	0.203	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.139	0.001	0.194	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.132	0.001	0.184	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.125	0.001	0.175	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.119	0.001	0.165	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.112	0.001	0.156	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.105	0.001	0.147	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.098	0.001	0.137	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.092	0.001	0.128	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.085	0.001	0.118	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.078	0.001	0.109	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.072	0.001	0.100	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.065	0.001	0.090	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.058	0.001	0.081	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.052	0.001	0.071	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.045	0.000	0.062	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.038	0.000	0.053	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.031	0.000	0.043	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.025	0.000	0.034	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.018	0.000	0.024	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.011	0.000	0.015	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0695	Leucadia	0	0	Avg. Net Sh	0.00	0.00	0.00	0.00	0.00	0.00						
SD-695	104.044	0	143.745	1500			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.016	0.000	0.010	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	2.509	0.024	2.507	0.017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	2.681	0.026	2.717	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	2.668	0.026	2.824	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	2.439	0.023	2.938	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	2.207	0.021	2.988	0.021	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	2.055	0.020	2.674	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	1.866	0.018	2.328	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	1.713	0.016	2.094	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	1.522	0.015	1.949	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	1.513	0.015	1.827	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	1.532	0.015	1.763	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	1.452	0.014	1.677	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	1.229	0.012	1.417	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1.070	0.010	1.197	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.966	0.009	1.035	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.923	0.009	0.905	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.885	0.009	0.784	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.945	0.009	0.758	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	1.260	0.012	0.932	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	1.625	0.016	1.148	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	1.868	0.018	1.369	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	1.913	0.018	1.450	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	1.927	0.019	1.503	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	1.611	0.015	1.310	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	1.633	0.016	1.324	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	1.846	0.018	1.496	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	1.844	0.018	1.455	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	1.853	0.018	1.483	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	1.354	0.013	1.137	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	1.174	0.011	1.112	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	0.990	0.010	1.109	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	0.857	0.008	1.094	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	0.706	0.007	1.084	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	0.524	0.005	1.070	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	0.563	0.005	1.286	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	0.571	0.005	1.499	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	0.538	0.005	1.697	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	0.505	0.005	1.896	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	0.575	0.006	2.087	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	0.684	0.007	2.260	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	0.602	0.006	2.079	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	0.622	0.006	1.991	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	0.619	0.006	1.803	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	0.558	0.005	1.574	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	0.483	0.005	1.358	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	0.440	0.004	1.199	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	0.360	0.003	1.021	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	0.321	0.003	0.854	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	0.346	0.003	0.696	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	0.290	0.003	0.602	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	0.319	0.003	0.525	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	0.367	0.004	0.566	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	0.349	0.003	0.713	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	0.556	0.005	0.824	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	0.711	0.007	0.891	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	0.529	0.005	0.765	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	0.701	0.007	0.718	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	0.810	0.008	0.716	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	0.862	0.008	0.718	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	0.746	0.007	0.768	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	0.576	0.006	0.757	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	0.563	0.005	0.758	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	0.969	0.009	0.928	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	0.986	0.009	1.089	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	0.929	0.009	1.068	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	0.706	0.007	1.057	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	0.596	0.006	1.289	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	0.937	0.009	1.462	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	1.018	0.010	1.606	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	0.827	0.008	1.421	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	0.549	0.005	1.272	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	0.486	0.005	1.152	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	1.183	0.011	1.628	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	1.304	0.013	1.661	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	1.103	0.011	1.437	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	0.670	0.006	1.157	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	0.590	0.006	0.961	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	0.556	0.005	1.140	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	0.521	0.005	1.514	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	0.478	0.005	1.364	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	0.596	0.006	1.598	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	0.908	0.009	1.831	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	0.935	0.009	1.669	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	0.804	0.008	1.490	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	0.540	0.005	0.810	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	0.532	0.005	0.798	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	0.524	0.005	0.785	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	0.515	0.005	0.773	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	0.507	0.005	0.760	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	0.499	0.005	0.748	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	0.491	0.005	0.736	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	0.483	0.005	0.723	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	0.474	0.005	0.711	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	0.466	0.004	0.698	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	0.458	0.004	0.686	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	0.450	0.004	0.674	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	0.442	0.004	0.661	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	0.433	0.004	0.649	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	0.425	0.004	0.636	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	0.417	0.004	0.624	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	0.409	0.004	0.612	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	0.401	0.004	0.599	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	0.392	0.004	0.587	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	0.384	0.004	0.574	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	0.376	0.004	0.562	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	0.368	0.004	0.550	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	0.360	0.003	0.537	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	0.351	0.003	0.525	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	0.343	0.003	0.512	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	0.335	0.003	0.500	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	0.327	0.003	0.488	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.319	0.003	0.475	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.310	0.003	0.463	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	0.302	0.003	0.450	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	0.294	0.003	0.438	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	0.286	0.003	0.426	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	0.278	0.003	0.413	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	0.269	0.003	0.401	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.261	0.003	0.388	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	0.253	0.002	0.376	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.245	0.002	0.364	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.237	0.002	0.351	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.228	0.002	0.339	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.220	0.002	0.326	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.212	0.002	0.314	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.204	0.002	0.302	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.196	0.002	0.289	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.187	0.002	0.277	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.179	0.002	0.264	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.171	0.002	0.252	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.163	0.002	0.240	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.155	0.001	0.227	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.146	0.001	0.215	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.138	0.001	0.202	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.130	0.001	0.190	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.122	0.001	0.178	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.114	0.001	0.165	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.105	0.001	0.153	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.097	0.001	0.140	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.089	0.001	0.128	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.081	0.001	0.116	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.073	0.001	0.103	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.064	0.001	0.091	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.056	0.001	0.078	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.048	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.040	0.000	0.054	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.032	0.000	0.041	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.023	0.000	0.029	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.015	0.000	0.016	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.007	0.000	0.004	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0700	Grandview	0	0	Avg. Net SL	0.00	0.00	0.00	0.00	0.00	0.00								
SD-700	156.8425	0	206.84	1515			Sand Depth (ft)											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall		
0	2.478	0.016	2.920	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10	2.613	0.017	3.000	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
20	2.204	0.014	2.591	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30	1.833	0.012	2.230	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
40	1.499	0.010	1.894	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
50	1.307	0.008	1.646	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
60	1.315	0.008	1.557	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
70	1.372	0.009	1.557	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
80	1.250	0.008	1.405	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	1.102	0.007	1.222	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
100	1.008	0.006	1.082	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
110	0.976	0.006	0.998	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
120	0.919	0.006	0.901	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
130	0.834	0.005	0.780	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
140	0.759	0.005	0.678	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
150	0.712	0.005	0.606	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
160	0.684	0.004	0.556	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
170	0.652	0.004	0.506	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
180	0.616	0.004	0.458	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
190	0.583	0.004	0.428	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
200	0.553	0.004	0.411	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
210	0.526	0.003	0.399	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
220	0.507	0.003	0.399	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
230	0.526	0.003	0.436	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
240	0.599	0.004	0.523	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
250	0.656	0.004	0.604	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
260	0.653	0.004	0.626	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
270	0.624	0.004	0.598	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
280	0.644	0.004	0.611	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
290	0.667	0.004	0.621	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
300	0.694	0.004	0.646	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
310	0.837	0.005	0.790	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
320	1.112	0.007	1.049	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
330	1.384	0.009	1.285	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
340	1.650	0.011	1.515	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
350	1.878	0.012	1.727	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
360	2.057	0.013	1.940	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
370	2.219	0.014	2.163	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
380	2.306	0.015	2.317	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
390	2.267	0.014	2.367	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
400	2.203	0.014	2.384	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
410	2.140	0.014	2.356	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
420	2.098	0.013	2.351	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
430	2.075	0.013	2.395	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
440	2.038	0.013	2.461	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
450	2.002	0.013	2.525	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
460	1.919	0.012	2.538	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
470	1.740	0.011	2.466	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
480	1.596	0.010	2.462	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
490	1.423	0.009	2.417	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
500	1.288	0.008	2.409	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
510	1.277	0.008	2.561	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
520	1.232	0.008	2.697	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
530	1.231	0.008	2.880	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
540	1.317	0.008	3.123	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
550	1.377	0.009	3.391	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
560	1.483	0.009	3.603	0.017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
570	1.631	0.010	3.723	0.018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
580	2.108	0.013	4.069	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
590	2.369	0.015	4.236	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
600	1.986	0.013	3.934	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
610	1.396	0.009	3.554	0.017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
620	1.340	0.009	3.142	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
630	2.060	0.013	2.846	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
640	2.148	0.014	2.654	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
650	1.677	0.011	2.353	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
660	1.172	0.007	2.117	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
670	0.943	0.006	1.837	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
680	1.056	0.007	1.693	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
690	1.222	0.008	1.734	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
700	1.287	0.008	1.855	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
710	1.261	0.008	1.859	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
720	1.203	0.008	1.810	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
730	1.006	0.006	1.794	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
740	0.772	0.005	1.738	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
750	0.627	0.004	1.699	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
760	0.602	0.004	1.690	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
770	0.650	0.004	1.684	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
780	0.966	0.006	1.778	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
790	1.295	0.008	1.703	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
800	1.369	0.009	1.662	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
810	1.823	0.012	2.187	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
820	2.228	0.014	2.451	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
830	1.772	0.011	2.048	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
840	1.256	0.008	1.601	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
850	0.967	0.006	1.267	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
860	0.924	0.006	1.212	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
870	1.283	0.008	1.308	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
880	1.676	0.011	1.565	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
890	1.763	0.011	1.665	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
900	1.402	0.009	1.520	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
910	1.136	0.007	1.506	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
920	1.251	0.008	1.691	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
930	1.459	0.009	1.861	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
940	1.597	0.010	1.958	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
950	2.235	0.014	2.312	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
960	2.509	0.016	2.194	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
970	2.307	0.015	1.952	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
980	1.897	0.012	1.834	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
990	1.676	0.011	1.567	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1000	1.697	0.011	1.435	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1010	1.356	0.009	1.310	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1020	0.874	0.006	1.109	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1030	0.657	0.004	0.927	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1040	0.701	0.004	0.735	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1050	0.775	0.005	0.668	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1060	0.496	0.003	0.655	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1070	0.486	0.003	0.642	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1080	0.475	0.003	0.629	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1090	0.465	0.003	0.616	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1100	0.454	0.003	0.603	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1110	0.444	0.003	0.590	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1120	0.433	0.003	0.577	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1130	0.423	0.003	0.564	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1140	0.412	0.003	0.551	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1150	0.402	0.003	0.538	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1160	0.391	0.002	0.525	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1170	0.381	0.002	0.512	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1180	0.370	0.002	0.499	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1190	0.360	0.002	0.486	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1200	0.349	0.002	0.473	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1210	0.339	0.002	0.460	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1220	0.328	0.002	0.447	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1230	0.318	0.002	0.434	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1240	0.307	0.002	0.421	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1250	0.297	0.002	0.408	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1260	0.286	0.002	0.395	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1270	0.276	0.002	0.382	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1280	0.265	0.002	0.369	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1290	0.255	0.002	0.356	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1300	0.244	0.002	0.343	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1310	0.234	0.001	0.330	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1320	0.223	0.001	0.317	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1330	0.213	0.001	0.304	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1340	0.202	0.001	0.291	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1350	0.192	0.001	0.278	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1360	0.181	0.001	0.265	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1370	0.171	0.001	0.252	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1380	0.160	0.001	0.239	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1390	0.150	0.001	0.226	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1400	0.139	0.001	0.213	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1410	0.129	0.001	0.200	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1420	0.118	0.001	0.187	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1430	0.108	0.001	0.174	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1440	0.097	0.001	0.161	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1450	0.086	0.001	0.148	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1460	0.076	0.000	0.135	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1470	0.065	0.000	0.122	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1480	0.055	0.000	0.109	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1490	0.044	0.000	0.096	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1500	0.034	0.000	0.083	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1510	0.023	0.000	0.070	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1520	0.013	0.000	0.057	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

SD-0710	Batiquitos	0	0	Avg. Net Cl	0.00	0.00	0.00	0.00	0.00	0.00						
SD-710	297.786	0	279.863	1485	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.066	0.000	0.069	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.852	0.006	1.568	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	3.731	0.013	3.365	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	3.151	0.011	2.458	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	3.507	0.012	2.344	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	4.162	0.014	2.436	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	4.390	0.015	2.348	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	4.471	0.015	2.391	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	4.241	0.014	2.156	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	4.385	0.015	1.977	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	4.699	0.016	2.085	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	4.978	0.017	2.256	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	5.231	0.018	2.494	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	5.157	0.017	2.452	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	4.652	0.016	1.984	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	4.218	0.014	1.540	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	3.916	0.013	1.254	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	3.645	0.012	1.030	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	3.136	0.011	0.811	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	3.013	0.010	0.970	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	2.921	0.010	1.095	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	2.556	0.009	0.940	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	2.213	0.007	0.791	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	1.930	0.006	0.478	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	1.748	0.006	0.370	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	1.688	0.006	0.378	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	1.723	0.006	0.461	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	1.829	0.006	0.554	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	1.945	0.007	0.622	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	2.070	0.007	0.632	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	2.288	0.008	0.694	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	2.505	0.008	0.760	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	2.813	0.009	0.893	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	3.466	0.012	1.315	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	4.110	0.014	1.773	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	4.755	0.016	2.222	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	5.186	0.017	2.534	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	5.598	0.019	2.790	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	5.597	0.019	2.660	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	5.510	0.019	2.506	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	5.405	0.018	2.402	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	5.344	0.018	2.315	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	5.288	0.018	2.283	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	5.211	0.017	2.402	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	5.130	0.017	2.474	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	5.046	0.017	2.626	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	4.913	0.016	2.809	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	4.761	0.016	2.906	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	4.532	0.015	2.979	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	4.347	0.015	2.872	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	4.062	0.014	2.677	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	3.564	0.012	2.444	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	3.551	0.012	2.645	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	3.317	0.011	2.723	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	2.609	0.009	2.490	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	2.115	0.007	2.290	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	2.337	0.008	2.600	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	1.931	0.006	2.365	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	1.268	0.004	2.085	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	1.087	0.004	2.303	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	1.281	0.004	2.924	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	1.154	0.004	2.681	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	1.659	0.006	2.928	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	0.925	0.003	2.217	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	0.543	0.002	1.864	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	0.907	0.003	1.966	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	0.835	0.003	1.771	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	1.127	0.004	1.639	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	0.849	0.003	1.586	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	0.664	0.002	1.513	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	0.728	0.002	1.900	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	0.862	0.003	2.498	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	1.209	0.004	3.220	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	1.840	0.006	4.136	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	1.115	0.004	3.528	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	1.427	0.005	3.858	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	1.311	0.004	3.607	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	1.093	0.004	3.007	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	0.666	0.002	2.394	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	0.663	0.002	2.504	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	0.768	0.003	2.765	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	1.134	0.004	3.460	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	1.025	0.003	3.616	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	1.275	0.004	4.064	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	1.242	0.004	3.920	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	1.360	0.005	3.308	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	2.019	0.007	3.541	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	1.803	0.006	3.270	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	1.885	0.006	3.138	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	1.786	0.006	2.971	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	1.492	0.005	2.705	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	1.225	0.004	2.400	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	1.020	0.003	2.221	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	0.853	0.003	2.144	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	0.805	0.003	2.171	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	0.758	0.003	2.237	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	0.697	0.002	2.160	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	0.839	0.003	2.323	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	0.793	0.003	2.185	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	1.654	0.006	3.115	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	1.533	0.005	2.919	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	1.646	0.006	2.806	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	1.085	0.004	2.017	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	0.821	0.003	1.715	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	1.039	0.003	1.800	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	1.181	0.004	1.836	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	1.095	0.004	1.774	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	1.064	0.004	1.756	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	1.070	0.004	1.883	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	1.352	0.005	2.151	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	1.178	0.004	1.871	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	1.028	0.003	1.599	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.809	0.003	1.561	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.852	0.003	1.524	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	1.109	0.004	1.739	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	1.449	0.005	2.105	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	1.006	0.003	1.601	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	1.126	0.004	1.689	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	1.021	0.003	1.564	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.904	0.003	1.378	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	1.334	0.004	1.826	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	1.148	0.004	1.572	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	1.184	0.004	1.717	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	1.114	0.004	1.523	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.860	0.003	1.163	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.806	0.003	1.026	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.829	0.003	1.009	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.759	0.003	0.913	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.756	0.003	0.873	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	1.002	0.003	1.000	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.783	0.003	0.855	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.582	0.002	0.654	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.560	0.002	0.594	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.472	0.002	0.593	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.383	0.001	0.576	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.358	0.001	0.538	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.332	0.001	0.500	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.307	0.001	0.462	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.281	0.001	0.424	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.256	0.001	0.386	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.230	0.001	0.348	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.205	0.001	0.310	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.179	0.001	0.272	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.154	0.001	0.234	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.128	0.000	0.196	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.103	0.000	0.158	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.077	0.000	0.120	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.051	0.000	0.082	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.026	0.000	0.044	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.000	0.000	0.006	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CB-0720	Batiquitos	0	0	Avg. Net SL	0.00	0.00	0.00	0.00	0.00	0.00						
CB-720	493.724	0	508.685	1556			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring rati	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.457	0.001	0.578	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.968	0.002	0.909	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.905	0.002	0.974	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.638	0.001	0.874	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.722	0.001	0.946	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.883	0.002	1.040	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	1.172	0.002	1.342	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	1.524	0.003	1.704	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	2.633	0.005	2.788	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	3.334	0.007	3.497	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	3.150	0.006	3.334	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	2.526	0.005	2.773	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	1.622	0.003	1.985	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	1.333	0.003	1.751	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1.601	0.003	1.970	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	2.382	0.005	2.623	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	3.343	0.007	3.534	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	3.976	0.008	3.965	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	4.721	0.010	4.356	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	5.552	0.011	4.765	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	6.023	0.012	4.657	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	6.287	0.013	4.408	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	6.601	0.013	4.307	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	6.763	0.014	4.077	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	6.776	0.014	3.771	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	6.735	0.014	3.549	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	6.640	0.013	3.371	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	6.492	0.013	3.196	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	6.324	0.013	3.039	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	6.108	0.012	2.896	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	5.791	0.012	2.674	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	5.408	0.011	2.429	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	4.979	0.010	2.208	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	4.556	0.009	2.027	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	4.294	0.009	1.975	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	4.250	0.009	2.103	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	4.284	0.009	2.305	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	4.341	0.009	2.497	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	4.546	0.009	2.771	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	4.900	0.010	3.119	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	5.295	0.011	3.477	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	5.689	0.012	3.791	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	5.983	0.012	3.958	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	6.106	0.012	3.937	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	6.176	0.013	3.846	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	6.267	0.013	3.789	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	6.204	0.013	3.626	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	5.813	0.012	3.158	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	5.606	0.011	2.896	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	5.639	0.011	2.898	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	5.667	0.011	2.907	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	5.107	0.010	2.536	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	4.679	0.009	2.451	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	4.560	0.009	2.714	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	4.452	0.009	2.862	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	4.410	0.009	2.907	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	4.676	0.009	3.167	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	4.873	0.010	3.349	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	4.905	0.010	3.402	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	4.919	0.010	3.475	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	5.078	0.010	3.709	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	5.323	0.011	4.017	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	5.558	0.011	4.307	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	5.781	0.012	4.596	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	5.815	0.012	4.725	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	5.434	0.011	4.496	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	4.840	0.010	4.119	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	4.261	0.009	3.800	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	3.908	0.008	3.720	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	3.733	0.008	3.832	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	3.684	0.007	4.093	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	3.366	0.007	4.141	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	2.993	0.006	4.096	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	2.841	0.006	4.166	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	2.745	0.006	4.282	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	2.672	0.005	4.404	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	2.734	0.006	4.626	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	2.857	0.006	4.908	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	2.974	0.006	5.187	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	3.012	0.006	5.366	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	2.917	0.006	5.394	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	2.778	0.006	5.344	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	2.632	0.005	5.221	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	2.438	0.005	5.019	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	2.207	0.004	4.792	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	1.989	0.004	4.580	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	1.897	0.004	4.491	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	1.876	0.004	4.468	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	1.864	0.004	4.440	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	1.885	0.004	4.440	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	1.889	0.004	4.427	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	1.893	0.004	4.373	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	1.879	0.004	4.385	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	1.873	0.004	4.471	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	1.846	0.004	4.508	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	1.824	0.004	4.457	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	1.816	0.004	4.377	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	1.793	0.004	4.308	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	1.802	0.004	4.230	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	1.819	0.004	4.186	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	1.811	0.004	4.066	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	1.799	0.004	3.914	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	1.763	0.004	3.781	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	1.710	0.003	3.647	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	1.667	0.003	3.510	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	1.654	0.003	3.425	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	1.650	0.003	3.381	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	1.641	0.003	3.335	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	1.631	0.003	3.218	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	1.570	0.003	3.089	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	1.486	0.003	2.971	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	1.421	0.003	2.878	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	1.369	0.003	2.785	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	1.340	0.003	2.716	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	1.341	0.003	2.719	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	1.350	0.003	2.692	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	1.359	0.003	2.651	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	1.465	0.003	2.755	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	1.633	0.003	2.935	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	1.788	0.004	3.061	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	1.894	0.004	3.134	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	1.991	0.004	3.166	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	2.073	0.004	3.182	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	2.171	0.004	3.185	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	2.235	0.005	3.188	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	2.307	0.005	3.138	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	2.362	0.005	3.092	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	2.414	0.005	3.031	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	2.448	0.005	2.936	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	2.465	0.005	2.896	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	2.489	0.005	2.910	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	2.493	0.005	2.901	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	2.495	0.005	2.878	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	2.481	0.005	2.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	2.479	0.005	2.850	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	2.499	0.005	2.876	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	2.527	0.005	2.960	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	2.570	0.005	3.010	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	2.612	0.005	3.016	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	2.655	0.005	3.027	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	2.683	0.005	3.046	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	2.701	0.005	3.104	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	2.718	0.006	3.088	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	2.707	0.005	3.005	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	2.666	0.005	2.923	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	2.609	0.005	2.825	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	2.560	0.005	2.737	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	2.548	0.005	2.651	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	2.268	0.005	2.361	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	1.988	0.004	2.071	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	1.708	0.003	1.781	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	1.428	0.003	1.491	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	1.148	0.002	1.201	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.868	0.002	0.911	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.588	0.001	0.621	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.308	0.001	0.331	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.028	0.000	0.041	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix D
Alternative 2A
Scenario IV Calm Wave Condition
Sediment Transport Model Predictions
Spring and Fall
Years 1 to 5, Year 10

DM-0565	South Del Mar	0	0	Avg. Net SL Change	0.00	-0.01	-0.04	-0.05	-0.04	0.13						
DM-0565	251.646	0	149.46	1770			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	9.672	0.038	3.985	0.027	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.06
180	7.710	0.031	2.281	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05
190	6.092	0.024	1.144	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04
200	4.460	0.018	1.082	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
210	2.848	0.011	1.022	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
220	2.565	0.010	1.035	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
230	2.598	0.010	1.008	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
240	2.670	0.011	1.018	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
250	2.768	0.011	1.074	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
260	2.711	0.011	1.050	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
270	2.576	0.010	0.954	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
280	2.502	0.010	0.873	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
290	2.538	0.010	0.845	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
300	2.600	0.010	0.830	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
310	2.662	0.011	0.815	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
320	2.752	0.011	0.799	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
330	2.871	0.011	0.802	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
340	2.961	0.012	0.789	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
350	2.951	0.012	0.701	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
360	2.950	0.012	0.624	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
370	3.017	0.012	0.638	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
380	3.254	0.013	0.841	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
390	3.521	0.014	1.067	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
400	3.772	0.015	1.296	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
410	3.990	0.016	1.502	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
420	4.080	0.016	1.532	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
430	4.011	0.016	1.266	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
440	3.928	0.016	0.961	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
450	3.961	0.016	0.774	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
460	4.328	0.017	0.918	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
470	4.576	0.018	0.999	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
480	4.487	0.018	0.887	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
490	4.383	0.017	0.815	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
500	4.111	0.016	0.781	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
510	3.578	0.014	0.669	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
520	2.882	0.011	0.467	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
530	2.369	0.009	0.421	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
540	2.264	0.009	0.814	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
550	2.167	0.009	1.286	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
560	1.959	0.008	1.582	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
570	1.844	0.007	1.853	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
580	1.676	0.007	1.956	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
590	1.262	0.005	1.740	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
600	1.019	0.004	1.634	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
610	1.091	0.004	1.650	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
620	1.034	0.004	1.421	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
630	1.044	0.004	1.225	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
640	1.114	0.004	1.094	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
650	1.135	0.005	0.972	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
660	1.091	0.004	0.885	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
670	1.078	0.004	0.800	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
680	1.043	0.004	0.707	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
690	1.125	0.004	0.681	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
700	1.493	0.006	0.686	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
710	2.125	0.008	0.997	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
720	1.804	0.007	0.748	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
730	1.711	0.007	0.792	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
740	2.098	0.008	1.125	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
750	2.131	0.008	1.371	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
760	1.930	0.008	1.410	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
770	2.055	0.008	1.125	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
780	2.077	0.008	0.979	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
790	1.912	0.008	0.792	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
800	1.617	0.006	0.643	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
810	1.671	0.007	0.826	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
820	1.692	0.007	1.319	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
830	1.416	0.006	1.444	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
840	1.406	0.006	1.216	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
850	1.565	0.006	1.620	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
860	1.029	0.004	1.658	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
870	1.348	0.005	1.996	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
880	0.781	0.003	1.142	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
890	0.784	0.003	0.743	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
900	0.748	0.003	0.839	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
910	0.976	0.004	0.850	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
920	1.687	0.007	1.042	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
930	1.070	0.004	1.443	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
940	0.687	0.003	1.469	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
950	1.787	0.007	2.283	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
960	2.892	0.011	2.749	0.018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
970	2.983	0.012	2.355	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
980	2.332	0.009	2.037	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
990	1.943	0.008	1.755	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1000	2.006	0.008	1.437	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1010	2.234	0.009	1.665	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1020	1.840	0.007	1.985	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1030	1.721	0.007	2.162	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1040	1.339	0.005	2.246	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1050	1.036	0.004	1.966	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1060	0.673	0.003	1.930	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
1070	0.698	0.003	2.104	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
1080	0.997	0.004	2.198	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1090	1.471	0.006	2.303	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1100	2.367	0.009	2.898	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
1110	1.931	0.008	2.032	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1120	0.551	0.002	1.363	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1130	0.769	0.003	1.126	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1140	0.483	0.002	0.668	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1150	0.693	0.003	0.676	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1160	0.683	0.003	0.666	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1170	0.673	0.003	0.656	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1180	0.663	0.003	0.646	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1190	0.653	0.003	0.636	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1200	0.643	0.003	0.626	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1210	0.633	0.003	0.616	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1220	0.623	0.002	0.606	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1230	0.613	0.002	0.596	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1240	0.603	0.002	0.586	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1250	0.593	0.002	0.576	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1260	0.583	0.002	0.566	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1270	0.573	0.002	0.556	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1280	0.563	0.002	0.546	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1290	0.553	0.002	0.536	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1300	0.543	0.002	0.526	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1310	0.533	0.002	0.516	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1320	0.523	0.002	0.506	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1330	0.513	0.002	0.496	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1340	0.503	0.002	0.486	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1350	0.493	0.002	0.476	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
1360	0.483	0.002	0.466	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.473	0.002	0.456	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.463	0.002	0.446	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.453	0.002	0.436	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.443	0.002	0.426	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.433	0.002	0.416	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.423	0.002	0.406	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.413	0.002	0.396	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.403	0.002	0.386	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.393	0.002	0.376	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.383	0.002	0.366	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.373	0.001	0.356	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.363	0.001	0.346	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.353	0.001	0.336	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.343	0.001	0.326	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	0.333	0.001	0.316	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	0.323	0.001	0.306	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.313	0.001	0.296	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.303	0.001	0.286	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.293	0.001	0.276	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.283	0.001	0.266	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1570	0.273	0.001	0.256	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1580	0.263	0.001	0.246	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1590	0.253	0.001	0.236	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.243	0.001	0.226	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1610	0.233	0.001	0.216	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1620	0.223	0.001	0.206	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1630	0.213	0.001	0.196	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1640	0.203	0.001	0.186	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1650	0.193	0.001	0.176	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1660	0.183	0.001	0.166	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1670	0.173	0.001	0.156	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1680	0.163	0.001	0.146	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1690	0.153	0.001	0.136	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1700	0.143	0.001	0.126	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1710	0.133	0.001	0.116	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1720	0.123	0.000	0.106	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1730	0.113	0.000	0.096	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1740	0.103	0.000	0.086	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1750	0.093	0.000	0.076	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1760	0.083	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1770	0.073	0.000	0.056	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DM-560	Del Mar	0	0	Avg. Net SL	-0.02	-0.13	-0.02	0.10	0.22	0.71						
DM-0560	242.943	0	328.557	1800			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.571	0.002	0.553	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
10	1.204	0.005	1.921	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.04
20	3.535	0.015	3.567	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.09	0.12
30	4.270	0.018	4.278	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.05	0.11	0.15
40	3.862	0.016	3.380	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.09	0.13
50	4.049	0.017	2.298	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.04	0.06	0.14
60	3.839	0.016	1.639	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.04	0.04	0.13
70	3.266	0.013	1.314	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.04	0.03	0.11
80	2.918	0.012	1.161	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.10
90	2.701	0.011	1.114	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.09
100	2.492	0.010	1.147	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.09
110	2.287	0.009	1.188	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.08
120	2.151	0.009	1.191	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.07
130	2.137	0.009	1.235	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.07
140	2.163	0.009	1.316	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.07
150	2.185	0.009	1.402	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.04	0.08
160	2.228	0.009	1.516	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.08
170	2.190	0.009	1.553	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.08
180	2.024	0.008	1.453	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07
190	1.966	0.008	1.428	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07
200	2.069	0.009	1.530	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07
210	2.276	0.009	1.716	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.08
220	2.600	0.011	2.009	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.09
230	2.768	0.011	2.170	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06	0.10
240	2.598	0.011	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05	0.09
250	2.355	0.010	1.835	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.05	0.08
260	2.114	0.009	1.644	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07
270	1.868	0.008	1.452	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06
280	1.626	0.007	1.258	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06
290	1.399	0.006	1.060	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05
300	1.286	0.005	0.968	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04
310	1.312	0.005	0.994	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.05
320	1.283	0.005	0.944	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04
330	1.204	0.005	0.848	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04
340	1.091	0.004	0.756	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04
350	0.954	0.004	0.657	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
360	0.829	0.003	0.568	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03
370	0.814	0.003	0.579	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03
380	0.932	0.004	0.696	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
390	1.121	0.005	0.846	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04
400	1.408	0.006	1.065	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05
410	1.688	0.007	1.280	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06
420	1.938	0.008	1.471	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07
430	2.041	0.008	1.552	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07
440	1.960	0.008	1.486	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.07
450	1.696	0.007	1.313	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.06
460	1.553	0.006	1.326	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05
470	1.716	0.007	1.649	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.06
480	1.769	0.007	1.847	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.06
490	1.769	0.007	1.943	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
500	1.779	0.007	1.986	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
510	1.812	0.007	2.035	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
520	1.789	0.007	2.045	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
530	1.681	0.007	1.999	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
540	1.563	0.006	1.979	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.05
550	1.467	0.006	1.985	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.05
560	1.451	0.006	2.080	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.05
570	1.624	0.007	2.359	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.06	0.06
580	1.828	0.008	2.666	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.07	0.06
590	1.780	0.007	2.712	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.07	0.06
600	1.587	0.007	2.629	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.07	0.05
610	1.487	0.006	2.676	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.07	0.05
620	1.412	0.006	2.738	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.07	0.05
630	1.311	0.005	2.764	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.05
640	1.231	0.005	2.787	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
650	1.155	0.005	2.789	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
660	1.184	0.005	2.830	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
670	1.163	0.005	2.837	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
680	1.043	0.004	2.760	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
690	0.969	0.004	2.746	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
700	0.908	0.004	2.699	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
710	0.796	0.003	2.586	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
720	0.779	0.003	2.600	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
730	0.805	0.003	2.627	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
740	0.809	0.003	2.701	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
750	0.834	0.003	2.826	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
760	0.828	0.003	2.902	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.07	0.03
770	0.796	0.003	2.946	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.08	0.03
780	0.771	0.003	2.993	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.08	0.03
790	0.802	0.003	3.098	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.08	0.03
800	0.820	0.003	3.177	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.08	0.03
810	0.814	0.003	3.227	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.08	0.03
820	0.804	0.003	3.342	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.09	0.03
830	0.813	0.003	3.408	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.09	0.03
840	0.881	0.004	3.525	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.09	0.03
850	0.996	0.004	3.678	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.09	0.03
860	1.111	0.005	3.768	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.10	0.04
870	1.185	0.005	3.773	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.10	0.04
880	1.237	0.005	3.703	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.09	0.04
890	1.195	0.005	3.602	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.09	0.04
900	1.130	0.005	3.425	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.01	0.09	0.04
910	1.032	0.004	3.168	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.08	0.04
920	0.986	0.004	2.967	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.08	0.03
930	1.068	0.004	2.923	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
940	1.248	0.005	2.961	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.08	0.04
950	1.432	0.006	3.069	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.08	0.05
960	1.498	0.006	3.047	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.08	0.05
970	1.397	0.006	2.913	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.07	0.05
980	1.266	0.005	2.770	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
990	1.163	0.005	2.665	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
1000	1.116	0.005	2.583	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.07	0.04
1010	1.052	0.004	2.466	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.04
1020	1.014	0.004	2.410	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.06	0.04
1030	0.996	0.004	2.379	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.06	0.03
1040	1.061	0.004	2.443	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.04
1050	1.206	0.005	2.525	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.04
1060	1.210	0.005	2.476	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.04
1070	1.242	0.005	2.444	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.04
1080	1.338	0.006	2.457	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.05
1090	1.348	0.006	2.371	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.05
1100	1.340	0.006	2.260	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.05
1110	1.347	0.006	2.191	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.06	0.05
1120	1.288	0.005	2.033	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.04
1130	1.190	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.04
1140	1.248	0.005	1.934	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.04
1150	1.284	0.005	1.912	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.04
1160	1.184	0.005	1.843	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.05	0.04
1170	1.113	0.005	1.749	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
1180	1.113	0.005	1.787	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.05	0.04
1190	1.255	0.005	1.931	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.04
1200	1.342	0.006	2.003	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.05
1210	1.340	0.006	1.984	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.05
1220	1.345	0.006	1.949	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.05
1230	1.378	0.006	1.929	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.05	0.05
1240	1.305	0.005	1.820	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.05	0.05
1250	1.205	0.005	1.708	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
1260	1.205	0.005	1.632	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
1270	1.267	0.005	1.668	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.04
1280	1.491	0.006	1.799	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.05
1290	1.617	0.007	1.903	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
1300	1.643	0.007	1.900	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.05	0.06
1310	1.645	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.06
1320	1.688	0.007	1.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.05	0.06
1330	1.576	0.006	1.719	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.04	0.05
1340	1.319	0.005	1.480	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.05
1350	1.081	0.004	1.289	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1360	1.078	0.004	1.274	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1370	0.999	0.004	1.222	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1380	0.889	0.004	1.080	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1390	0.820	0.003	0.985	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1400	0.832	0.003	0.913	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1410	0.730	0.003	0.773	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1420	0.984	0.004	1.008	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1430	1.140	0.005	1.194	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1440	0.821	0.003	0.928	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1450	0.896	0.004	1.009	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1460	1.117	0.005	1.175	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1470	1.290	0.005	1.329	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1480	1.360	0.006	1.413	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.05
1490	1.208	0.005	1.308	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1500	1.143	0.005	1.333	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1510	1.083	0.004	1.239	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1520	1.017	0.004	1.182	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.04
1530	1.131	0.005	1.306	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1540	0.904	0.004	1.066	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1550	0.819	0.003	1.001	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1560	0.874	0.004	1.073	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1570	0.987	0.004	1.120	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1580	1.002	0.004	1.139	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03
1590	0.768	0.003	0.914	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1600	0.681	0.003	0.788	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1610	0.838	0.003	0.873	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1620	1.118	0.005	1.041	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.04
1630	0.982	0.004	0.870	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1640	0.752	0.003	0.658	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03
1650	0.596	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
1660	0.524	0.002	0.378	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
1670	0.500	0.002	0.442	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
1680	0.453	0.002	0.432	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
1690	0.390	0.002	0.455	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1700	0.525	0.002	0.655	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1710	0.550	0.002	0.706	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02
1720	0.304	0.001	0.449	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1730	0.369	0.002	0.466	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1740	0.399	0.002	0.552	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1750	0.409	0.002	0.597	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
1760	0.374	0.002	0.567	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1770	0.361	0.001	0.525	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1780	0.348	0.001	0.488	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1790	0.307	0.001	0.464	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
1800	0.284	0.001	0.456	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01

DM-580	Del Mar	0	0	Avg. Net Sl	-0.148	0.159	0.500	0.699	0.874	1.306						
DM-0580	427.197	0	422.914	1899	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	3.615	0.008	3.265	0.008	0.00	0.00	0.01	0.02	0.05	0.05	0.06	0.07	0.08	0.09	0.12	0.13
20	2.757	0.006	2.138	0.005	0.00	0.00	0.01	0.01	0.03	0.04	0.04	0.05	0.05	0.07	0.08	0.10
30	2.818	0.007	1.975	0.005	0.00	0.00	0.01	0.01	0.03	0.04	0.04	0.05	0.05	0.07	0.07	0.10
40	3.146	0.007	1.892	0.004	0.00	0.00	0.01	0.01	0.03	0.04	0.04	0.06	0.05	0.08	0.07	0.11
50	3.882	0.009	2.057	0.005	0.00	0.00	0.01	0.02	0.03	0.05	0.04	0.08	0.05	0.09	0.08	0.14
60	4.365	0.010	1.994	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.05	0.11	0.07	0.16
70	4.912	0.011	1.997	0.005	0.00	0.00	0.01	0.02	0.03	0.07	0.04	0.10	0.05	0.12	0.07	0.18
80	5.309	0.012	1.877	0.004	0.00	0.00	0.01	0.02	0.03	0.07	0.04	0.10	0.05	0.13	0.07	0.19
90	5.529	0.013	1.723	0.004	0.00	0.00	0.01	0.02	0.02	0.08	0.03	0.11	0.04	0.13	0.06	0.20
100	5.464	0.013	1.581	0.004	0.00	0.00	0.01	0.02	0.02	0.08	0.03	0.11	0.04	0.13	0.06	0.20
110	5.187	0.012	1.466	0.003	0.00	0.00	0.01	0.02	0.02	0.07	0.03	0.10	0.04	0.13	0.05	0.19
120	4.946	0.012	1.537	0.004	0.00	0.00	0.01	0.02	0.02	0.07	0.03	0.10	0.04	0.12	0.06	0.18
130	5.075	0.012	1.876	0.004	0.00	0.00	0.01	0.02	0.03	0.07	0.04	0.10	0.05	0.12	0.07	0.18
140	5.015	0.012	2.044	0.005	0.00	0.00	0.01	0.02	0.03	0.07	0.04	0.10	0.05	0.12	0.08	0.18
150	4.995	0.012	2.249	0.005	0.00	0.00	0.01	0.02	0.03	0.07	0.04	0.10	0.06	0.12	0.08	0.18
160	4.999	0.012	2.489	0.006	0.00	0.00	0.01	0.02	0.04	0.07	0.05	0.10	0.06	0.12	0.09	0.18
170	4.877	0.011	2.568	0.006	0.00	0.00	0.01	0.02	0.04	0.07	0.05	0.10	0.06	0.12	0.09	0.18
180	4.754	0.011	2.644	0.006	0.00	0.00	0.01	0.02	0.04	0.07	0.05	0.09	0.07	0.12	0.10	0.17
190	4.627	0.011	2.717	0.006	0.00	0.00	0.01	0.02	0.04	0.06	0.05	0.09	0.07	0.11	0.10	0.17
200	4.537	0.011	2.918	0.007	0.00	0.00	0.01	0.02	0.04	0.06	0.06	0.09	0.07	0.11	0.11	0.17
210	4.481	0.010	3.079	0.007	0.00	0.00	0.01	0.02	0.04	0.06	0.06	0.09	0.08	0.11	0.11	0.16
220	4.486	0.011	3.262	0.008	0.00	0.00	0.01	0.02	0.05	0.06	0.06	0.09	0.08	0.11	0.12	0.16
230	4.565	0.011	3.438	0.008	0.00	0.00	0.02	0.02	0.05	0.06	0.07	0.09	0.08	0.11	0.13	0.17
240	4.662	0.011	3.584	0.008	0.00	0.00	0.02	0.02	0.05	0.07	0.07	0.09	0.09	0.11	0.13	0.17
250	4.776	0.011	3.741	0.009	0.00	0.00	0.02	0.02	0.05	0.07	0.07	0.09	0.09	0.12	0.14	0.17
260	4.939	0.012	3.918	0.009	0.00	0.00	0.02	0.02	0.06	0.07	0.08	0.10	0.10	0.12	0.14	0.18
270	5.128	0.012	4.077	0.010	0.00	0.00	0.02	0.02	0.06	0.07	0.08	0.10	0.10	0.12	0.15	0.19
280	5.050	0.012	3.951	0.009	0.00	0.00	0.02	0.02	0.06	0.07	0.08	0.10	0.10	0.12	0.15	0.18
290	4.801	0.011	3.655	0.009	0.00	0.00	0.02	0.02	0.05	0.07	0.07	0.09	0.09	0.12	0.13	0.17
300	4.544	0.011	3.356	0.008	0.00	0.00	0.01	0.02	0.05	0.06	0.07	0.09	0.08	0.11	0.12	0.17
310	4.320	0.010	3.008	0.007	0.00	0.00	0.01	0.02	0.04	0.06	0.06	0.08	0.07	0.11	0.11	0.16
320	4.106	0.010	2.575	0.006	0.00	0.00	0.01	0.02	0.04	0.06	0.05	0.08	0.06	0.10	0.09	0.15
330	3.798	0.009	2.033	0.005	0.00	0.00	0.01	0.02	0.03	0.05	0.04	0.07	0.05	0.09	0.07	0.14
340	3.742	0.009	1.759	0.004	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.07	0.04	0.09	0.06	0.14
350	3.598	0.008	1.496	0.004	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.07	0.04	0.09	0.06	0.13
360	3.251	0.008	1.075	0.003	0.00	0.00	0.00	0.01	0.02	0.05	0.02	0.06	0.03	0.08	0.04	0.12
370	3.671	0.009	1.442	0.003	0.00	0.00	0.01	0.02	0.02	0.05	0.03	0.07	0.04	0.09	0.05	0.13
380	4.175	0.010	1.816	0.004	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.08	0.04	0.10	0.07	0.15
390	4.518	0.011	2.027	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.05	0.11	0.07	0.16
400	4.547	0.011	2.014	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.05	0.11	0.07	0.17
410	4.559	0.011	2.073	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.05	0.11	0.08	0.17
420	4.558	0.011	2.083	0.005	0.00	0.00	0.01	0.02	0.03	0.06	0.04	0.09	0.05	0.11	0.08	0.17
430	4.773	0.011	2.315	0.005	0.00	0.00	0.01	0.02	0.03	0.07	0.05	0.09	0.06	0.12	0.09	0.17
440	5.074	0.012	2.635	0.006	0.00	0.00	0.01	0.02	0.04	0.07	0.05	0.10	0.06	0.12	0.10	0.18
450	5.379	0.013	3.003	0.007	0.00	0.00	0.01	0.02	0.04	0.08	0.06	0.10	0.07	0.13	0.11	0.20
460	5.672	0.013	3.389	0.008	0.00	0.00	0.02	0.03	0.05	0.08	0.07	0.11	0.08	0.14	0.12	0.21
470	5.960	0.014	3.840	0.009	0.00	0.00	0.02	0.03	0.05	0.08	0.08	0.12	0.09	0.15	0.14	0.22
480	6.253	0.015	4.236	0.010	0.00	0.00	0.02	0.03	0.06	0.09	0.08	0.12	0.10	0.15	0.16	0.23
490	6.468	0.015	4.521	0.011	0.00	0.00	0.02	0.03	0.06	0.09	0.09	0.13	0.11	0.16	0.17	0.24
500	6.277	0.015	4.418	0.010	0.00	0.00	0.02	0.03	0.06	0.09	0.09	0.12	0.11	0.15	0.16	0.23
510	6.086	0.014	4.334	0.010	0.00	0.00	0.02	0.03	0.06	0.08	0.09	0.12	0.11	0.15	0.16	0.22
520	5.855	0.014	4.299	0.010	0.00	0.00	0.02	0.03	0.06	0.08	0.08	0.11	0.11	0.14	0.16	0.21
530	5.622	0.013	4.262	0.010	0.00	0.00	0.02	0.02	0.06	0.08	0.08	0.11	0.10	0.14	0.16	0.20
540	5.352	0.013	4.213	0.010	0.00	0.00	0.02	0.02	0.06	0.07	0.08	0.10	0.10	0.13	0.16	0.19
550	5.054	0.012	4.155	0.010	0.00	0.00	0.02	0.02	0.06	0.07	0.08	0.10	0.10	0.12	0.15	0.18
560	4.665	0.011	4.032	0.010	0.00	0.00	0.02	0.02	0.06	0.07	0.08	0.09	0.10	0.11	0.15	0.17
570	4.259	0.010	3.904	0.009	0.00	0.00	0.02	0.02	0.06	0.06	0.08	0.08	0.10	0.10	0.14	0.16
580	3.845	0.009	3.863	0.009	0.00	0.00	0.02	0.02	0.05	0.05	0.08	0.07	0.10	0.09	0.14	0.14
590	3.409	0.008	3.817	0.009	0.00	0.00	0.02	0.02	0.05	0.05	0.08	0.07	0.09	0.08	0.14	0.12
600	3.257	0.008	4.034	0.010	0.00	0.00	0.02	0.01	0.06	0.05	0.08	0.06	0.10	0.08	0.15	0.12
610	3.227	0.008	4.387	0.010	0.00	0.00	0.02	0.01	0.06	0.05	0.09	0.06	0.11	0.08	0.16	0.12
620	3.266	0.008	4.708	0.011	0.00	0.00	0.02	0.01	0.07	0.05	0.09	0.06	0.12	0.08	0.17	0.12
630	3.325	0.008	4.964	0.012	0.00	0.00	0.02	0.01	0.07	0.05	0.10	0.06	0.12	0.08	0.18	0.12
640	3.354	0.008	5.247	0.012	0.00	0.00	0.02	0.01	0.07	0.05	0.10	0.07	0.13	0.08	0.19	0.12
650	3.401	0.008	5.477	0.013	0.00	0.00	0.02	0.02	0.08	0.05	0.11	0.07	0.13	0.08	0.20	0.12
660	3.437	0.008	5.682	0.013	0.00	0.00	0.03	0.02	0.08	0.05	0.11	0.07	0.14	0.08	0.21	0.13
670	3.371	0.008	5.855	0.014	0.00	0.00	0.03	0.01	0.08	0.05	0.12	0.07	0.14	0.08	0.22	0.12
680	3.210	0.008	5.806	0.014	0.00	0.00	0.03	0.01	0.08	0.04	0.11	0.06	0.14	0.08	0.21	0.12
690	3.002	0.007	5.837	0.014	0.00	0.00	0.03	0.01	0.08	0.04	0.11	0.06	0.14	0.07	0.21	0.11
700	2.892	0.007	5.698	0.013	0.00	0.00	0.03	0.01	0.08	0.04	0.11	0.06	0.14	0.07	0.21	0.11
710	2.791	0.007	5.569	0.013	0.00	0.00	0.02	0.01	0.08	0.04	0.11	0.05	0.14	0.07	0.20	0.10
720	2.527	0.006	5.362	0.013	0.00	0.00	0.02	0.01	0.08	0.04	0.11	0.05	0.13	0.06	0.20	0.09
730	2.298	0.005	5.154	0.012	0.00	0.00	0.02	0.01	0.07	0.03	0.10	0.04	0.13	0.06	0.19	0.08
740	2.095	0.005	4.962	0.012	0.00	0.00	0.02	0.01	0.07	0.03	0.10	0.04	0.12	0.05	0.18	0.08
750	1.895	0.004	4.765	0.011	0.00	0.00	0.02	0.01	0.07	0.03	0.09	0.04	0.12	0.05	0.18	0.07
760	1.709	0.004	4.588	0.011	0.00	0.00	0.02	0.01	0.06	0.02	0.09	0.03	0.11	0.04	0.17	0.06
770	1.548	0.004	4.370	0.010	0.00	0.00	0.02	0.01	0.06	0.02	0.09	0.03	0.11	0.04	0.16	0.06
780	1.519	0.004	4.231	0.010	0.00	0.00	0.02	0.01	0.06	0.02	0.08	0.03	0.10	0.04	0.16	0.06
790	1.468	0.003	4.137	0.010	0.00	0.00	0.02	0.01	0.06	0.02	0.08	0.03	0.10	0.04	0.15	0.05
800	1.378	0.003	3.994	0.009	0.00	0.00	0.02	0.01	0.06	0.02	0.08	0.03	0.10	0.03	0.15	0.05
810	1.343	0.003	3.877	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.08	0.03	0.10	0.03	0.14	0.05
820	1.308	0.003	3.749	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.03	0.09	0.03	0.14	0.05
830	1.293	0.003	3.633	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.03	0.09	0.03	0.13	0.05
840	1.281	0.003	3.611	0.009	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.02	0.09	0.03	0.13	0.05
850	1.287	0.003	3.486	0.008	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.03	0.09	0.03	0.13	0.05
860	1.248	0.003	3.412	0.008	0.00	0.00	0.02	0.01	0.05	0.02	0.07	0.02	0.08	0.03	0.13	0.05
870	1.211	0.003	3.339	0.008	0.00	0.00	0.01	0.01	0.05	0.02	0.07	0.02	0.08	0.03	0.12	0.04
880	1.168	0.003	3.273	0.008	0.00	0.00	0.01	0.01	0.05	0.02	0.06	0.02	0.08	0.03	0.12	0.04
890	1.128	0.003	3.208	0.008	0.00	0.00	0.01	0.00	0.05	0.02	0.06	0.02	0.08	0.03	0.12	0.04
900	1.084	0.003	3.144	0.007	0.00	0.00	0.01	0.00	0.04	0.02	0.06	0.02	0.08	0.03	0.12	0.04
910	1.048	0.002	3.107	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.06	0.02	0.08	0.03	0.11	0.04
920	1.033	0.002	2.903	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.06	0.02	0.07	0.03	0.11	0.04
930	1.033	0.002	2.815	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.06	0.02	0.07	0.03	0.10	0.04
940	1.046	0.002	2.789	0.007	0.00	0.00	0.01	0.00	0.04	0.01	0.05	0.02	0.07	0.03	0.10	0.04
950	1.093	0.003	2.674	0.006	0.00	0.00	0.01	0.00	0.04	0.02	0.05	0.02	0.07	0.03	0.10	0.04
960	1.178	0.003	2.603	0.006	0.00	0.00	0.01	0.01	0.04	0.02	0.05	0.02	0.06	0.03	0.10	0.04
970	1.292	0.003	2.608	0.006	0.00	0.00	0.01	0.01	0.04	0.02	0.05	0.03	0.06	0.03	0.10	0.05
980	1.404	0.003	2.597	0.006	0.00	0.00	0.01	0.01	0.04	0.02	0.05	0.03	0.06	0.03	0.10	0.05
990	1.412	0.003	2.574	0.006	0.00	0.00	0.01	0.01	0.04	0.02	0.05	0.03	0.06	0.03	0.09	0.05
1000	1.477	0.003	2.560	0.006	0.00	0.00	0.01	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.09	0.05
1010	1.558	0.004	2.537	0.006	0.00	0.00	0.01	0.01	0.04	0.02	0.05	0.03	0.06	0.04	0.09	0.06
1020	1.559	0.004	2.462	0.006	0.00	0.00	0.01	0.01	0.03	0.02	0.05	0.03	0.06	0.04	0.09	0.06
1030	1.448	0.003	2.302	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.05	0.03	0.06	0.04	0.08	0.05
1040	1.424	0.003	2.190	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.08	0.05
1050	1.449	0.003	2.184	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.04	0.08	0.05
1060	1.450	0.003	2.161	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.04	0.08	0.05
1070	1.463	0.003	2.167	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.04	0.08	0.05
1080	1.390	0.003	2.095	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.08	0.05
1090	1.291	0.003	1.985	0.005	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.07	0.05
1100	1.208	0.003	1.894	0.004	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.07	0.04
1110	1.133	0.003	1.840	0.004	0.00	0.00	0.01	0.01	0.03	0.02	0.04	0.02	0.05	0.03	0.07	0.04
1120	1.048	0.002	1.816	0.004	0.00	0.00	0.01	0.00	0.03	0.01	0.04	0.02	0.04	0.03	0.07	0.04
1130	1.011	0.002	1.745	0.004	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.06	0.04
1140	1.005	0.002	1.633	0.004	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.06	0.04
1150	1.025	0.002	1.639	0.004	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.06	0.04
1160	0.979	0.002	1.460	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.05	0.04
1170	0.898	0.002	1.279	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.05	0.03
1180	0.927	0.002	1.306	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.05	0.03
1190	0.885	0.002	1.223	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.02	0.03	0.02	0.05	0.03
1200	0.807	0.002	1.122	0.003	0.00	0.00	0.01	0.00	0.02	0.01	0.02	0.02	0.03	0.02	0.04	0.03
1210	0.763	0.002	1.030	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.04	0.03
1220	0.823	0.002	1.000	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.03
1230	0.830	0.002	1.027	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.04	0.03
1240	0.655	0.002	0.853	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1250	0.718	0.002	0.902	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1260	0.586	0.001	0.739	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1270	0.617	0.001	0.721	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1280	0.515	0.001	0.669	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1290	0.573	0.001	0.672	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1300	0.610	0.001	0.657	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1310	0.773	0.002	0.839	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1320	0.725	0.002	0.750	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1330	0.682	0.002	0.745	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1340	0.633	0.001	0.725	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1350	0.626	0.001	0.742	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1360	0.713	0.002	0.817	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1370	0.594	0.001	0.682	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1380	0.551	0.001	0.623	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1390	0.731	0.002	0.750	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1400	0.818	0.002	0.742	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03
1410	0.680	0.002	0.647	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1420	0.690	0.002	0.657	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
1430	0.861	0.002	0.834	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1440	0.974	0.002	0.971	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.04	0.04
1450	0.896	0.002	0.863	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1460	0.724	0.002	0.651	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
1470	0.723	0.002	0.597	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03
1480	0.739	0.002	0.581	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03
1490	0.644	0.002	0.538	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
1500	0.491	0.001	0.506	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
1510	0.563	0.001	0.618	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1520	0.546	0.001	0.627	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1530	0.611	0.001	0.644	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1540	0.669	0.002	0.659	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1550	0.758	0.002	0.738	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03
1560	0.770	0.002	0.736	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03
1570	0.824	0.002	0.802	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1580	0.805	0.002	0.768	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1590	0.799	0.002	0.809	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1600	0.817	0.002	0.823	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
1610	0.732	0.002	0.818	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1620	0.750	0.002	0.797	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1630	0.757	0.002	0.781	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1640	0.633	0.001	0.718	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1650	0.655	0.002	0.711	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1660	0.605	0.001	0.697	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1670	0.613	0.001	0.748	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1680	0.652	0.002	0.771	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1690	0.657	0.002	0.780	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1700	0.635	0.001	0.750	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1710	0.636	0.001	0.739	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1720	0.670	0.002	0.789	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1730	0.717	0.002	0.812	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.03
1740	0.676	0.002	0.827	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.02
1750	0.588	0.001	0.722	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1760	0.523	0.001	0.699	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1770	0.519	0.001	0.645	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1780	0.520	0.001	0.654	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1790	0.499	0.001	0.642	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1800	0.580	0.001	0.747	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.03	0.02
1810	0.620	0.001	0.754	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1820	0.651	0.002	0.742	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1830	0.669	0.002	0.720	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1840	0.663	0.002	0.703	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.02
1850	0.630	0.001	0.663	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1860	0.621	0.001	0.677	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1870	0.569	0.001	0.648	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1880	0.571	0.001	0.667	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02
1890	0.531	0.001	0.595	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
1900	0.553	0.001	0.610	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02

DM-590	Del Mar	0	0	Avg. Net Sl	0.49	1.52	1.72	1.85	2.05	1.86						
DM-0590	283.419	0	200.363	1900			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.12	0.000	0.130	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
10	0.476	0.002	0.470	0.002	0.01	0.01	0.04	0.03	0.05	0.03	0.05	0.04	0.06	0.04	0.05	0.04
20	0.768	0.003	0.983	0.005	0.03	0.02	0.09	0.05	0.10	0.06	0.11	0.06	0.12	0.07	0.11	0.06
30	1.862	0.007	2.304	0.011	0.07	0.04	0.21	0.12	0.24	0.13	0.25	0.15	0.28	0.16	0.25	0.15
40	2.153	0.008	2.543	0.013	0.07	0.04	0.23	0.14	0.26	0.16	0.28	0.17	0.31	0.19	0.28	0.17
50	2.416	0.009	2.754	0.014	0.08	0.05	0.25	0.15	0.28	0.17	0.30	0.19	0.34	0.21	0.30	0.19
60	2.301	0.008	2.567	0.013	0.07	0.05	0.23	0.15	0.26	0.17	0.28	0.18	0.31	0.20	0.28	0.18
70	2.211	0.008	2.410	0.012	0.07	0.05	0.22	0.14	0.25	0.16	0.27	0.17	0.29	0.19	0.27	0.17
80	2.144	0.008	2.312	0.012	0.07	0.04	0.21	0.14	0.24	0.15	0.26	0.17	0.28	0.18	0.26	0.17
90	2.145	0.008	2.257	0.011	0.07	0.04	0.20	0.14	0.23	0.15	0.25	0.17	0.27	0.18	0.25	0.17
100	2.173	0.008	2.214	0.011	0.06	0.04	0.20	0.14	0.23	0.16	0.24	0.17	0.27	0.19	0.24	0.17
110	2.216	0.008	2.233	0.011	0.06	0.05	0.20	0.14	0.23	0.16	0.25	0.17	0.27	0.19	0.25	0.17
120	2.333	0.008	2.286	0.011	0.07	0.05	0.21	0.15	0.23	0.17	0.25	0.18	0.28	0.20	0.25	0.18
130	2.348	0.008	2.247	0.011	0.07	0.05	0.20	0.15	0.23	0.17	0.25	0.18	0.27	0.20	0.25	0.18
140	2.406	0.008	2.217	0.011	0.06	0.05	0.20	0.15	0.23	0.17	0.24	0.19	0.27	0.21	0.25	0.19
150	2.469	0.009	2.208	0.011	0.06	0.05	0.20	0.16	0.23	0.18	0.24	0.19	0.27	0.21	0.24	0.19
160	2.322	0.008	1.976	0.010	0.06	0.05	0.18	0.15	0.20	0.17	0.22	0.18	0.24	0.20	0.22	0.18
170	2.071	0.007	1.627	0.008	0.05	0.04	0.15	0.13	0.17	0.15	0.18	0.16	0.20	0.18	0.18	0.16
180	1.829	0.006	1.301	0.006	0.04	0.04	0.12	0.12	0.13	0.13	0.14	0.14	0.16	0.16	0.14	0.14
190	1.64	0.006	1.026	0.005	0.03	0.03	0.09	0.10	0.10	0.12	0.11	0.13	0.12	0.14	0.11	0.13
200	1.819	0.006	1.108	0.006	0.03	0.04	0.10	0.12	0.11	0.13	0.12	0.14	0.13	0.16	0.12	0.14
210	1.997	0.007	1.189	0.006	0.03	0.04	0.11	0.13	0.12	0.14	0.13	0.16	0.14	0.17	0.13	0.16
220	1.949	0.007	1.084	0.005	0.03	0.04	0.10	0.12	0.11	0.14	0.12	0.15	0.13	0.17	0.12	0.15
230	1.823	0.006	0.926	0.005	0.03	0.04	0.08	0.12	0.09	0.13	0.10	0.14	0.11	0.16	0.10	0.14
240	1.692	0.006	0.770	0.004	0.02	0.03	0.07	0.11	0.08	0.12	0.08	0.13	0.09	0.15	0.09	0.13
250	1.877	0.007	0.936	0.005	0.03	0.04	0.08	0.12	0.10	0.14	0.10	0.15	0.11	0.16	0.10	0.15
260	2.079	0.007	1.105	0.006	0.03	0.04	0.10	0.13	0.11	0.15	0.12	0.16	0.13	0.18	0.12	0.16
270	2.282	0.008	1.262	0.006	0.04	0.05	0.11	0.15	0.13	0.16	0.14	0.18	0.15	0.20	0.14	0.18
280	2.482	0.009	1.382	0.007	0.04	0.05	0.12	0.16	0.14	0.18	0.15	0.19	0.17	0.21	0.15	0.19
290	2.745	0.010	1.569	0.008	0.05	0.06	0.14	0.18	0.16	0.20	0.17	0.21	0.19	0.24	0.17	0.21
300	3.088	0.011	1.848	0.009	0.05	0.06	0.17	0.20	0.19	0.22	0.20	0.24	0.23	0.27	0.20	0.24
310	3.424	0.012	2.133	0.011	0.06	0.07	0.19	0.22	0.22	0.25	0.24	0.27	0.26	0.29	0.24	0.27
320	3.754	0.013	2.424	0.012	0.07	0.08	0.22	0.24	0.25	0.27	0.27	0.29	0.30	0.32	0.27	0.29
330	4.093	0.014	2.702	0.013	0.08	0.08	0.24	0.26	0.28	0.30	0.30	0.32	0.33	0.35	0.30	0.32
340	4.441	0.016	2.975	0.015	0.09	0.09	0.27	0.28	0.30	0.32	0.33	0.35	0.36	0.38	0.33	0.35
350	4.797	0.017	3.245	0.016	0.09	0.10	0.29	0.31	0.33	0.35	0.36	0.37	0.40	0.41	0.36	0.38
360	5.009	0.018	3.358	0.017	0.10	0.10	0.30	0.32	0.34	0.36	0.37	0.39	0.41	0.43	0.37	0.39
370	4.816	0.017	3.063	0.015	0.09	0.10	0.28	0.31	0.31	0.35	0.34	0.38	0.37	0.41	0.34	0.38
380	4.621	0.016	2.746	0.014	0.08	0.09	0.25	0.29	0.28	0.33	0.30	0.36	0.33	0.40	0.30	0.36
390	4.412	0.016	2.411	0.012	0.07	0.09	0.22	0.28	0.25	0.32	0.27	0.34	0.29	0.38	0.27	0.35
400	4.199	0.015	2.094	0.010	0.06	0.09	0.19	0.27	0.21	0.30	0.23	0.33	0.26	0.36	0.23	0.33
410	4.066	0.014	1.866	0.009	0.05	0.08	0.17	0.26	0.19	0.29	0.21	0.32	0.23	0.35	0.21	0.32
420	4.038	0.014	1.771	0.009	0.05	0.08	0.16	0.26	0.18	0.29	0.20	0.31	0.22	0.35	0.20	0.32
430	4.076	0.014	1.750	0.009	0.05	0.08	0.16	0.26	0.18	0.29	0.19	0.32	0.21	0.35	0.19	0.32
440	4.116	0.015	1.727	0.009	0.05	0.08	0.16	0.26	0.18	0.30	0.19	0.32	0.21	0.35	0.19	0.32
450	4.108	0.014	1.704	0.009	0.05	0.08	0.15	0.26	0.17	0.30	0.19	0.32	0.21	0.35	0.19	0.32
460	4.091	0.014	1.687	0.008	0.05	0.08	0.15	0.26	0.17	0.30	0.19	0.32	0.21	0.35	0.19	0.32
470	4.067	0.014	1.682	0.008	0.05	0.08	0.15	0.26	0.17	0.29	0.19	0.32	0.20	0.35	0.19	0.32
480	4.012	0.014	1.677	0.008	0.05	0.08	0.15	0.26	0.17	0.29	0.19	0.31	0.20	0.35	0.19	0.31
490	4.055	0.014	1.761	0.009	0.05	0.08	0.16	0.26	0.18	0.29	0.19	0.32	0.21	0.35	0.19	0.32
500	4.286	0.015	2.035	0.010	0.06	0.09	0.18	0.27	0.21	0.31	0.22	0.33	0.25	0.37	0.23	0.34
510	4.513	0.016	2.287	0.011	0.07	0.09	0.21	0.29	0.23	0.33	0.25	0.35	0.28	0.39	0.25	0.35
520	4.727	0.017	2.517	0.013	0.07	0.10	0.23	0.30	0.26	0.34	0.28	0.37	0.31	0.41	0.28	0.37
530	4.892	0.017	2.738	0.014	0.08	0.10	0.25	0.31	0.28	0.35	0.30	0.38	0.33	0.42	0.30	0.38
540	5.045	0.018	2.958	0.015	0.09	0.10	0.27	0.32	0.30	0.36	0.33	0.39	0.36	0.43	0.33	0.39
550	5.197	0.018	3.163	0.016	0.09	0.11	0.29	0.33	0.32	0.37	0.35	0.41	0.39	0.45	0.35	0.41
560	5.034	0.018	3.017	0.015	0.09	0.10	0.27	0.32	0.31	0.36	0.33	0.39	0.37	0.43	0.33	0.39
570	4.764	0.017	2.752	0.014	0.08	0.10	0.25	0.30	0.28	0.34	0.30	0.37	0.34	0.41	0.30	0.37
580	4.45	0.016	2.460	0.012	0.07	0.09	0.22	0.28	0.25	0.32	0.27	0.35	0.30	0.38	0.27	0.35
590	4.109	0.014	2.157	0.011	0.06	0.08	0.19	0.26	0.22	0.30	0.24	0.32	0.26	0.35	0.24	0.32
600	3.752	0.013	1.865	0.009	0.05	0.08	0.17	0.24	0.19	0.27	0.21	0.29	0.23	0.32	0.21	0.29
610	3.581	0.013	1.743	0.009	0.05	0.07	0.16	0.23	0.18	0.26	0.19	0.28	0.21	0.31	0.19	0.28
620	3.392	0.012	1.614	0.008	0.05	0.07	0.15	0.22	0.16	0.24	0.18	0.26	0.20	0.29	0.18	0.27
630	3.186	0.011	1.482	0.007	0.04	0.07	0.13	0.20	0.15	0.23	0.16	0.25	0.18	0.27	0.16	0.25
640	2.963	0.010	1.357	0.007	0.04	0.06	0.12	0.19	0.14	0.21	0.15	0.23	0.17	0.26	0.15	0.23
650	2.734	0.010	1.220	0.006	0.04	0.06	0.11	0.17	0.12	0.20	0.13	0.21	0.15	0.24	0.13	0.21
660	2.466	0.009	1.094	0.005	0.03	0.05	0.10	0.16	0.11	0.18	0.12	0.19	0.13	0.21	0.12	0.19
670	2.233	0.008	1.000	0.005	0.03	0.05	0.09	0.14	0.10	0.16	0.11	0.17	0.12	0.19	0.11	0.17
680	2.126	0.008	1.000	0.005	0.03	0.04	0.09	0.14	0.10	0.15	0.11	0.17	0.12	0.18	0.11	0.17
690	2.249	0.008	1.359	0.007	0.04	0.05	0.12	0.14	0.14	0.16	0.15	0.18	0.17	0.19	0.15	0.18
700	2.454	0.009	1.832	0.009	0.05	0.05	0.17	0.16	0.19	0.18	0.20	0.19	0.22	0.21	0.20	0.19
710	1.972	0.007	1.659	0.008	0.05	0.04	0.15	0.13	0.17	0.14	0.18	0.15	0.20	0.17	0.18	0.15
720	1.677	0.006	1.662	0.008	0.05	0.03	0.15	0.11	0.17	0.12	0.18	0.13	0.20	0.14	0.18	0.13
730	1.698	0.006	1.878	0.009	0.05	0.03	0.17	0.11	0.19	0.12	0.21	0.13	0.23	0.15	0.21	0.13
740	1.742	0.006	2.088	0.010	0.06	0.04	0.19	0.11	0.21	0.13	0.23	0.14	0.25	0.15	0.23	0.14
750	1.684	0.006	2.108	0.011	0.06	0.03	0.19	0.11	0.22	0.12	0.23	0.13	0.26	0.14	0.23	0.13
760	1.457	0.005	1.940	0.010	0.06	0.03	0.18	0.09	0.20	0.11	0.21	0.11	0.24	0.13	0.21	0.11
770	1.272	0.004	1.791	0.009	0.05	0.03	0.16	0.08	0.18	0.09	0.20	0.10	0.22	0.11	0.20	0.10
780	1.229	0.004	1.659	0.008	0.05	0.03	0.15	0.08	0.17	0.09	0.18	0.10	0.20	0.11	0.18	0.10
790	1.1	0.004	1.334	0.007	0.04	0.02	0.12	0.07	0.14	0.08	0.15	0.09	0.16	0.09	0.15	0.09
800	1.013	0.004	1.168	0.006	0.03	0.02	0.11	0.06	0.12	0.07	0.13	0.08	0.14	0.09	0.13	0.08
810	1.057	0.004	1.289	0.006	0.04	0.02	0.12	0.07	0.13	0.08	0.14	0.08	0.16	0.09	0.14	0.08
820	1.298	0.005	1.609	0.008	0.05	0.03	0.15	0.08	0.16	0.09	0.18	0.10	0.20	0.11	0.18	0.10
830	1.433	0.005	1.860	0.009	0.05	0.03	0.17	0.09	0.19	0.10	0.21	0.11	0.23	0.12	0.21	0.11
840	1.335	0.005	1.775	0.009	0.05	0.03	0.16	0.09	0.18	0.10	0.20	0.10	0.22	0.11	0.20	0.10
850	1.577	0.006	2.071	0.010	0.06	0.03	0.19	0.10	0.21	0.11	0.23	0.12	0.25	0.14	0.23	0.12
860	1.236	0.004	1.766	0.009	0.05	0.03	0.16	0.08	0.18	0.09	0.19	0.10	0.22	0.11	0.20	0.10
870	0.998	0.004	1.654	0.008	0.05	0.02	0.15	0.06	0.17	0.07	0.18	0.08	0.20	0.09	0.18	0.08
880	0.88	0.003	1.555	0.008	0.05	0.02	0.14	0.06	0.16	0.06	0.17	0.07	0.19	0.08	0.17	0.07
890	1.422	0.005	1.955	0.010	0.06	0.03	0.18	0.09	0.20	0.10	0.22	0.11	0.24	0.12	0.22	0.11
900	1.249	0.004	1.593	0.008	0.05	0.03	0.14	0.08	0.16	0.09	0.18	0.10	0.19	0.11	0.18	0.10
910	0.863	0.003	0.971	0.005	0.03	0.02	0.09	0.06	0.10	0.06	0.11	0.07	0.12	0.07	0.11	0.07
920	0.932	0.003	0.889	0.004	0.03	0.02	0.08	0.06	0.09	0.07	0.10	0.07	0.11	0.08	0.10	0.07
930	0.764	0.003	0.668	0.003	0.02	0.02	0.06	0.05	0.07	0.06	0.07	0.06	0.08	0.07	0.07	0.06
940	0.938	0.003	0.861	0.004	0.02	0.02	0.08	0.06	0.09	0.07	0.09	0.07	0.10	0.08	0.10	0.07
950	0.659	0.002	0.537	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.07	0.06	0.06	0.05
960	0.659	0.002	0.550	0.003	0.02	0.01	0.05	0.04	0.06	0.05	0.06	0.05	0.07	0.06	0.06	0.05
970	0.652	0.002	0.544	0.003	0.02	0.01	0.05	0.04	0.06	0.05	0.06	0.05	0.07	0.06	0.06	0.05
980	0.645	0.002	0.538	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.07	0.06	0.06	0.05
990	0.638	0.002	0.533	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1000	0.631	0.002	0.527	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1010	0.624	0.002	0.521	0.003	0.02	0.01	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05	0.06	0.05
1020	0.617	0.002	0.515	0.003	0.01	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1030	0.61	0.002	0.509	0.003	0.01	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1040	0.603	0.002	0.504	0.003	0.01	0.01	0.05	0.04	0.05	0.04	0.06	0.05	0.06	0.05	0.06	0.05
1050	0.596	0.002	0.498	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.05	0.06	0.05	0.06	0.05
1060	0.589	0.002	0.492	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.05	0.06	0.05	0.05	0.05
1070	0.582	0.002	0.486	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.05	0.06	0.05	0.05	0.05
1080	0.575	0.002	0.480	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1090	0.568	0.002	0.475	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1100	0.561	0.002	0.469	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1110	0.554	0.002	0.463	0.002	0.01	0.01	0.04	0.04	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1120	0.547	0.002	0.457	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.06	0.05	0.05	0.04
1130	0.54	0.002	0.451	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.05	0.05	0.04
1140	0.533	0.002	0.446	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.05	0.05	0.04
1150	0.526	0.002	0.440	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.05	0.05	0.04
1160	0.519	0.002	0.434	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1170	0.512	0.002	0.428	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1180	0.505	0.002	0.422	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1190	0.498	0.002	0.417	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1200	0.491	0.002	0.411	0.002	0.01	0.01	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.04
1210	0.484	0.002	0.405	0.002	0.01	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1220	0.477	0.002	0.399	0.002	0.01	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1230	0.47	0.002	0.393	0.002	0.01	0.01	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1240	0.463	0.002	0.388	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1250	0.456	0.002	0.382	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1260	0.449	0.002	0.376	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.04	0.05	0.04	0.04	0.04
1270	0.442	0.002	0.370	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.05	0.04	0.04	0.03
1280	0.435	0.002	0.364	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1290	0.428	0.002	0.359	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1300	0.421	0.001	0.353	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1310	0.414	0.001	0.347	0.002	0.01	0.01	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1320	0.407	0.001	0.341	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.04	0.04	0.03
1330	0.4	0.001	0.335	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1340	0.393	0.001	0.330	0.002	0.01	0.01	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1350	0.386	0.001	0.324	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1360	0.379	0.001	0.318	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1370	0.372	0.001	0.312	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1380	0.365	0.001	0.306	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1390	0.358	0.001	0.301	0.002	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1400	0.351	0.001	0.295	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03
1410	0.344	0.001	0.289	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.04	0.03	0.03	0.03
1420	0.337	0.001	0.283	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
1430	0.33	0.001	0.277	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
1440	0.323	0.001	0.272	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
1450	0.316	0.001	0.266	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1460	0.309	0.001	0.260	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1470	0.302	0.001	0.254	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1480	0.295	0.001	0.248	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
1490	0.288	0.001	0.243	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1500	0.281	0.001	0.237	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1510	0.274	0.001	0.231	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1520	0.267	0.001	0.225	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
1530	0.26	0.001	0.219	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
1540	0.253	0.001	0.214	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
1550	0.246	0.001	0.208	0.001	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
1560	0.239	0.001	0.202	0.001	0.01	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1570	0.232	0.001	0.196	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1580	0.225	0.001	0.190	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1590	0.218	0.001	0.185	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1600	0.211	0.001	0.179	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1610	0.204	0.001	0.173	0.001	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1620	0.197	0.001	0.167	0.001	0.00	0.00	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
1630	0.19	0.001	0.161	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.01
1640	0.183	0.001	0.156	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.01
1650	0.176	0.001	0.150	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.01
1660	0.169	0.001	0.144	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1670	0.162	0.001	0.138	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01
1680	0.155	0.001	0.132	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
1690	0.148	0.001	0.127	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
1700	0.141	0.000	0.121	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1710	0.134	0.000	0.115	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1720	0.127	0.000	0.109	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1730	0.12	0.000	0.103	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1740	0.113	0.000	0.098	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1750	0.106	0.000	0.092	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1760	0.099	0.000	0.086	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1770	0.092	0.000	0.080	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1780	0.085	0.000	0.074	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1790	0.078	0.000	0.069	0.000	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1800	0.071	0.000	0.063	0.000	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1810	0.064	0.000	0.057	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01
1820	0.057	0.000	0.051	0.000	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1830	0.05	0.000	0.045	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1840	0.043	0.000	0.040	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1850	0.036	0.000	0.034	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1860	0.029	0.000	0.028	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1870	0.022	0.000	0.022	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1880	0.015	0.000	0.016	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1890	0.008	0.000	0.011	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1900	0.001	0.000	0.005	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-595	Seascape Surf	0	0	Avg. Net SL	4.78	3.68	3.55	3.54	3.39	2.34						
SD-0595	245.066	0	270.779	1900	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.067	0.000	0.087	0.000	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10	0.388	0.002	0.192	0.001	0.04	0.09	0.03	0.07	0.03	0.07	0.03	0.07	0.03	0.06	0.02	0.04
20	0.709	0.003	0.298	0.001	0.06	0.16	0.05	0.13	0.05	0.12	0.05	0.12	0.04	0.12	0.03	0.08
30	1.030	0.004	0.403	0.001	0.08	0.24	0.07	0.18	0.06	0.18	0.06	0.18	0.06	0.17	0.04	0.12
40	1.350	0.006	0.508	0.002	0.11	0.31	0.08	0.24	0.08	0.23	0.08	0.23	0.08	0.22	0.05	0.15
50	1.672	0.007	0.614	0.002	0.13	0.39	0.10	0.30	0.10	0.29	0.10	0.29	0.09	0.28	0.06	0.19
60	1.356	0.006	0.595	0.002	0.13	0.32	0.10	0.24	0.09	0.23	0.09	0.23	0.09	0.22	0.06	0.15
70	1.463	0.006	0.657	0.002	0.14	0.34	0.11	0.26	0.10	0.25	0.10	0.25	0.10	0.24	0.07	0.17
80	1.813	0.007	0.727	0.003	0.15	0.42	0.12	0.32	0.11	0.31	0.11	0.31	0.11	0.30	0.07	0.21
90	1.804	0.007	0.788	0.003	0.17	0.42	0.13	0.32	0.12	0.31	0.12	0.31	0.12	0.30	0.08	0.21
100	1.799	0.007	0.770	0.003	0.16	0.42	0.12	0.32	0.12	0.31	0.12	0.31	0.11	0.30	0.08	0.20
110	1.801	0.007	0.790	0.003	0.17	0.42	0.13	0.32	0.12	0.31	0.12	0.31	0.12	0.30	0.08	0.21
120	1.909	0.008	0.883	0.003	0.19	0.44	0.14	0.34	0.14	0.33	0.14	0.33	0.13	0.31	0.09	0.22
130	1.994	0.008	0.952	0.004	0.20	0.46	0.15	0.36	0.15	0.34	0.15	0.34	0.14	0.33	0.10	0.23
140	1.932	0.008	0.920	0.003	0.19	0.45	0.15	0.35	0.14	0.33	0.14	0.33	0.14	0.32	0.09	0.22
150	1.889	0.008	0.908	0.003	0.19	0.44	0.15	0.34	0.14	0.33	0.14	0.33	0.14	0.31	0.09	0.22
160	1.877	0.008	0.930	0.003	0.20	0.44	0.15	0.34	0.15	0.32	0.14	0.32	0.14	0.31	0.10	0.21
170	1.951	0.008	0.999	0.004	0.21	0.45	0.16	0.35	0.16	0.34	0.16	0.34	0.15	0.32	0.10	0.22
180	2.041	0.008	1.108	0.004	0.23	0.47	0.18	0.37	0.17	0.35	0.17	0.35	0.17	0.34	0.11	0.23
190	1.998	0.008	1.114	0.004	0.23	0.46	0.18	0.36	0.17	0.35	0.17	0.34	0.17	0.33	0.11	0.23
200	1.943	0.008	1.123	0.004	0.24	0.45	0.18	0.35	0.18	0.34	0.17	0.33	0.17	0.32	0.12	0.22
210	1.919	0.008	1.139	0.004	0.24	0.45	0.18	0.34	0.18	0.33	0.18	0.33	0.17	0.32	0.12	0.22
220	1.910	0.008	1.180	0.004	0.25	0.44	0.19	0.34	0.18	0.33	0.18	0.33	0.18	0.31	0.12	0.22
230	1.906	0.008	1.221	0.005	0.26	0.44	0.20	0.34	0.19	0.33	0.19	0.33	0.18	0.31	0.13	0.22
240	1.857	0.008	1.231	0.005	0.26	0.43	0.20	0.33	0.19	0.32	0.19	0.32	0.18	0.31	0.13	0.21
250	1.820	0.007	1.246	0.005	0.26	0.42	0.20	0.33	0.19	0.31	0.19	0.31	0.19	0.30	0.13	0.21
260	1.803	0.007	1.226	0.005	0.26	0.42	0.20	0.32	0.19	0.31	0.19	0.31	0.18	0.30	0.13	0.21
270	1.734	0.007	1.177	0.004	0.25	0.40	0.19	0.31	0.18	0.30	0.18	0.30	0.18	0.29	0.12	0.20
280	1.657	0.007	1.108	0.004	0.23	0.39	0.18	0.30	0.17	0.29	0.17	0.29	0.17	0.27	0.11	0.19
290	1.581	0.006	1.046	0.004	0.22	0.37	0.17	0.28	0.16	0.27	0.16	0.27	0.16	0.26	0.11	0.18
300	1.510	0.006	0.960	0.004	0.20	0.35	0.16	0.27	0.15	0.26	0.15	0.26	0.14	0.25	0.10	0.17
310	1.555	0.006	0.963	0.004	0.20	0.36	0.16	0.28	0.15	0.27	0.15	0.27	0.14	0.26	0.10	0.18
320	1.605	0.007	0.952	0.004	0.20	0.37	0.15	0.29	0.15	0.28	0.15	0.28	0.14	0.26	0.10	0.18
330	1.668	0.007	0.917	0.003	0.19	0.39	0.15	0.30	0.14	0.29	0.14	0.29	0.14	0.27	0.09	0.19
340	1.673	0.007	0.835	0.003	0.18	0.39	0.14	0.30	0.13	0.29	0.13	0.29	0.12	0.28	0.09	0.19
350	1.564	0.006	0.667	0.002	0.14	0.36	0.11	0.28	0.10	0.27	0.10	0.27	0.10	0.26	0.07	0.18
360	1.604	0.007	0.662	0.002	0.14	0.37	0.11	0.29	0.10	0.28	0.10	0.28	0.10	0.26	0.07	0.18
370	1.870	0.008	0.886	0.003	0.19	0.43	0.14	0.34	0.14	0.32	0.14	0.32	0.13	0.31	0.09	0.21
380	2.119	0.009	1.021	0.004	0.21	0.49	0.17	0.38	0.16	0.37	0.16	0.36	0.15	0.35	0.11	0.24
390	2.359	0.010	1.128	0.004	0.24	0.55	0.18	0.42	0.18	0.41	0.18	0.41	0.17	0.39	0.12	0.27
400	2.530	0.010	1.195	0.004	0.25	0.59	0.19	0.45	0.19	0.44	0.19	0.44	0.18	0.42	0.12	0.29
410	2.681	0.011	1.226	0.005	0.26	0.62	0.20	0.48	0.19	0.46	0.19	0.46	0.18	0.44	0.13	0.31
420	2.846	0.012	1.182	0.004	0.25	0.66	0.19	0.51	0.18	0.49	0.18	0.49	0.18	0.47	0.12	0.32
430	3.134	0.013	1.230	0.005	0.26	0.73	0.20	0.56	0.19	0.54	0.19	0.54	0.18	0.52	0.13	0.36
440	3.397	0.014	1.372	0.005	0.29	0.79	0.22	0.61	0.21	0.59	0.21	0.58	0.20	0.56	0.14	0.39
450	3.106	0.013	1.086	0.004	0.23	0.72	0.18	0.56	0.17	0.54	0.17	0.53	0.16	0.51	0.11	0.35
460	3.900	0.016	1.754	0.006	0.37	0.91	0.28	0.70	0.27	0.67	0.27	0.67	0.26	0.64	0.18	0.44
470	4.450	0.018	2.205	0.008	0.46	1.03	0.36	0.80	0.34	0.77	0.34	0.77	0.33	0.73	0.23	0.51
480	3.928	0.016	1.745	0.006	0.37	0.91	0.28	0.70	0.27	0.68	0.27	0.68	0.26	0.65	0.18	0.45
490	3.196	0.013	1.124	0.004	0.24	0.74	0.18	0.57	0.18	0.55	0.18	0.55	0.17	0.53	0.12	0.36
500	2.924	0.012	0.965	0.004	0.20	0.68	0.16	0.52	0.15	0.51	0.15	0.50	0.14	0.48	0.10	0.33
510	2.809	0.011	1.013	0.004	0.21	0.65	0.16	0.50	0.16	0.49	0.16	0.48	0.15	0.46	0.10	0.32
520	2.729	0.011	1.139	0.004	0.24	0.63	0.18	0.49	0.18	0.47	0.18	0.47	0.17	0.45	0.12	0.31
530	2.860	0.012	1.435	0.005	0.30	0.66	0.23	0.51	0.22	0.49	0.22	0.49	0.21	0.47	0.15	0.33
540	2.253	0.009	1.162	0.004	0.24	0.52	0.19	0.40	0.18	0.39	0.18	0.39	0.17	0.37	0.12	0.26
550	1.988	0.008	1.237	0.005	0.26	0.46	0.20	0.36	0.19	0.34	0.19	0.34	0.18	0.33	0.13	0.23
560	1.854	0.008	1.396	0.005	0.29	0.43	0.23	0.33	0.22	0.32	0.22	0.32	0.21	0.31	0.14	0.21
570	1.788	0.007	1.605	0.006	0.34	0.42	0.26	0.32	0.25	0.31	0.25	0.31	0.24	0.29	0.17	0.20
580	1.704	0.007	1.810	0.007	0.38	0.40	0.29	0.31	0.28	0.29	0.28	0.29	0.27	0.28	0.19	0.19
590	1.547	0.006	1.856	0.007	0.39	0.36	0.30	0.28	0.29	0.27	0.29	0.27	0.28	0.25	0.19	0.18
600	1.304	0.005	1.898	0.007	0.40	0.30	0.31	0.23	0.30	0.23	0.30	0.22	0.28	0.21	0.20	0.15
610	1.105	0.005	1.957	0.007	0.41	0.26	0.32	0.20	0.31	0.19	0.30	0.19	0.29	0.18	0.20	0.13
620	1.123	0.005	2.237	0.008	0.47	0.26	0.36	0.20	0.35	0.19	0.35	0.19	0.33	0.19	0.23	0.13
630	1.134	0.005	2.523	0.009	0.53	0.26	0.41	0.20	0.39	0.20	0.39	0.20	0.38	0.19	0.26	0.13
640	1.073	0.004	2.671	0.010	0.56	0.25	0.43	0.19	0.42	0.19	0.42	0.18	0.40	0.18	0.28	0.12
650	0.922	0.004	2.712	0.010	0.57	0.21	0.44	0.17	0.42	0.16	0.42	0.16	0.40	0.15	0.28	0.10
660	0.912	0.004	2.888	0.011	0.61	0.21	0.47	0.16	0.45	0.16	0.45	0.16	0.43	0.15	0.30	0.10
670	0.878	0.004	3.031	0.011	0.64	0.20	0.49	0.16	0.47	0.15	0.47	0.15	0.45	0.14	0.31	0.10
680	0.973	0.004	3.205	0.012	0.67	0.23	0.52	0.17	0.50	0.17	0.50	0.17	0.48	0.16	0.33	0.11
690	1.042	0.004	3.340	0.012	0.70	0.24	0.54	0.19	0.52	0.18	0.52	0.18	0.50	0.17	0.34	0.12
700	1.003	0.004	3.428	0.013	0.72	0.23	0.56	0.18	0.54	0.17	0.53	0.17	0.51	0.17	0.35	0.11
710	0.940	0.004	3.345	0.012	0.70	0.22	0.54	0.17	0.52	0.16	0.52	0.16	0.50	0.15	0.34	0.11
720	0.813	0.003	3.311	0.012	0.70	0.19	0.54	0.15	0.52	0.14	0.52	0.14	0.49	0.13	0.34	0.09
730	0.845	0.003	3.346	0.012	0.70	0.20	0.54	0.15	0.52	0.15	0.52	0.15	0.50	0.14	0.34	0.10
740	0.849	0.003	3.278	0.012	0.69	0.20	0.53	0.15	0.51	0.15	0.51	0.15	0.49	0.14	0.34	0.10
750	0.790	0.003	3.229	0.012	0.68	0.18	0.52	0.14	0.50	0.14	0.50	0.14	0.48	0.13	0.33	0.09
760	0.658	0.003	3.047	0.011	0.64	0.15	0.49	0.12	0.48	0.11	0.47	0.11	0.45	0.11	0.31	0.07
770	0.738	0.003	3.103	0.011	0.65	0.17	0.50	0.13	0.49	0.13	0.48	0.13	0.46	0.12	0.32	0.08
780	0.740	0.003	3.036	0.011	0.64	0.17	0.49	0.13	0.47	0.13	0.47	0.13	0.45	0.12	0.31	0.08
790	0.655	0.003	2.868	0.011	0.60	0.15	0.47	0.12	0.45	0.11	0.45	0.11	0.43	0.11	0.30	0.07
800	0.678	0.003	2.905	0.011	0.61	0.16	0.47	0.12	0.45	0.12	0.45	0.12	0.43	0.11	0.30	0.08
810	0.885	0.004	3.167	0.012	0.67	0.21	0.51	0.16	0.50	0.15	0.49	0.15	0.47	0.15	0.33	0.10
820	0.822	0.003	3.155	0.012	0.66	0.19	0.51	0.15	0.49	0.14	0.49	0.14	0.47	0.14	0.33	0.09
830	1.745	0.007	3.946	0.015	0.83	0.41	0.64	0.31	0.62	0.30	0.61	0.30	0.59	0.29	0.41	0.20
840	1.120	0.005	2.988	0.011	0.63	0.26	0.48	0.20	0.47	0.19	0.47	0.19	0.45	0.18	0.31	0.13
850	0.956	0.004	2.663	0.010	0.56	0.22	0.43	0.17	0.42	0.17	0.41	0.16	0.40	0.16	0.27	0.11
860	0.747	0.003	2.428	0.009	0.51	0.17	0.39	0.13	0.38	0.13	0.38	0.13	0.36	0.12	0.25	0.09
870	0.727	0.003	2.376	0.009	0.50	0.17	0.39	0.13	0.37	0.13	0.37	0.13	0.35	0.12	0.24	0.08
880	0.596	0.002	2.224	0.008	0.47	0.14	0.36	0.11	0.35	0.10	0.35	0.10	0.33	0.10	0.23	0.07
890	0.512	0.002	2.143	0.008	0.45	0.12	0.35	0.09	0.34	0.09	0.33	0.09	0.32	0.08	0.22	0.06
900	0.421	0.002	2.022	0.007	0.43	0.10	0.33	0.08	0.32	0.07	0.32	0.07	0.30	0.07	0.21	0.05
910	0.346	0.001	1.943	0.007	0.41	0.08	0.32	0.06	0.30	0.06	0.30	0.06	0.29	0.06	0.20	0.04
920	0.764	0.003	2.483	0.009	0.52	0.18	0.40	0.14	0.39	0.13	0.39	0.13	0.37	0.13	0.26	0.09
930	0.675	0.003	2.312	0.009	0.49	0.16	0.37	0.12	0.36	0.12	0.36	0.12	0.34	0.11	0.24	0.08
940	0.660	0.003	2.322	0.009	0.49	0.15	0.38	0.12	0.36	0.11	0.36	0.11	0.35	0.11	0.24	0.08
950	0.741	0.003	2.358	0.009	0.50	0.17	0.38	0.13	0.37	0.13	0.37	0.13	0.35	0.12	0.24	0.08
960	0.532	0.002	1.997	0.007	0.42	0.12	0.32	0.10	0.31	0.09	0.31	0.09	0.30	0.09	0.21	0.06
970	0.735	0.003	2.154	0.008	0.45	0.17	0.35	0.13	0.34	0.13	0.34	0.13	0.32	0.12	0.22	0.08
980	0.785	0.003	2.103	0.008	0.44	0.18	0.34	0.14	0.33	0.14	0.33	0.14	0.31	0.13	0.22	0.09
990	0.922	0.004	2.154	0.008	0.45	0.21	0.35	0.17	0.34	0.16	0.34	0.16	0.32	0.15	0.22	0.10
1000	0.807	0.003	1.912	0.007	0.40	0.19	0.31	0.14	0.30	0.14	0.30	0.14	0.29	0.13	0.20	0.09
1010	1.080	0.004	2.208	0.008	0.46	0.25	0.36	0.19	0.35	0.19	0.34	0.19	0.33	0.18	0.23	0.12
1020	1.074	0.004	2.020	0.007	0.42	0.25	0.33	0.19	0.32	0.19	0.31	0.18	0.30	0.18	0.21	0.12
1030	1.500	0.006	2.678	0.010	0.56	0.35	0.43	0.27	0.42	0.26	0.42	0.26	0.40	0.25	0.28	0.17
1040	1.337	0.005	2.109	0.008	0.44	0.31	0.34	0.24	0.33	0.23	0.33	0.23	0.31	0.22	0.22	0.15
1050	1.027	0.004	1.420	0.005	0.30	0.24	0.23	0.18	0.22	0.18	0.22	0.18	0.21	0.17	0.15	0.12
1060	0.607	0.002	1.013	0.004	0.21	0.14	0.16	0.11	0.16	0.10	0.16	0.10	0.15	0.10	0.10	0.07
1070	0.443	0.002	0.953	0.004	0.20	0.10	0.15	0.08	0.15	0.08	0.15	0.08	0.14	0.07	0.10	0.05
1080	0.462	0.002	0.983	0.004	0.21	0.11	0.16	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.10	0.05
1090	0.498	0.002	1.083	0.004	0.23	0.12	0.18	0.09	0.17	0.09	0.17	0.09	0.16	0.08	0.11	0.06
1100	0.525	0.002	1.198	0.004	0.25	0.12	0.19	0.09	0.19	0.09	0.19	0.09	0.18	0.09	0.12	0.06
1110	0.798	0.003	1.241	0.005	0.26	0.19	0.20	0.14	0.19	0.14	0.19	0.14	0.19	0.13	0.13	0.09
1120	0.746	0.003	0.860	0.003	0.18	0.17	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.09	0.08
1130	0.603	0.002	0.605	0.002	0.13	0.14	0.10	0.11	0.09	0.10	0.09	0.10	0.09	0.10	0.06	0.07
1140	0.797	0.003	0.705	0.003	0.15	0.19	0.11	0.14	0.11	0.14	0.11	0.14	0.11	0.13	0.07	0.09
1150	1.351	0.006	1.207	0.004	0.25	0.31	0.20	0.24	0.19	0.23	0.19	0.23	0.18	0.22	0.12	0.15
1160	1.935	0.008	1.796	0.007	0.38	0.45	0.29	0.35	0.28	0.33	0.28	0.33	0.27	0.32	0.19	0.22
1170	2.269	0.009	1.916	0.007	0.40	0.53	0.31	0.41	0.30	0.39	0.30	0.39	0.29	0.37	0.20	0.26
1180	1.185	0.005	1.116	0.004	0.23	0.28	0.18	0.21	0.17	0.20	0.17	0.20	0.17	0.20	0.12	0.13
1190	1.354	0.006	1.373	0.005	0.29	0.31	0.22	0.24	0.21	0.23	0.21	0.23	0.20	0.22	0.14	0.15
1200	1.384	0.006	1.358	0.005	0.29	0.32	0.22	0.25	0.21	0.24	0.21	0.24	0.20	0.23	0.14	0.16
1210	1.734	0.007	1.973	0.007	0.42	0.40	0.32	0.31	0.31	0.30	0.31	0.30	0.29	0.29	0.20	0.20
1220	1.219	0.005	1.571	0.006	0.33	0.28	0.25	0.22	0.25	0.21	0.24	0.21	0.23	0.20	0.16	0.14
1230	1.587	0.006	1.677	0.006	0.35	0.37	0.27	0.28	0.26	0.27	0.26	0.27	0.25	0.26	0.17	0.18
1240	1.818	0.007	1.881	0.007	0.40	0.42	0.30	0.33	0.29	0.31	0.29	0.31	0.28	0.30	0.19	0.21
1250	1.865	0.008	1.926	0.007	0.41	0.43	0.31	0.33	0.30	0.32	0.30	0.32	0.29	0.31	0.20	0.21
1260	2.165	0.009	2.215	0.008	0.47	0.50	0.36	0.39	0.35	0.37	0.35	0.37	0.33	0.36	0.23	0.25
1270	1.655	0.007	1.770	0.007	0.37	0.38	0.29	0.30	0.28	0.29	0.28	0.28	0.26	0.27	0.18	0.19
1280	1.608	0.007	1.740	0.006	0.37	0.37	0.28	0.29	0.27	0.28	0.27	0.28	0.26	0.27	0.18	0.18
1290	1.841	0.008	1.814	0.007	0.38	0.43	0.29	0.33	0.28	0.32	0.28	0.32	0.27	0.30	0.19	0.21
1300	0.926	0.004	0.946	0.003	0.20	0.22	0.15	0.17	0.15	0.16	0.15	0.16	0.14	0.15	0.10	0.11
1310	0.877	0.004	0.976	0.004	0.21	0.20	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.14	0.10	0.10
1320	1.071	0.004	1.209	0.004	0.25	0.25	0.20	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.12	0.12
1330	1.147	0.005	1.336	0.005	0.28	0.27	0.22	0.21	0.21	0.20	0.21	0.20	0.20	0.19	0.14	0.13
1340	1.095	0.004	1.403	0.005	0.30	0.25	0.23	0.20	0.22	0.19	0.22	0.19	0.21	0.18	0.14	0.12
1350	1.119	0.005	1.485	0.005	0.31	0.26	0.24	0.20	0.23	0.19	0.23	0.19	0.22	0.18	0.15	0.13
1360	1.087	0.004	1.506	0.006	0.32	0.25	0.24	0.19	0.24	0.19	0.23	0.19	0.22	0.18	0.16	0.12
1370	1.149	0.005	1.520	0.006	0.32	0.27	0.25	0.21	0.24	0.20	0.24	0.20	0.23	0.19	0.16	0.13
1380	0.917	0.004	1.456	0.005	0.31	0.21	0.24	0.16	0.23	0.16	0.23	0.16	0.22	0.15	0.15	0.10
1390	0.837	0.003	1.265	0.005	0.27	0.19	0.21	0.15	0.20	0.14	0.20	0.14	0.19	0.14	0.13	0.10
1400	0.633	0.003	0.926	0.003	0.19	0.15	0.15	0.11	0.14	0.11	0.14	0.11	0.14	0.10	0.10	0.07
1410	0.632	0.003	0.900	0.003	0.19	0.15	0.15	0.11	0.14	0.11	0.14	0.11	0.13	0.10	0.09	0.07
1420	0.598	0.002	0.827	0.003	0.17	0.14	0.13	0.11	0.13	0.10	0.13	0.10	0.12	0.10	0.09	0.07
1430	0.415	0.002	0.672	0.002	0.14	0.10	0.11	0.07	0.11	0.07	0.10	0.07	0.10	0.07	0.07	0.05
1440	0.527	0.002	0.688	0.003	0.14	0.12	0.11	0.09	0.11	0.09	0.11	0.09	0.10	0.09	0.07	0.06
1450	0.399	0.002	0.583	0.002	0.12	0.09	0.09	0.07	0.09	0.07	0.09	0.07	0.09	0.07	0.06	0.05
1460	0.464	0.002	0.497	0.002	0.10	0.11	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.08	0.05	0.05
1470	0.387	0.002	0.364	0.001	0.08	0.09	0.06	0.07	0.06	0.07	0.06	0.07	0.05	0.06	0.04	0.04
1480	0.602	0.002	0.439	0.002	0.09	0.14	0.07	0.11	0.07	0.10	0.07	0.10	0.07	0.10	0.05	0.07
1490	0.779	0.003	0.517	0.002	0.11	0.18	0.08	0.14	0.08	0.13	0.08	0.13	0.08	0.13	0.05	0.09
1500	1.068	0.004	0.830	0.003	0.17	0.25	0.13	0.19	0.13	0.18	0.13	0.18	0.12	0.18	0.09	0.12
1510	1.164	0.005	0.728	0.003	0.15	0.27	0.12	0.21	0.11	0.20	0.11	0.20	0.11	0.19	0.08	0.13
1520	0.893	0.004	0.550	0.002	0.12	0.21	0.09	0.16	0.09	0.15	0.09	0.15	0.08	0.15	0.06	0.10
1530	0.555	0.002	0.378	0.001	0.08	0.13	0.06	0.10	0.06	0.10	0.06	0.10	0.06	0.09	0.04	0.06
1540	0.705	0.003	0.614	0.002	0.13	0.16	0.10	0.13	0.10	0.12	0.10	0.12	0.09	0.12	0.06	0.08
1550	1.002	0.004	0.772	0.003	0.16	0.23	0.13	0.18	0.12	0.17	0.12	0.17	0.12	0.17	0.08	0.11
1560	1.079	0.004	0.782	0.003	0.16	0.25	0.13	0.19	0.12	0.19	0.12	0.19	0.12	0.18	0.08	0.12
1570	0.726	0.003	0.605	0.002	0.13	0.17	0.10	0.13	0.09	0.13	0.09	0.13	0.09	0.12	0.06	0.08
1580	0.887	0.004	0.842	0.003	0.18	0.21	0.14	0.16	0.13	0.15	0.13	0.15	0.13	0.15	0.09	0.10
1590	1.401	0.006	1.216	0.004	0.26	0.33	0.20	0.25	0.19	0.24	0.19	0.24	0.18	0.23	0.13	0.16
1600	1.360	0.006	0.979	0.004	0.21	0.32	0.16	0.24	0.15	0.23	0.15	0.23	0.15	0.22	0.10	0.15
1610	1.133	0.005	0.608	0.002	0.13	0.26	0.10	0.20	0.10	0.20	0.09	0.20	0.09	0.19	0.06	0.13
1620	0.948	0.004	0.449	0.002	0.09	0.22	0.07	0.17	0.07	0.16	0.07	0.16	0.07	0.16	0.05	0.11
1630	1.006	0.004	0.517	0.002	0.11	0.23	0.08	0.18	0.08	0.17	0.08	0.17	0.08	0.17	0.05	0.11
1640	0.979	0.004	0.481	0.002	0.10	0.23	0.08	0.18	0.08	0.17	0.07	0.17	0.07	0.16	0.05	0.11
1650	0.981	0.004	0.580	0.002	0.12	0.23	0.09	0.18	0.09	0.17	0.09	0.17	0.09	0.16	0.06	0.11
1660	0.990	0.004	0.649	0.002	0.14	0.23	0.11	0.18	0.10	0.17	0.10	0.17	0.10	0.16	0.07	0.11
1670	0.868	0.004	0.698	0.003	0.15	0.20	0.11	0.16	0.11	0.15	0.11	0.15	0.10	0.14	0.07	0.10
1680	0.844	0.003	0.954	0.004	0.20	0.20	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.10	0.10
1690	0.952	0.004	1.154	0.004	0.24	0.22	0.19	0.17	0.18	0.16	0.18	0.16	0.17	0.16	0.12	0.11
1700	0.883	0.004	0.975	0.004	0.21	0.21	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.10
1710	1.093	0.004	1.267	0.005	0.27	0.25	0.21	0.20	0.20	0.19	0.20	0.19	0.19	0.18	0.13	0.12
1720	1.055	0.004	1.272	0.005	0.27	0.25	0.21	0.19	0.20	0.18	0.20	0.18	0.19	0.17	0.13	0.12
1730	1.084	0.004	1.207	0.004	0.25	0.25	0.20	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.12	0.12
1740	0.932	0.004	1.107	0.004	0.23	0.22	0.18	0.17	0.17	0.16	0.17	0.16	0.17	0.15	0.11	0.11
1750	0.907	0.004	1.072	0.004	0.23	0.21	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.15	0.11	0.10
1760	0.881	0.004	1.024	0.004	0.22	0.20	0.17	0.16	0.16	0.15	0.16	0.15	0.15	0.15	0.11	0.10
1770	0.867	0.004	0.987	0.004	0.21	0.20	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.14	0.10	0.10
1780	0.946	0.004	1.025	0.004	0.22	0.22	0.17	0.17	0.16	0.16	0.16	0.16	0.15	0.16	0.11	0.11
1790	0.945	0.004	1.016	0.004	0.21	0.22	0.16	0.17	0.16	0.16	0.16	0.16	0.15	0.16	0.10	0.11
1800	0.846	0.003	0.877	0.003	0.18	0.20	0.14	0.15	0.14	0.15	0.14	0.15	0.13	0.14	0.09	0.10
1810	0.801	0.003	0.869	0.003	0.18	0.19	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.09	0.09
1820	0.722	0.003	0.848	0.003	0.18	0.17	0.14	0.13	0.13	0.12	0.13	0.12	0.13	0.12	0.09	0.08
1830	0.618	0.003	0.816	0.003	0.17	0.14	0.13	0.11	0.13	0.11	0.13	0.11	0.12	0.10	0.08	0.07
1840	0.592	0.002	0.776	0.003	0.16	0.14	0.13	0.11	0.12	0.10	0.12	0.10	0.12	0.10	0.08	0.07
1850	0.514	0.002	0.727	0.003	0.15	0.12	0.12	0.09	0.11	0.09	0.11	0.09	0.11	0.08	0.07	0.06
1860	0.514	0.002	0.678	0.003	0.14	0.12	0.11	0.09	0.11	0.09	0.11	0.09	0.10	0.08	0.07	0.06
1870	0.478	0.002	0.626	0.002	0.13	0.11	0.10	0.09	0.10	0.08	0.10	0.08	0.09	0.08	0.06	0.05
1880	0.573	0.002	0.751	0.003	0.16	0.13	0.12	0.10	0.12	0.10	0.12	0.10	0.11	0.09	0.08	0.07
1890	0.427	0.002	0.564	0.002	0.12	0.10	0.09	0.08	0.09	0.07	0.09	0.07	0.08	0.07	0.06	0.05
1900	0.922	0.004	1.109	0.004	0.23	0.21	0.18	0.17	0.17	0.16	0.17	0.16	0.17	0.15	0.11	0.10

SD-600	Fletcher Cove	0	0	Avg. Net SL	5.89	4.94	4.81	4.44	3.19	2.59						
SD-600	208.436	0	231.37	1900	Sand Depth (ft)											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.194	0.001	0.000	0.000	0.00	0.07	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.03
20	0.751	0.004	0.000	0.000	0.00	0.25	0.00	0.21	0.00	0.21	0.00	0.19	0.00	0.14	0.00	0.11
30	1.386	0.007	0.002	0.000	0.00	0.47	0.00	0.39	0.00	0.38	0.00	0.35	0.00	0.25	0.00	0.21
40	1.877	0.009	0.601	0.003	0.18	0.63	0.15	0.53	0.15	0.52	0.14	0.48	0.10	0.34	0.08	0.28
50	1.99	0.010	0.907	0.004	0.28	0.67	0.23	0.56	0.22	0.55	0.21	0.51	0.15	0.36	0.12	0.30
60	2.116	0.010	1.176	0.005	0.36	0.71	0.30	0.60	0.29	0.58	0.27	0.54	0.19	0.39	0.16	0.31
70	2.228	0.011	1.339	0.006	0.41	0.75	0.34	0.63	0.33	0.61	0.31	0.57	0.22	0.41	0.18	0.33
80	2.353	0.011	1.449	0.006	0.44	0.79	0.37	0.66	0.36	0.65	0.33	0.60	0.24	0.43	0.19	0.35
90	2.403	0.012	1.483	0.006	0.45	0.81	0.38	0.68	0.37	0.66	0.34	0.61	0.24	0.44	0.20	0.36
100	2.38	0.011	1.446	0.006	0.44	0.80	0.37	0.67	0.36	0.65	0.33	0.60	0.24	0.43	0.19	0.35
110	2.343	0.011	1.439	0.006	0.44	0.79	0.37	0.66	0.36	0.64	0.33	0.60	0.24	0.43	0.19	0.35
120	2.361	0.011	1.497	0.006	0.45	0.80	0.38	0.67	0.37	0.65	0.34	0.60	0.25	0.43	0.20	0.35
130	2.449	0.012	1.591	0.007	0.48	0.82	0.40	0.69	0.39	0.67	0.36	0.62	0.26	0.45	0.21	0.36
140	2.542	0.012	1.681	0.007	0.51	0.86	0.43	0.72	0.42	0.70	0.38	0.65	0.28	0.46	0.22	0.38
150	2.573	0.012	1.685	0.007	0.51	0.87	0.43	0.73	0.42	0.71	0.39	0.65	0.28	0.47	0.23	0.38
160	2.588	0.012	1.656	0.007	0.50	0.87	0.42	0.73	0.41	0.71	0.38	0.66	0.27	0.47	0.22	0.38
170	2.617	0.013	1.683	0.007	0.51	0.88	0.43	0.74	0.42	0.72	0.39	0.67	0.28	0.48	0.22	0.39
180	2.648	0.013	1.702	0.007	0.52	0.89	0.43	0.75	0.42	0.73	0.39	0.67	0.28	0.48	0.23	0.39
190	2.564	0.012	1.571	0.007	0.48	0.86	0.40	0.72	0.39	0.70	0.36	0.65	0.26	0.47	0.21	0.38
200	2.394	0.011	1.350	0.006	0.41	0.81	0.34	0.68	0.33	0.66	0.31	0.61	0.22	0.44	0.18	0.36
210	2.223	0.011	1.128	0.005	0.34	0.75	0.29	0.63	0.28	0.61	0.26	0.57	0.19	0.41	0.15	0.33
220	2.059	0.010	0.926	0.004	0.28	0.69	0.24	0.58	0.23	0.57	0.21	0.52	0.15	0.38	0.12	0.31
230	2.146	0.010	0.973	0.004	0.30	0.72	0.25	0.61	0.24	0.59	0.22	0.55	0.16	0.39	0.13	0.32
240	2.414	0.012	1.212	0.005	0.37	0.81	0.31	0.68	0.30	0.66	0.28	0.61	0.20	0.44	0.16	0.36
250	2.696	0.013	1.470	0.006	0.45	0.91	0.37	0.76	0.36	0.74	0.34	0.69	0.24	0.49	0.20	0.40
260	2.925	0.014	1.700	0.007	0.52	0.99	0.43	0.83	0.42	0.80	0.39	0.74	0.28	0.53	0.23	0.43
270	3.119	0.015	1.920	0.008	0.58	1.05	0.49	0.88	0.48	0.86	0.44	0.79	0.32	0.57	0.26	0.46
280	3.212	0.015	2.061	0.009	0.63	1.08	0.52	0.91	0.51	0.88	0.47	0.82	0.34	0.59	0.28	0.48
290	3.23	0.015	2.150	0.009	0.65	1.09	0.55	0.91	0.53	0.89	0.49	0.82	0.35	0.59	0.29	0.48
300	3.254	0.016	2.229	0.010	0.68	1.10	0.57	0.92	0.55	0.89	0.51	0.83	0.37	0.59	0.30	0.48
310	3.171	0.015	2.226	0.010	0.68	1.07	0.57	0.90	0.55	0.87	0.51	0.81	0.37	0.58	0.30	0.47
320	3.057	0.015	2.200	0.010	0.67	1.03	0.56	0.86	0.54	0.84	0.50	0.78	0.36	0.56	0.29	0.45
330	3.071	0.015	2.308	0.010	0.70	1.03	0.59	0.87	0.57	0.84	0.53	0.78	0.38	0.56	0.31	0.46
340	2.98	0.014	2.333	0.010	0.71	1.00	0.59	0.84	0.58	0.82	0.53	0.76	0.38	0.54	0.31	0.44
350	2.713	0.013	2.143	0.009	0.65	0.91	0.55	0.77	0.53	0.75	0.49	0.69	0.35	0.50	0.29	0.40
360	2.5	0.012	1.975	0.009	0.60	0.84	0.50	0.71	0.49	0.69	0.45	0.64	0.32	0.46	0.26	0.37
370	2.43	0.012	1.921	0.008	0.58	0.82	0.49	0.69	0.48	0.67	0.44	0.62	0.32	0.44	0.26	0.36
380	2.44	0.012	1.942	0.008	0.59	0.82	0.49	0.69	0.48	0.67	0.44	0.62	0.32	0.45	0.26	0.36
390	2.452	0.012	1.938	0.008	0.59	0.83	0.49	0.69	0.48	0.67	0.44	0.62	0.32	0.45	0.26	0.36
400	2.466	0.012	1.930	0.008	0.59	0.83	0.49	0.70	0.48	0.68	0.44	0.63	0.32	0.45	0.26	0.37
410	2.446	0.012	1.943	0.008	0.59	0.82	0.49	0.69	0.48	0.67	0.44	0.62	0.32	0.45	0.26	0.36
420	2.449	0.012	2.027	0.009	0.62	0.82	0.52	0.69	0.50	0.67	0.46	0.62	0.33	0.45	0.27	0.36
430	2.438	0.012	2.096	0.009	0.64	0.82	0.53	0.69	0.52	0.67	0.48	0.62	0.34	0.44	0.28	0.36
440	2.414	0.012	2.142	0.009	0.65	0.81	0.55	0.68	0.53	0.66	0.49	0.61	0.35	0.44	0.29	0.36
450	2.319	0.011	2.152	0.009	0.65	0.78	0.55	0.66	0.53	0.64	0.49	0.59	0.35	0.42	0.29	0.34
460	2.236	0.011	2.211	0.010	0.67	0.75	0.56	0.63	0.55	0.61	0.51	0.57	0.36	0.41	0.30	0.33
470	2.204	0.011	2.324	0.010	0.71	0.74	0.59	0.62	0.58	0.61	0.53	0.56	0.38	0.40	0.31	0.33
480	2.166	0.010	2.438	0.011	0.74	0.73	0.62	0.61	0.60	0.60	0.56	0.55	0.40	0.40	0.33	0.32
490	2.114	0.010	2.563	0.011	0.78	0.71	0.65	0.60	0.63	0.58	0.59	0.54	0.42	0.39	0.34	0.31
500	2.066	0.010	2.654	0.011	0.81	0.70	0.68	0.58	0.66	0.57	0.61	0.53	0.44	0.38	0.35	0.31
510	1.949	0.009	2.716	0.012	0.82	0.66	0.69	0.55	0.67	0.54	0.62	0.50	0.45	0.36	0.36	0.29
520	1.841	0.009	2.765	0.012	0.84	0.62	0.70	0.52	0.68	0.51	0.63	0.47	0.45	0.34	0.37	0.27
530	1.722	0.008	2.792	0.012	0.85	0.58	0.71	0.49	0.69	0.47	0.64	0.44	0.46	0.31	0.37	0.26
540	1.633	0.008	2.802	0.012	0.85	0.55	0.71	0.46	0.69	0.45	0.64	0.42	0.46	0.30	0.37	0.24
550	1.59	0.008	2.849	0.012	0.86	0.54	0.73	0.45	0.71	0.44	0.65	0.40	0.47	0.29	0.38	0.24
560	1.542	0.007	2.860	0.012	0.87	0.52	0.73	0.44	0.71	0.42	0.65	0.39	0.47	0.28	0.38	0.23
570	1.411	0.007	2.837	0.012	0.86	0.48	0.72	0.40	0.70	0.39	0.65	0.36	0.47	0.26	0.38	0.21
580	1.315	0.006	2.767	0.012	0.84	0.44	0.70	0.37	0.69	0.36	0.63	0.33	0.45	0.24	0.37	0.20
590	1.198	0.006	2.689	0.012	0.82	0.40	0.68	0.34	0.67	0.33	0.62	0.30	0.44	0.22	0.36	0.18
600	1.105	0.005	2.576	0.011	0.78	0.37	0.66	0.31	0.64	0.30	0.59	0.28	0.42	0.20	0.34	0.16
610	0.981	0.005	2.435	0.011	0.74	0.33	0.62	0.28	0.60	0.27	0.56	0.25	0.40	0.18	0.33	0.15
620	0.852	0.004	2.285	0.010	0.69	0.29	0.58	0.24	0.57	0.23	0.52	0.22	0.38	0.16	0.31	0.13
630	0.738	0.004	2.175	0.009	0.66	0.25	0.55	0.21	0.54	0.20	0.50	0.19	0.36	0.13	0.29	0.11
640	0.754	0.004	2.182	0.009	0.66	0.25	0.56	0.21	0.54	0.21	0.50	0.19	0.36	0.14	0.29	0.11
650	0.704	0.003	2.133	0.009	0.65	0.24	0.54	0.20	0.53	0.19	0.49	0.18	0.35	0.13	0.29	0.10
660	0.63	0.003	2.018	0.009	0.61	0.21	0.51	0.18	0.50	0.17	0.46	0.16	0.33	0.11	0.27	0.09
670	0.558	0.003	1.960	0.008	0.59	0.19	0.50	0.16	0.49	0.15	0.45	0.14	0.32	0.10	0.26	0.08
680	0.517	0.002	1.858	0.008	0.56	0.17	0.47	0.15	0.46	0.14	0.43	0.13	0.31	0.09	0.25	0.08
690	0.495	0.002	1.747	0.008	0.53	0.17	0.44	0.14	0.43	0.14	0.40	0.13	0.29	0.09	0.23	0.07
700	0.441	0.002	1.683	0.007	0.51	0.15	0.43	0.12	0.42	0.12	0.39	0.11	0.28	0.08	0.22	0.07
710	0.386	0.002	1.615	0.007	0.49	0.13	0.41	0.11	0.40	0.11	0.37	0.10	0.27	0.07	0.22	0.06
720	0.417	0.002	1.607	0.007	0.49	0.14	0.41	0.12	0.40	0.11	0.37	0.11	0.26	0.08	0.21	0.06
730	0.437	0.002	1.604	0.007	0.49	0.15	0.41	0.12	0.40	0.12	0.37	0.11	0.26	0.08	0.21	0.06
740	0.355	0.002	1.528	0.007	0.46	0.12	0.39	0.10	0.38	0.10	0.35	0.09	0.25	0.06	0.20	0.05
750	0.294	0.001	1.469	0.006	0.45	0.10	0.37	0.08	0.36	0.08	0.34	0.07	0.24	0.05	0.20	0.04
760	0.375	0.002	1.544	0.007	0.47	0.13	0.39	0.11	0.38	0.10	0.35	0.10	0.25	0.07	0.21	0.06
770	0.492	0.002	1.612	0.007	0.49	0.17	0.41	0.14	0.40	0.14	0.37	0.13	0.27	0.09	0.22	0.07
780	0.499	0.002	1.591	0.007	0.48	0.17	0.40	0.14	0.39	0.14	0.36	0.13	0.26	0.09	0.21	0.07
790	0.459	0.002	1.560	0.007	0.47	0.15	0.40	0.13	0.39	0.13	0.36	0.12	0.26	0.08	0.21	0.07
800	0.459	0.002	1.532	0.007	0.46	0.15	0.39	0.13	0.38	0.13	0.35	0.12	0.25	0.08	0.20	0.07
810	0.437	0.002	1.483	0.006	0.45	0.15	0.38	0.12	0.37	0.12	0.34	0.11	0.24	0.08	0.20	0.06
820	0.411	0.002	1.441	0.006	0.44	0.14	0.37	0.12	0.36	0.11	0.33	0.10	0.24	0.08	0.19	0.06
830	0.456	0.002	1.422	0.006	0.43	0.15	0.36	0.13	0.35	0.13	0.33	0.12	0.23	0.08	0.19	0.07
840	0.426	0.002	1.427	0.006	0.43	0.14	0.36	0.12	0.35	0.12	0.33	0.11	0.23	0.08	0.19	0.06
850	0.394	0.002	1.364	0.006	0.41	0.13	0.35	0.11	0.34	0.11	0.31	0.10	0.22	0.07	0.18	0.06
860	0.397	0.002	1.295	0.006	0.39	0.13	0.33	0.11	0.32	0.11	0.30	0.10	0.21	0.07	0.17	0.06
870	0.418	0.002	1.254	0.005	0.38	0.14	0.32	0.12	0.31	0.11	0.29	0.11	0.21	0.08	0.17	0.06
880	0.426	0.002	1.232	0.005	0.37	0.14	0.31	0.12	0.31	0.12	0.28	0.11	0.20	0.08	0.16	0.06
890	0.443	0.002	1.264	0.005	0.38	0.15	0.32	0.13	0.31	0.12	0.29	0.11	0.21	0.08	0.17	0.07
900	0.432	0.002	1.239	0.005	0.38	0.15	0.32	0.12	0.31	0.12	0.28	0.11	0.20	0.08	0.17	0.06
910	0.424	0.002	1.140	0.005	0.35	0.14	0.29	0.12	0.28	0.12	0.26	0.11	0.19	0.08	0.15	0.06
920	0.418	0.002	1.057	0.005	0.32	0.14	0.27	0.12	0.26	0.11	0.24	0.11	0.17	0.08	0.14	0.06
930	0.492	0.002	1.069	0.005	0.32	0.17	0.27	0.14	0.26	0.14	0.24	0.13	0.18	0.09	0.14	0.07
940	0.557	0.003	1.149	0.005	0.35	0.19	0.29	0.16	0.28	0.15	0.26	0.14	0.19	0.10	0.15	0.08
950	0.614	0.003	1.177	0.005	0.36	0.21	0.30	0.17	0.29	0.17	0.27	0.16	0.19	0.11	0.16	0.09
960	0.537	0.003	1.131	0.005	0.34	0.18	0.29	0.15	0.28	0.15	0.26	0.14	0.19	0.10	0.15	0.08
970	0.582	0.003	1.225	0.005	0.37	0.20	0.31	0.16	0.30	0.16	0.28	0.15	0.20	0.11	0.16	0.09
980	0.593	0.003	1.193	0.005	0.36	0.20	0.30	0.17	0.30	0.16	0.27	0.15	0.20	0.11	0.16	0.09
990	0.545	0.003	1.152	0.005	0.35	0.18	0.29	0.15	0.29	0.15	0.26	0.14	0.19	0.10	0.15	0.08
1000	0.449	0.002	1.025	0.004	0.31	0.15	0.26	0.13	0.25	0.12	0.23	0.11	0.17	0.08	0.14	0.07
1010	0.468	0.002	1.033	0.004	0.31	0.16	0.26	0.13	0.26	0.13	0.24	0.12	0.17	0.09	0.14	0.07
1020	0.56	0.003	1.111	0.005	0.34	0.19	0.28	0.16	0.28	0.15	0.25	0.14	0.18	0.10	0.15	0.08
1030	0.665	0.003	1.168	0.005	0.35	0.22	0.30	0.19	0.29	0.18	0.27	0.17	0.19	0.12	0.16	0.10
1040	0.789	0.004	1.212	0.005	0.37	0.27	0.31	0.22	0.30	0.22	0.28	0.20	0.20	0.14	0.16	0.12
1050	0.828	0.004	1.208	0.005	0.37	0.28	0.31	0.23	0.30	0.23	0.28	0.21	0.20	0.15	0.16	0.12
1060	0.926	0.004	1.245	0.005	0.38	0.31	0.32	0.26	0.31	0.25	0.29	0.24	0.20	0.17	0.17	0.14
1070	0.893	0.004	1.154	0.005	0.35	0.30	0.29	0.25	0.29	0.25	0.26	0.23	0.19	0.16	0.15	0.13
1080	0.906	0.004	1.147	0.005	0.35	0.31	0.29	0.26	0.28	0.25	0.26	0.23	0.19	0.17	0.15	0.13
1090	0.893	0.004	1.067	0.005	0.32	0.30	0.27	0.25	0.26	0.25	0.24	0.23	0.18	0.16	0.14	0.13
1100	0.829	0.004	1.025	0.004	0.31	0.28	0.26	0.23	0.25	0.23	0.23	0.21	0.17	0.15	0.14	0.12
1110	0.747	0.004	0.970	0.004	0.29	0.25	0.25	0.21	0.24	0.21	0.22	0.19	0.16	0.14	0.13	0.11
1120	0.666	0.003	0.928	0.004	0.28	0.22	0.24	0.19	0.23	0.18	0.21	0.17	0.15	0.12	0.12	0.10
1130	0.603	0.003	0.853	0.004	0.26	0.20	0.22	0.17	0.21	0.17	0.20	0.15	0.14	0.11	0.11	0.09
1140	0.655	0.003	0.898	0.004	0.27	0.22	0.23	0.19	0.22	0.18	0.21	0.17	0.15	0.12	0.12	0.10
1150	0.7	0.003	0.950	0.004	0.29	0.24	0.24	0.20	0.24	0.19	0.22	0.18	0.16	0.13	0.13	0.10
1160	0.691	0.003	0.940	0.004	0.29	0.23	0.24	0.20	0.23	0.19	0.22	0.18	0.15	0.13	0.13	0.10
1170	0.695	0.003	0.901	0.004	0.27	0.23	0.23	0.20	0.22	0.19	0.21	0.18	0.15	0.13	0.12	0.10
1180	0.706	0.003	0.961	0.004	0.29	0.24	0.24	0.20	0.24	0.19	0.22	0.18	0.16	0.13	0.13	0.10
1190	0.7	0.003	1.016	0.004	0.31	0.24	0.26	0.20	0.25	0.19	0.23	0.18	0.17	0.13	0.14	0.10
1200	0.709	0.003	0.953	0.004	0.29	0.24	0.24	0.20	0.24	0.19	0.22	0.18	0.16	0.13	0.13	0.11
1210	0.753	0.004	1.004	0.004	0.30	0.25	0.26	0.21	0.25	0.21	0.23	0.19	0.17	0.14	0.13	0.11
1220	0.73	0.004	0.932	0.004	0.28	0.25	0.24	0.21	0.23	0.20	0.21	0.19	0.15	0.13	0.12	0.11
1230	0.69	0.003	0.887	0.004	0.27	0.23	0.23	0.19	0.22	0.19	0.20	0.18	0.15	0.13	0.12	0.10
1240	0.691	0.003	0.843	0.004	0.26	0.23	0.21	0.20	0.21	0.19	0.19	0.18	0.14	0.13	0.11	0.10
1250	0.638	0.003	0.810	0.004	0.25	0.21	0.21	0.18	0.20	0.18	0.19	0.16	0.13	0.12	0.11	0.09
1260	0.606	0.003	0.751	0.003	0.23	0.20	0.19	0.17	0.19	0.17	0.17	0.15	0.12	0.11	0.10	0.09
1270	0.583	0.003	0.742	0.003	0.23	0.20	0.19	0.16	0.18	0.16	0.17	0.15	0.12	0.11	0.10	0.09
1280	0.597	0.003	0.753	0.003	0.23	0.20	0.19	0.17	0.19	0.16	0.17	0.15	0.12	0.11	0.10	0.09
1290	0.604	0.003	0.725	0.003	0.22	0.20	0.18	0.17	0.18	0.17	0.17	0.15	0.12	0.11	0.10	0.09
1300	0.575	0.003	0.740	0.003	0.22	0.19	0.19	0.16	0.18	0.16	0.17	0.15	0.12	0.10	0.10	0.09
1310	0.504	0.002	0.647	0.003	0.20	0.17	0.16	0.14	0.16	0.14	0.15	0.13	0.11	0.09	0.09	0.07
1320	0.501	0.002	0.647	0.003	0.20	0.17	0.16	0.14	0.16	0.14	0.15	0.13	0.11	0.09	0.09	0.07
1330	0.492	0.002	0.657	0.003	0.20	0.17	0.17	0.14	0.16	0.14	0.15	0.13	0.11	0.09	0.09	0.07
1340	0.459	0.002	0.579	0.003	0.18	0.15	0.15	0.13	0.14	0.13	0.13	0.12	0.10	0.08	0.08	0.07
1350	0.474	0.002	0.586	0.003	0.18	0.16	0.15	0.13	0.15	0.13	0.13	0.12	0.10	0.09	0.08	0.07
1360	0.466	0.002	0.582	0.003	0.18	0.16	0.15	0.13	0.14	0.13	0.13	0.12	0.10	0.09	0.08	0.07
1370	0.483	0.002	0.574	0.002	0.17	0.16	0.15	0.14	0.14	0.13	0.13	0.12	0.09	0.09	0.08	0.07
1380	0.506	0.002	0.579	0.003	0.18	0.17	0.15	0.14	0.14	0.14	0.13	0.13	0.10	0.09	0.08	0.08
1390	0.515	0.002	0.587	0.003	0.18	0.17	0.15	0.15	0.15	0.14	0.13	0.13	0.10	0.09	0.08	0.08
1400	0.413	0.002	0.527	0.002	0.16	0.14	0.13	0.12	0.13	0.11	0.12	0.10	0.09	0.08	0.07	0.06
1410	0.409	0.002	0.499	0.002	0.15	0.14	0.13	0.12	0.12	0.11	0.11	0.10	0.08	0.07	0.07	0.06
1420	0.37	0.002	0.421	0.002	0.13	0.12	0.11	0.10	0.10	0.10	0.10	0.09	0.07	0.07	0.06	0.05
1430	0.349	0.002	0.447	0.002	0.14	0.12	0.11	0.10	0.11	0.10	0.10	0.09	0.07	0.06	0.06	0.05
1440	0.604	0.003	0.841	0.004	0.26	0.20	0.21	0.17	0.21	0.17	0.19	0.15	0.14	0.11	0.11	0.09
1450	0.699	0.003	0.853	0.004	0.26	0.24	0.22	0.20	0.21	0.19	0.20	0.18	0.14	0.13	0.11	0.10
1460	0.584	0.003	0.665	0.003	0.20	0.20	0.17	0.16	0.16	0.16	0.15	0.15	0.11	0.11	0.09	0.09
1470	0.517	0.002	0.616	0.003	0.19	0.17	0.16	0.15	0.15	0.14	0.14	0.13	0.10	0.09	0.08	0.08
1480	0.448	0.002	0.569	0.002	0.17	0.15	0.14	0.13	0.14	0.12	0.13	0.11	0.09	0.08	0.08	0.07
1490	0.453	0.002	0.591	0.003	0.18	0.15	0.15	0.13	0.15	0.12	0.14	0.12	0.10	0.08	0.08	0.07
1500	0.368	0.002	0.483	0.002	0.15	0.12	0.12	0.10	0.12	0.10	0.11	0.09	0.08	0.07	0.06	0.05
1510	0.314	0.002	0.451	0.002	0.14	0.11	0.11	0.09	0.11	0.09	0.10	0.08	0.07	0.06	0.06	0.05
1520	0.324	0.002	0.475	0.002	0.14	0.11	0.12	0.09	0.12	0.09	0.11	0.08	0.08	0.06	0.06	0.05
1530	0.366	0.002	0.509	0.002	0.15	0.12	0.13	0.10	0.13	0.10	0.12	0.09	0.08	0.07	0.07	0.05
1540	0.428	0.002	0.567	0.002	0.17	0.14	0.14	0.12	0.14	0.12	0.13	0.11	0.09	0.08	0.08	0.06
1550	0.454	0.002	0.584	0.003	0.18	0.15	0.15	0.13	0.14	0.12	0.13	0.12	0.10	0.08	0.08	0.07
1560	0.452	0.002	0.522	0.002	0.16	0.15	0.13	0.13	0.13	0.12	0.12	0.11	0.09	0.08	0.07	0.07
1570	0.456	0.002	0.521	0.002	0.16	0.15	0.13	0.13	0.13	0.13	0.12	0.12	0.09	0.08	0.07	0.07
1580	0.446	0.002	0.527	0.002	0.16	0.15	0.13	0.13	0.13	0.12	0.12	0.11	0.09	0.08	0.07	0.07
1590	0.343	0.002	0.393	0.002	0.12	0.12	0.10	0.10	0.10	0.09	0.09	0.09	0.06	0.06	0.05	0.05
1600	0.351	0.002	0.432	0.002	0.13	0.12	0.11	0.10	0.11	0.10	0.10	0.09	0.07	0.06	0.06	0.05
1610	0.451	0.002	0.466	0.002	0.14	0.15	0.12	0.13	0.12	0.12	0.11	0.11	0.08	0.08	0.06	0.07
1620	0.454	0.002	0.496	0.002	0.15	0.15	0.13	0.13	0.12	0.12	0.11	0.12	0.08	0.08	0.07	0.07
1630	0.467	0.002	0.529	0.002	0.16	0.16	0.13	0.13	0.13	0.13	0.12	0.12	0.09	0.09	0.07	0.07
1640	0.479	0.002	0.535	0.002	0.16	0.16	0.14	0.14	0.13	0.13	0.12	0.12	0.09	0.09	0.07	0.07
1650	0.504	0.002	0.543	0.002	0.16	0.17	0.14	0.14	0.13	0.14	0.12	0.13	0.09	0.09	0.07	0.07
1660	0.477	0.002	0.521	0.002	0.16	0.16	0.13	0.13	0.13	0.13	0.12	0.12	0.09	0.09	0.07	0.07
1670	0.484	0.002	0.494	0.002	0.15	0.16	0.13	0.14	0.12	0.13	0.11	0.12	0.08	0.09	0.07	0.07
1680	0.455	0.002	0.452	0.002	0.14	0.15	0.12	0.13	0.11	0.13	0.10	0.12	0.07	0.08	0.06	0.07
1690	0.465	0.002	0.444	0.002	0.13	0.16	0.11	0.13	0.11	0.13	0.10	0.12	0.07	0.08	0.06	0.07
1700	0.531	0.003	0.481	0.002	0.15	0.18	0.12	0.15	0.12	0.15	0.11	0.13	0.08	0.10	0.06	0.08
1710	0.487	0.002	0.414	0.002	0.13	0.16	0.11	0.14	0.10	0.13	0.09	0.12	0.07	0.09	0.06	0.07
1720	0.382	0.002	0.351	0.002	0.11	0.13	0.09	0.11	0.09	0.11	0.08	0.10	0.06	0.07	0.05	0.06
1730	0.41	0.002	0.319	0.001	0.10	0.14	0.08	0.12	0.08	0.11	0.07	0.10	0.05	0.07	0.04	0.06
1740	0.534	0.003	0.367	0.002	0.11	0.18	0.09	0.15	0.09	0.15	0.08	0.14	0.06	0.10	0.05	0.08
1750	0.555	0.003	0.293	0.001	0.09	0.19	0.07	0.16	0.07	0.15	0.07	0.14	0.05	0.10	0.04	0.08
1760	0.555	0.003	0.257	0.001	0.08	0.19	0.07	0.16	0.06	0.15	0.06	0.14	0.04	0.10	0.03	0.08
1770	0.55	0.003	0.232	0.001	0.07	0.19	0.06	0.16	0.06	0.15	0.05	0.14	0.04	0.10	0.03	0.08
1780	0.602	0.003	0.288	0.001	0.09	0.20	0.07	0.17	0.07	0.17	0.07	0.15	0.05	0.11	0.04	0.09
1790	0.661	0.003	0.299	0.001	0.09	0.22	0.08	0.19	0.07	0.18	0.07	0.17	0.05	0.12	0.04	0.10
1800	0.672	0.003	0.264	0.001	0.08	0.23	0.07	0.19	0.07	0.18	0.06	0.17	0.04	0.12	0.04	0.10
1810	0.731	0.004	0.336	0.001	0.10	0.25	0.09	0.21	0.08	0.20	0.08	0.19	0.06	0.13	0.04	0.11
1820	0.85	0.004	0.484	0.002	0.15	0.29	0.12	0.24	0.12	0.23	0.11	0.22	0.08	0.16	0.06	0.13
1830	0.844	0.004	0.560	0.002	0.17	0.28	0.14	0.24	0.14	0.23	0.13	0.21	0.09	0.15	0.07	0.13
1840	0.769	0.004	0.532	0.002	0.16	0.26	0.14	0.22	0.13	0.21	0.12	0.20	0.09	0.14	0.07	0.11
1850	0.791	0.004	0.566	0.002	0.17	0.27	0.14	0.22	0.14	0.22	0.13	0.20	0.09	0.14	0.08	0.12
1860	0.755	0.004	0.575	0.002	0.17	0.25	0.15	0.21	0.14	0.21	0.13	0.19	0.09	0.14	0.08	0.11
1870	0.718	0.003	0.573	0.002	0.17	0.24	0.15	0.20	0.14	0.20	0.13	0.18	0.09	0.13	0.08	0.11
1880	0.752	0.004	0.563	0.002	0.17	0.25	0.14	0.21	0.14	0.21	0.13	0.19	0.09	0.14	0.08	0.11
1890	0.809	0.004	0.611	0.003	0.19	0.27	0.16	0.23	0.15	0.22	0.14	0.21	0.10	0.15	0.08	0.12
1900	0.831	0.004	0.644	0.003	0.20	0.28	0.16	0.23	0.16	0.23	0.15	0.21	0.11	0.15	0.09	0.12

SD-610	Tide Park	0	0	Avg. Net SL Change	2.78	5.33	4.69	3.45	2.10	1.85						
SD-610	314.556	0	229.886	1900			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdpn	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
-50	3.421	0.011	0.737	0.003	0.11	0.36	0.20	0.69	0.18	0.61	0.13	0.45	0.08	0.27	0.07	0.24
-40	4.195	0.013	0.898	0.004	0.13	0.44	0.25	0.85	0.22	0.75	0.16	0.55	0.10	0.33	0.09	0.29
-30	4.407	0.014	0.862	0.004	0.12	0.46	0.24	0.89	0.21	0.78	0.15	0.58	0.09	0.35	0.08	0.31
-20	4.396	0.014	0.867	0.004	0.13	0.46	0.24	0.89	0.21	0.78	0.16	0.58	0.09	0.35	0.08	0.31
-10	4.367	0.014	0.877	0.004	0.13	0.46	0.24	0.88	0.21	0.78	0.16	0.57	0.10	0.35	0.08	0.31
0	4.338	0.014	0.885	0.004	0.13	0.46	0.24	0.88	0.22	0.77	0.16	0.57	0.10	0.34	0.08	0.30
10	4.309	0.014	0.894	0.004	0.13	0.45	0.25	0.87	0.22	0.77	0.16	0.56	0.10	0.34	0.09	0.30
20	4.217	0.013	0.904	0.004	0.13	0.44	0.25	0.85	0.22	0.75	0.16	0.55	0.10	0.33	0.09	0.29
30	4.099	0.013	0.943	0.004	0.14	0.43	0.26	0.83	0.23	0.73	0.17	0.54	0.10	0.33	0.09	0.29
40	3.936	0.013	0.991	0.004	0.14	0.42	0.27	0.80	0.24	0.70	0.18	0.52	0.11	0.31	0.09	0.28
50	3.616	0.011	0.948	0.004	0.14	0.38	0.26	0.73	0.23	0.64	0.17	0.47	0.10	0.29	0.09	0.25
60	3.316	0.011	0.920	0.004	0.13	0.35	0.25	0.67	0.22	0.59	0.16	0.43	0.10	0.26	0.09	0.23
70	3.109	0.010	0.907	0.004	0.13	0.33	0.25	0.63	0.22	0.55	0.16	0.41	0.10	0.25	0.09	0.22
80	2.953	0.009	0.877	0.004	0.13	0.31	0.24	0.60	0.21	0.52	0.16	0.39	0.10	0.23	0.08	0.21
90	2.784	0.009	0.827	0.004	0.12	0.29	0.23	0.56	0.20	0.49	0.15	0.36	0.09	0.22	0.08	0.19
100	2.621	0.008	0.784	0.003	0.11	0.28	0.22	0.53	0.19	0.47	0.14	0.34	0.09	0.21	0.08	0.18
110	2.469	0.008	0.734	0.003	0.11	0.26	0.20	0.50	0.18	0.44	0.13	0.32	0.08	0.20	0.07	0.17
120	2.396	0.008	0.675	0.003	0.10	0.25	0.19	0.48	0.16	0.43	0.12	0.31	0.07	0.19	0.06	0.17
130	2.346	0.007	0.644	0.003	0.09	0.25	0.18	0.47	0.16	0.42	0.12	0.31	0.07	0.19	0.06	0.16
140	2.29	0.007	0.618	0.003	0.09	0.24	0.17	0.46	0.15	0.41	0.11	0.30	0.07	0.18	0.06	0.16
150	2.348	0.007	0.645	0.003	0.09	0.25	0.18	0.47	0.16	0.42	0.12	0.31	0.07	0.19	0.06	0.16
160	2.247	0.007	0.594	0.003	0.09	0.24	0.16	0.45	0.14	0.40	0.11	0.29	0.06	0.18	0.06	0.16
170	2.203	0.007	0.652	0.003	0.09	0.23	0.18	0.45	0.16	0.39	0.12	0.29	0.07	0.17	0.06	0.15
180	2.102	0.007	0.599	0.003	0.09	0.22	0.17	0.42	0.15	0.37	0.11	0.28	0.07	0.17	0.06	0.15
190	1.984	0.006	0.537	0.002	0.08	0.21	0.15	0.40	0.13	0.35	0.10	0.26	0.06	0.16	0.05	0.14
200	1.868	0.006	0.483	0.002	0.07	0.20	0.13	0.38	0.12	0.33	0.09	0.24	0.05	0.15	0.05	0.13
210	1.777	0.006	0.460	0.002	0.07	0.19	0.13	0.36	0.11	0.32	0.08	0.23	0.05	0.14	0.04	0.12
220	1.744	0.006	0.479	0.002	0.07	0.18	0.13	0.35	0.12	0.31	0.09	0.23	0.05	0.14	0.05	0.12
230	1.801	0.006	0.566	0.002	0.08	0.19	0.16	0.36	0.14	0.32	0.10	0.24	0.06	0.14	0.05	0.13
240	1.876	0.006	0.664	0.003	0.10	0.20	0.18	0.38	0.16	0.33	0.12	0.25	0.07	0.15	0.06	0.13
250	1.945	0.006	0.745	0.003	0.11	0.21	0.21	0.39	0.18	0.35	0.13	0.25	0.08	0.15	0.07	0.14
260	2.002	0.006	0.811	0.004	0.12	0.21	0.22	0.40	0.20	0.36	0.15	0.26	0.09	0.16	0.08	0.14
270	2.177	0.007	0.988	0.004	0.14	0.23	0.27	0.44	0.24	0.39	0.18	0.28	0.11	0.17	0.09	0.15
280	2.352	0.007	1.169	0.005	0.17	0.25	0.32	0.48	0.28	0.42	0.21	0.31	0.13	0.19	0.11	0.16
290	2.489	0.008	1.344	0.006	0.19	0.26	0.37	0.50	0.33	0.44	0.24	0.33	0.15	0.20	0.13	0.17
300	2.573	0.008	1.471	0.006	0.21	0.27	0.41	0.52	0.36	0.46	0.26	0.34	0.16	0.20	0.14	0.18
310	2.556	0.008	1.470	0.006	0.21	0.27	0.41	0.52	0.36	0.45	0.26	0.33	0.16	0.20	0.14	0.18
320	2.499	0.008	1.444	0.006	0.21	0.26	0.40	0.51	0.35	0.44	0.26	0.33	0.16	0.20	0.14	0.17
330	2.523	0.008	1.539	0.007	0.22	0.27	0.43	0.51	0.37	0.45	0.28	0.33	0.17	0.20	0.15	0.18
340	2.276	0.007	1.414	0.006	0.20	0.24	0.39	0.46	0.34	0.40	0.25	0.30	0.15	0.18	0.14	0.16
350	2.118	0.007	1.374	0.006	0.20	0.22	0.38	0.43	0.33	0.38	0.25	0.28	0.15	0.17	0.13	0.15
360	2.01	0.006	1.295	0.006	0.19	0.21	0.36	0.41	0.31	0.36	0.23	0.26	0.14	0.16	0.12	0.14
370	2.181	0.007	1.460	0.006	0.21	0.23	0.40	0.44	0.35	0.39	0.26	0.29	0.16	0.17	0.14	0.15
380	2.282	0.007	1.529	0.007	0.22	0.24	0.42	0.46	0.37	0.41	0.27	0.30	0.17	0.18	0.15	0.16
390	2.576	0.008	1.885	0.008	0.27	0.27	0.52	0.52	0.46	0.46	0.34	0.34	0.20	0.20	0.18	0.18
400	2.778	0.009	2.073	0.009	0.30	0.29	0.57	0.56	0.50	0.49	0.37	0.36	0.23	0.22	0.20	0.19
410	2.168	0.007	1.602	0.007	0.23	0.23	0.44	0.44	0.39	0.39	0.29	0.28	0.17	0.17	0.15	0.15
420	1.395	0.004	1.055	0.005	0.15	0.15	0.29	0.28	0.26	0.25	0.19	0.18	0.11	0.11	0.10	0.10
430	1.892	0.006	1.556	0.007	0.22	0.20	0.43	0.38	0.38	0.34	0.28	0.25	0.17	0.15	0.15	0.13
440	1.562	0.005	1.113	0.005	0.16	0.16	0.31	0.32	0.27	0.28	0.20	0.20	0.12	0.12	0.11	0.11
450	2.061	0.007	1.524	0.007	0.22	0.22	0.42	0.42	0.37	0.37	0.27	0.27	0.17	0.16	0.15	0.14
460	2.514	0.008	1.886	0.008	0.27	0.27	0.52	0.51	0.46	0.45	0.34	0.33	0.20	0.20	0.18	0.18
470	2.322	0.007	1.717	0.007	0.25	0.24	0.47	0.47	0.42	0.41	0.31	0.30	0.19	0.18	0.16	0.16
480	2.092	0.007	1.496	0.007	0.22	0.22	0.41	0.42	0.36	0.37	0.27	0.27	0.16	0.17	0.14	0.15
490	1.656	0.005	1.154	0.005	0.17	0.17	0.32	0.33	0.28	0.29	0.21	0.22	0.13	0.13	0.11	0.12
500	1.848	0.006	1.531	0.007	0.22	0.19	0.42	0.37	0.37	0.33	0.27	0.24	0.17	0.15	0.15	0.13
510	1.485	0.005	1.397	0.006	0.20	0.16	0.39	0.30	0.34	0.26	0.25	0.19	0.15	0.12	0.13	0.10
520	0.971	0.003	1.077	0.005	0.16	0.10	0.30	0.20	0.26	0.17	0.19	0.13	0.12	0.08	0.10	0.07
530	1.324	0.004	1.389	0.006	0.20	0.14	0.38	0.27	0.34	0.24	0.25	0.17	0.15	0.11	0.13	0.09
540	1.008	0.003	1.020	0.004	0.15	0.11	0.28	0.20	0.25	0.18	0.18	0.13	0.11	0.08	0.10	0.07
550	1.047	0.003	1.002	0.004	0.14	0.11	0.28	0.21	0.24	0.19	0.18	0.14	0.11	0.08	0.10	0.07
560	0.746	0.002	0.722	0.003	0.10	0.08	0.20	0.15	0.18	0.13	0.13	0.10	0.08	0.06	0.07	0.05
570	1.18	0.004	1.290	0.006	0.19	0.12	0.36	0.24	0.31	0.21	0.23	0.15	0.14	0.09	0.12	0.08
580	0.911	0.003	1.072	0.005	0.15	0.10	0.30	0.18	0.26	0.16	0.19	0.12	0.12	0.07	0.10	0.06
590	0.859	0.003	0.966	0.004	0.14	0.09	0.27	0.17	0.23	0.15	0.17	0.11	0.10	0.07	0.09	0.06
600	0.733	0.002	0.933	0.004	0.13	0.08	0.26	0.15	0.23	0.13	0.17	0.10	0.10	0.06	0.09	0.05
610	0.981	0.003	1.248	0.005	0.18	0.10	0.35	0.20	0.30	0.17	0.22	0.13	0.14	0.08	0.12	0.07
620	1.392	0.004	1.575	0.007	0.23	0.15	0.44	0.28	0.38	0.25	0.28	0.18	0.17	0.11	0.15	0.10
630	1.265	0.004	1.115	0.005	0.16	0.13	0.31	0.26	0.27	0.22	0.20	0.17	0.12	0.10	0.11	0.09
640	1.099	0.003	0.786	0.003	0.11	0.12	0.22	0.22	0.19	0.20	0.14	0.14	0.09	0.09	0.08	0.08
650	2.601	0.008	2.434	0.011	0.35	0.27	0.67	0.53	0.59	0.46	0.44	0.34	0.26	0.21	0.23	0.18
660	2.111	0.007	1.977	0.009	0.29	0.22	0.55	0.43	0.48	0.38	0.35	0.28	0.21	0.17	0.19	0.15
670	1.962	0.006	1.784	0.008	0.26	0.21	0.49	0.40	0.43	0.35	0.32	0.26	0.19	0.16	0.17	0.14
680	1.628	0.005	1.691	0.007	0.24	0.17	0.47	0.33	0.41	0.29	0.30	0.21	0.18	0.13	0.16	0.11
690	1.843	0.006	1.763	0.008	0.25	0.19	0.49	0.37	0.43	0.33	0.32	0.24	0.19	0.15	0.17	0.13
700	1.465	0.005	1.539	0.007	0.22	0.15	0.43	0.30	0.37	0.26	0.28	0.19	0.17	0.12	0.15	0.10
710	1.327	0.004	1.402	0.006	0.20	0.14	0.39	0.27	0.34	0.24	0.25	0.17	0.15	0.11	0.13	0.09
720	1.477	0.005	1.497	0.007	0.22	0.16	0.41	0.30	0.36	0.26	0.27	0.19	0.16	0.12	0.14	0.10
730	1.534	0.005	1.515	0.007	0.22	0.16	0.42	0.31	0.37	0.27	0.27	0.20	0.16	0.12	0.14	0.11
740	1.396	0.004	1.368	0.006	0.20	0.15	0.38	0.28	0.33	0.25	0.24	0.18	0.15	0.11	0.13	0.10
750	1.095	0.003	1.174	0.005	0.17	0.12	0.32	0.22	0.29	0.19	0.21	0.14	0.13	0.09	0.11	0.08
760	0.92	0.003	1.080	0.005	0.16	0.10	0.30	0.19	0.26	0.16	0.19	0.12	0.12	0.07	0.10	0.06
770	1.148	0.004	1.022	0.004	0.15	0.12	0.28	0.23	0.25	0.20	0.18	0.15	0.11	0.09	0.10	0.08
780	0.852	0.003	0.862	0.004	0.12	0.09	0.24	0.17	0.21	0.15	0.15	0.11	0.09	0.07	0.08	0.06
790	0.992	0.003	0.943	0.004	0.14	0.10	0.26	0.20	0.23	0.18	0.17	0.13	0.10	0.08	0.09	0.07
800	1.06	0.003	0.950	0.004	0.14	0.11	0.26	0.21	0.23	0.19	0.17	0.14	0.10	0.08	0.09	0.07
810	0.985	0.003	0.835	0.004	0.12	0.10	0.23	0.20	0.20	0.18	0.15	0.13	0.09	0.08	0.08	0.07
820	1.046	0.003	0.874	0.004	0.13	0.11	0.24	0.21	0.21	0.19	0.16	0.14	0.09	0.08	0.08	0.07
830	1.109	0.004	0.907	0.004	0.13	0.12	0.25	0.22	0.22	0.20	0.16	0.15	0.10	0.09	0.09	0.08
840	1.194	0.004	0.989	0.004	0.14	0.13	0.27	0.24	0.24	0.21	0.18	0.16	0.11	0.09	0.09	0.08
850	1.178	0.004	0.992	0.004	0.14	0.12	0.27	0.24	0.24	0.21	0.18	0.15	0.11	0.09	0.09	0.08
860	1.377	0.004	1.230	0.005	0.18	0.15	0.34	0.28	0.30	0.24	0.22	0.18	0.13	0.11	0.12	0.10
870	1.819	0.006	1.669	0.007	0.24	0.19	0.46	0.37	0.41	0.32	0.30	0.24	0.18	0.14	0.16	0.13
880	2.025	0.006	1.841	0.008	0.27	0.21	0.51	0.41	0.45	0.36	0.33	0.27	0.20	0.16	0.18	0.14
890	1.811	0.006	1.696	0.007	0.24	0.19	0.47	0.37	0.41	0.32	0.30	0.24	0.18	0.14	0.16	0.13
900	1.422	0.005	1.485	0.006	0.21	0.15	0.41	0.29	0.36	0.25	0.27	0.19	0.16	0.11	0.14	0.10
910	1.583	0.005	1.676	0.007	0.24	0.17	0.46	0.32	0.41	0.28	0.30	0.21	0.18	0.13	0.16	0.11
920	1.37	0.004	1.536	0.007	0.22	0.14	0.42	0.28	0.37	0.24	0.28	0.18	0.17	0.11	0.15	0.10
930	1.474	0.005	1.587	0.007	0.23	0.16	0.44	0.30	0.39	0.26	0.28	0.19	0.17	0.12	0.15	0.10
940	1.539	0.005	1.569	0.007	0.23	0.16	0.43	0.31	0.38	0.27	0.28	0.20	0.17	0.12	0.15	0.11
950	1.641	0.005	1.579	0.007	0.23	0.17	0.44	0.33	0.38	0.29	0.28	0.21	0.17	0.13	0.15	0.11
960	1.549	0.005	1.458	0.006	0.21	0.16	0.40	0.31	0.35	0.28	0.26	0.20	0.16	0.12	0.14	0.11
970	1.349	0.004	1.220	0.005	0.18	0.14	0.34	0.27	0.30	0.24	0.22	0.18	0.13	0.11	0.12	0.09
980	1.196	0.004	1.009	0.004	0.15	0.13	0.28	0.24	0.25	0.21	0.18	0.16	0.11	0.09	0.10	0.08
990	1.234	0.004	1.064	0.005	0.15	0.13	0.29	0.25	0.26	0.22	0.19	0.16	0.12	0.10	0.10	0.09
1000	1.195	0.004	1.032	0.004	0.15	0.13	0.29	0.24	0.25	0.21	0.18	0.16	0.11	0.09	0.10	0.08
1010	1.181	0.004	1.015	0.004	0.15	0.12	0.28	0.24	0.25	0.21	0.18	0.15	0.11	0.09	0.10	0.08
1020	1.314	0.004	1.133	0.005	0.16	0.14	0.31	0.27	0.28	0.23	0.20	0.17	0.12	0.10	0.11	0.09
1030	1.435	0.005	1.221	0.005	0.18	0.15	0.34	0.29	0.30	0.25	0.22	0.19	0.13	0.11	0.12	0.10
1040	1.559	0.005	1.453	0.006	0.21	0.16	0.40	0.32	0.35	0.28	0.26	0.20	0.16	0.12	0.14	0.11
1050	1.205	0.004	1.184	0.005	0.17	0.13	0.33	0.24	0.29	0.21	0.21	0.16	0.13	0.10	0.11	0.08
1060	1.147	0.004	1.186	0.005	0.17	0.12	0.33	0.23	0.29	0.20	0.21	0.15	0.13	0.09	0.11	0.08
1070	1.169	0.004	1.173	0.005	0.17	0.12	0.32	0.24	0.29	0.21	0.21	0.15	0.13	0.09	0.11	0.08
1080	1.139	0.004	1.089	0.005	0.16	0.12	0.30	0.23	0.26	0.20	0.20	0.15	0.12	0.09	0.10	0.08
1090	1.081	0.003	0.942	0.004	0.14	0.11	0.26	0.22	0.23	0.19	0.17	0.14	0.10	0.09	0.09	0.08
1100	1.04	0.003	1.042	0.005	0.15	0.11	0.29	0.21	0.25	0.18	0.19	0.14	0.11	0.08	0.10	0.07
1110	0.677	0.002	0.852	0.004	0.12	0.07	0.24	0.14	0.21	0.12	0.15	0.09	0.09	0.05	0.08	0.05
1120	0.469	0.001	0.700	0.003	0.10	0.05	0.19	0.09	0.17	0.08	0.13	0.06	0.08	0.04	0.07	0.03
1130	0.557	0.002	0.854	0.004	0.12	0.06	0.24	0.11	0.21	0.10	0.15	0.07	0.09	0.04	0.08	0.04
1140	0.723	0.002	1.068	0.005	0.15	0.08	0.30	0.15	0.26	0.13	0.19	0.09	0.12	0.06	0.10	0.05
1150	0.656	0.002	0.918	0.004	0.13	0.07	0.25	0.13	0.22	0.12	0.16	0.09	0.10	0.05	0.09	0.05
1160	1.106	0.004	1.389	0.006	0.20	0.12	0.38	0.22	0.34	0.20	0.25	0.14	0.15	0.09	0.13	0.08
1170	1.104	0.004	1.435	0.006	0.21	0.12	0.40	0.22	0.35	0.20	0.26	0.14	0.16	0.09	0.14	0.08
1180	1.101	0.004	1.512	0.007	0.22	0.12	0.42	0.22	0.37	0.20	0.27	0.14	0.16	0.09	0.14	0.08
1190	0.96	0.003	1.373	0.006	0.20	0.10	0.38	0.19	0.33	0.17	0.25	0.13	0.15	0.08	0.13	0.07
1200	0.905	0.003	1.216	0.005	0.18	0.10	0.34	0.18	0.30	0.16	0.22	0.12	0.13	0.07	0.12	0.06
1210	0.726	0.002	0.924	0.004	0.13	0.08	0.26	0.15	0.22	0.13	0.17	0.10	0.10	0.06	0.09	0.05
1220	0.834	0.003	0.846	0.004	0.12	0.09	0.23	0.17	0.21	0.15	0.15	0.11	0.09	0.07	0.08	0.06
1230	0.946	0.003	0.903	0.004	0.13	0.10	0.25	0.19	0.22	0.17	0.16	0.12	0.10	0.08	0.09	0.07
1240	0.897	0.003	0.757	0.003	0.11	0.09	0.21	0.18	0.18	0.16	0.14	0.12	0.08	0.07	0.07	0.06
1250	0.875	0.003	0.662	0.003	0.10	0.09	0.18	0.18	0.16	0.16	0.12	0.11	0.07	0.07	0.06	0.06
1260	1.015	0.003	0.844	0.004	0.12	0.11	0.23	0.21	0.21	0.18	0.15	0.13	0.09	0.08	0.08	0.07
1270	0.727	0.002	0.651	0.003	0.09	0.08	0.18	0.15	0.16	0.13	0.12	0.10	0.07	0.06	0.06	0.05
1280	0.896	0.003	0.892	0.004	0.13	0.09	0.25	0.18	0.22	0.16	0.16	0.12	0.10	0.07	0.09	0.06
1290	0.821	0.003	0.822	0.004	0.12	0.09	0.23	0.17	0.20	0.15	0.15	0.11	0.09	0.07	0.08	0.06
1300	0.603	0.002	0.585	0.003	0.08	0.06	0.16	0.12	0.14	0.11	0.10	0.08	0.06	0.05	0.06	0.04
1310	0.548	0.002	0.452	0.002	0.07	0.06	0.12	0.11	0.11	0.10	0.08	0.07	0.05	0.04	0.04	0.04
1320	0.675	0.002	0.481	0.002	0.07	0.07	0.13	0.14	0.12	0.12	0.09	0.09	0.05	0.05	0.05	0.05
1330	0.926	0.003	0.770	0.003	0.11	0.10	0.21	0.19	0.19	0.16	0.14	0.12	0.08	0.07	0.07	0.06
1340	0.918	0.003	0.624	0.003	0.09	0.10	0.17	0.19	0.15	0.16	0.11	0.12	0.07	0.07	0.06	0.06
1350	0.947	0.003	0.635	0.003	0.09	0.10	0.18	0.19	0.15	0.17	0.11	0.12	0.07	0.08	0.06	0.07
1360	1.047	0.003	0.666	0.003	0.10	0.11	0.18	0.21	0.16	0.19	0.12	0.14	0.07	0.08	0.06	0.07
1370	0.831	0.003	0.510	0.002	0.07	0.09	0.14	0.17	0.12	0.15	0.09	0.11	0.06	0.07	0.05	0.06
1380	0.731	0.002	0.441	0.002	0.06	0.08	0.12	0.15	0.11	0.13	0.08	0.10	0.05	0.06	0.04	0.05
1390	0.615	0.002	0.380	0.002	0.05	0.06	0.11	0.12	0.09	0.11	0.07	0.08	0.04	0.05	0.04	0.04
1400	0.85	0.003	0.598	0.003	0.09	0.09	0.17	0.17	0.15	0.15	0.11	0.11	0.06	0.07	0.06	0.06
1410	1.051	0.003	0.833	0.004	0.12	0.11	0.23	0.21	0.20	0.19	0.15	0.14	0.09	0.08	0.08	0.07
1420	1.09	0.003	1.003	0.004	0.14	0.11	0.28	0.22	0.24	0.19	0.18	0.14	0.11	0.09	0.10	0.08
1430	0.917	0.003	0.941	0.004	0.14	0.10	0.26	0.19	0.23	0.16	0.17	0.12	0.10	0.07	0.09	0.06
1440	1.94	0.006	2.130	0.009	0.31	0.20	0.59	0.39	0.52	0.34	0.38	0.25	0.23	0.15	0.20	0.14
1450	2.469	0.008	2.775	0.012	0.40	0.26	0.77	0.50	0.67	0.44	0.50	0.32	0.30	0.20	0.27	0.17
1460	2.753	0.009	3.088	0.013	0.45	0.29	0.85	0.56	0.75	0.49	0.55	0.36	0.34	0.22	0.30	0.19
1470	2.98	0.009	3.254	0.014	0.47	0.31	0.90	0.60	0.79	0.53	0.58	0.39	0.35	0.24	0.31	0.21
1480	2.246	0.007	2.784	0.012	0.40	0.24	0.77	0.45	0.68	0.40	0.50	0.29	0.30	0.18	0.27	0.16
1490	1.104	0.004	1.759	0.008	0.25	0.12	0.49	0.22	0.43	0.20	0.31	0.14	0.19	0.09	0.17	0.08
1500	0.616	0.002	1.045	0.005	0.15	0.06	0.29	0.12	0.25	0.11	0.19	0.08	0.11	0.05	0.10	0.04
1510	0.809	0.003	1.042	0.005	0.15	0.09	0.29	0.16	0.25	0.14	0.19	0.11	0.11	0.06	0.10	0.06
1520	0.736	0.002	0.911	0.004	0.13	0.08	0.25	0.15	0.22	0.13	0.16	0.10	0.10	0.06	0.09	0.05
1530	0.517	0.002	0.563	0.002	0.08	0.05	0.16	0.10	0.14	0.09	0.10	0.07	0.06	0.04	0.05	0.04
1540	0.428	0.001	0.361	0.002	0.05	0.05	0.10	0.09	0.09	0.08	0.06	0.06	0.04	0.03	0.03	0.03
1550	0.748	0.002	0.478	0.002	0.07	0.08	0.13	0.15	0.12	0.13	0.09	0.10	0.05	0.06	0.05	0.05
1560	0.851	0.003	0.432	0.002	0.06	0.09	0.12	0.17	0.11	0.15	0.08	0.11	0.05	0.07	0.04	0.06
1570	1.082	0.003	0.635	0.003	0.09	0.11	0.18	0.22	0.15	0.19	0.11	0.14	0.07	0.09	0.06	0.08
1580	1.411	0.004	0.907	0.004	0.13	0.15	0.25	0.29	0.22	0.25	0.16	0.18	0.10	0.11	0.09	0.10
1590	1.791	0.006	1.840	0.008	0.27	0.19	0.51	0.36	0.45	0.32	0.33	0.23	0.20	0.14	0.18	0.13
1600	2.34	0.007	2.864	0.012	0.41	0.25	0.79	0.47	0.70	0.42	0.51	0.31	0.31	0.19	0.27	0.16
1610	2.256	0.007	2.943	0.013	0.42	0.24	0.81	0.46	0.72	0.40	0.53	0.30	0.32	0.18	0.28	0.16
1620	1.221	0.004	2.446	0.011	0.35	0.13	0.68	0.25	0.59	0.22	0.44	0.16	0.27	0.10	0.23	0.09
1630	0.977	0.003	1.995	0.009	0.29	0.10	0.55	0.20	0.49	0.17	0.36	0.13	0.22	0.08	0.19	0.07
1640	1.147	0.004	1.841	0.008	0.27	0.12	0.51	0.23	0.45	0.20	0.33	0.15	0.20	0.09	0.18	0.08
1650	1.037	0.003	1.755	0.008	0.25	0.11	0.49	0.21	0.43	0.18	0.31	0.14	0.19	0.08	0.17	0.07
1660	0.943	0.003	1.686	0.007	0.24	0.10	0.47	0.19	0.41	0.17	0.30	0.12	0.18	0.07	0.16	0.07
1670	1.049	0.003	1.464	0.006	0.21	0.11	0.40	0.21	0.36	0.19	0.26	0.14	0.16	0.08	0.14	0.07
1680	1.148	0.004	1.245	0.005	0.18	0.12	0.34	0.23	0.30	0.20	0.22	0.15	0.14	0.09	0.12	0.08
1690	0.832	0.003	0.779	0.003	0.11	0.09	0.22	0.17	0.19	0.15	0.14	0.11	0.08	0.07	0.07	0.06
1700	1.219	0.004	1.079	0.005	0.16	0.13	0.30	0.25	0.26	0.22	0.19	0.16	0.12	0.10	0.10	0.09
1710	2.045	0.007	1.975	0.009	0.28	0.22	0.55	0.41	0.48	0.36	0.35	0.27	0.21	0.16	0.19	0.14
1720	1.542	0.005	1.564	0.007	0.23	0.16	0.43	0.31	0.38	0.27	0.28	0.20	0.17	0.12	0.15	0.11
1730	1.368	0.004	1.221	0.005	0.18	0.14	0.34	0.28	0.30	0.24	0.22	0.18	0.13	0.11	0.12	0.10
1740	2.265	0.007	1.904	0.008	0.27	0.24	0.53	0.46	0.46	0.40	0.34	0.30	0.21	0.18	0.18	0.16
1750	1.12	0.004	0.804	0.003	0.12	0.12	0.22	0.23	0.20	0.20	0.14	0.15	0.09	0.09	0.08	0.08
1760	1.237	0.004	0.963	0.004	0.14	0.13	0.27	0.25	0.23	0.22	0.17	0.16	0.10	0.10	0.09	0.09
1770	1.754	0.006	1.557	0.007	0.22	0.18	0.43	0.35	0.38	0.31	0.28	0.23	0.17	0.14	0.15	0.12
1780	1.847	0.006	1.381	0.006	0.20	0.19	0.38	0.37	0.34	0.33	0.25	0.24	0.15	0.15	0.13	0.13
1790	1.946	0.006	1.743	0.008	0.25	0.21	0.48	0.39	0.42	0.35	0.31	0.25	0.19	0.15	0.17	0.14
1800	2.111	0.007	2.135	0.009	0.31	0.22	0.59	0.43	0.52	0.38	0.38	0.28	0.23	0.17	0.20	0.15
1810	1.619	0.005	1.594	0.007	0.23	0.17	0.44	0.33	0.39	0.29	0.29	0.21	0.17	0.13	0.15	0.11
1820	0.9	0.003	0.963	0.004	0.14	0.09	0.27	0.18	0.23	0.16	0.17	0.12	0.10	0.07	0.09	0.06
1830	0.668	0.002	0.686	0.003	0.10	0.07	0.19	0.14	0.17	0.12	0.12	0.09	0.07	0.05	0.07	0.05
1840	0.391	0.001	0.471	0.002	0.07	0.04	0.13	0.08	0.11	0.07	0.08	0.05	0.05	0.03	0.05	0.03
1850	0.514	0.002	0.523	0.002	0.08	0.05	0.14	0.10	0.13	0.09	0.09	0.07	0.06	0.04	0.05	0.04
1860	0.327	0.001	0.376	0.002	0.05	0.03	0.10	0.07	0.09	0.06	0.07	0.04	0.04	0.03	0.04	0.02
1870	0.261	0.001	0.330	0.001	0.05	0.03	0.09	0.05	0.08	0.05	0.06	0.03	0.04	0.02	0.03	0.02
1880	0.729	0.002	0.645	0.003	0.09	0.08	0.18	0.15	0.16	0.13	0.12	0.10	0.07	0.06	0.06	0.05
1890	1.148	0.004	0.948	0.004	0.14	0.12	0.26	0.23	0.23	0.20	0.17	0.15	0.10	0.09	0.09	0.08
1900	1.21	0.004	1.070	0.005	0.15	0.13	0.30	0.24	0.26	0.22	0.19	0.16	0.12	0.10	0.10	0.08

SD-620	Seaside Park	0	0	Avg. Net SL	4.23	5.18	3.31	0.83	2.69	-0.14						
SD-620	189.094	0	325.048	1935			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring rati	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.089	0.000	0.028	0.000	0.00	0.02	0.01	0.03	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
10	1.827	0.010	2.419	0.007	0.38	0.49	0.46	0.60	0.29	0.38	0.07	0.10	0.24	0.31	0.00	0.00
20	2.564	0.014	3.709	0.011	0.58	0.68	0.70	0.84	0.45	0.54	0.11	0.13	0.37	0.43	0.00	0.00
30	2.032	0.011	2.911	0.009	0.45	0.54	0.55	0.66	0.35	0.42	0.09	0.11	0.29	0.34	0.00	0.00
40	1.262	0.007	1.482	0.005	0.23	0.34	0.28	0.41	0.18	0.26	0.04	0.07	0.15	0.21	0.00	0.00
50	1.173	0.006	0.884	0.003	0.14	0.31	0.17	0.38	0.11	0.24	0.03	0.06	0.09	0.20	0.00	0.00
60	1.447	0.008	1.371	0.004	0.21	0.39	0.26	0.47	0.17	0.30	0.04	0.08	0.14	0.25	0.00	0.00
70	2.315	0.012	2.136	0.007	0.33	0.62	0.41	0.76	0.26	0.48	0.06	0.12	0.21	0.39	0.00	0.00
80	2.205	0.012	1.785	0.005	0.28	0.59	0.34	0.72	0.22	0.46	0.05	0.11	0.18	0.37	0.00	0.00
90	2.725	0.014	2.384	0.007	0.37	0.73	0.45	0.89	0.29	0.57	0.07	0.14	0.23	0.46	0.00	0.00
100	3.193	0.017	2.978	0.009	0.46	0.85	0.57	1.04	0.36	0.67	0.09	0.17	0.29	0.54	0.00	0.00
110	2.709	0.014	2.635	0.008	0.41	0.72	0.50	0.88	0.32	0.57	0.08	0.14	0.26	0.46	0.00	0.00
120	2.446	0.013	2.297	0.007	0.36	0.65	0.44	0.80	0.28	0.51	0.07	0.13	0.23	0.41	0.00	0.00
130	2.217	0.012	2.051	0.006	0.32	0.59	0.39	0.72	0.25	0.46	0.06	0.12	0.20	0.38	0.00	0.00
140	2.079	0.011	1.828	0.006	0.28	0.55	0.35	0.68	0.22	0.43	0.06	0.11	0.18	0.35	0.00	0.00
150	1.997	0.011	1.633	0.005	0.25	0.53	0.31	0.65	0.20	0.42	0.05	0.10	0.16	0.34	0.00	0.00
160	1.931	0.010	1.478	0.005	0.23	0.52	0.28	0.63	0.18	0.40	0.04	0.10	0.15	0.33	0.00	0.00
170	1.869	0.010	1.394	0.004	0.22	0.50	0.26	0.61	0.17	0.39	0.04	0.10	0.14	0.32	0.00	0.00
180	1.810	0.010	1.324	0.004	0.21	0.48	0.25	0.59	0.16	0.38	0.04	0.09	0.13	0.31	0.00	0.00
190	1.785	0.009	1.303	0.004	0.20	0.48	0.25	0.58	0.16	0.37	0.04	0.09	0.13	0.30	0.00	0.00
200	1.766	0.009	1.280	0.004	0.20	0.47	0.24	0.58	0.16	0.37	0.04	0.09	0.13	0.30	0.00	0.00
210	1.751	0.009	1.270	0.004	0.20	0.47	0.24	0.57	0.15	0.37	0.04	0.09	0.13	0.30	0.00	0.00
220	1.741	0.009	1.289	0.004	0.20	0.46	0.24	0.57	0.16	0.36	0.04	0.09	0.13	0.29	0.00	0.00
230	1.734	0.009	1.309	0.004	0.20	0.46	0.25	0.57	0.16	0.36	0.04	0.09	0.13	0.29	0.00	0.00
240	1.747	0.009	1.349	0.004	0.21	0.47	0.26	0.57	0.16	0.36	0.04	0.09	0.13	0.30	0.00	0.00
250	1.772	0.009	1.426	0.004	0.22	0.47	0.27	0.58	0.17	0.37	0.04	0.09	0.14	0.30	0.00	0.00
260	1.827	0.010	1.497	0.005	0.23	0.49	0.28	0.60	0.18	0.38	0.05	0.10	0.15	0.31	0.00	0.00
270	1.896	0.010	1.562	0.005	0.24	0.51	0.30	0.62	0.19	0.40	0.05	0.10	0.15	0.32	0.00	0.00
280	1.953	0.010	1.636	0.005	0.25	0.52	0.31	0.64	0.20	0.41	0.05	0.10	0.16	0.33	0.00	0.00
290	2.005	0.011	1.716	0.005	0.27	0.53	0.33	0.65	0.21	0.42	0.05	0.10	0.17	0.34	0.00	0.00
300	2.055	0.011	1.796	0.006	0.28	0.55	0.34	0.67	0.22	0.43	0.05	0.11	0.18	0.35	0.00	0.00
310	2.098	0.011	1.858	0.006	0.29	0.56	0.35	0.68	0.23	0.44	0.06	0.11	0.18	0.36	0.00	0.00
320	2.144	0.011	1.899	0.006	0.29	0.57	0.36	0.70	0.23	0.45	0.06	0.11	0.19	0.36	0.00	0.00
330	2.188	0.012	1.920	0.006	0.30	0.58	0.36	0.71	0.23	0.46	0.06	0.11	0.19	0.37	0.00	0.00
340	2.227	0.012	1.933	0.006	0.30	0.59	0.37	0.73	0.23	0.46	0.06	0.12	0.19	0.38	0.00	0.00
350	2.273	0.012	1.904	0.006	0.30	0.61	0.36	0.74	0.23	0.47	0.06	0.12	0.19	0.38	0.00	0.00
360	2.322	0.012	1.867	0.006	0.29	0.62	0.35	0.76	0.23	0.48	0.06	0.12	0.18	0.39	0.00	0.00
370	2.369	0.013	1.837	0.006	0.29	0.63	0.35	0.77	0.22	0.49	0.06	0.12	0.18	0.40	0.00	0.00
380	2.427	0.013	1.805	0.006	0.28	0.65	0.34	0.79	0.22	0.51	0.05	0.13	0.18	0.41	0.00	0.00
390	2.483	0.013	1.773	0.005	0.28	0.66	0.34	0.81	0.22	0.52	0.05	0.13	0.17	0.42	0.00	0.00
400	2.533	0.013	1.904	0.006	0.30	0.68	0.36	0.83	0.23	0.53	0.06	0.13	0.19	0.43	0.00	0.00
410	2.581	0.014	2.035	0.006	0.32	0.69	0.39	0.84	0.25	0.54	0.06	0.13	0.20	0.44	0.00	0.00
420	2.624	0.014	2.167	0.007	0.34	0.70	0.41	0.86	0.26	0.55	0.07	0.14	0.21	0.44	0.00	0.00
430	2.648	0.014	2.268	0.007	0.35	0.71	0.43	0.86	0.28	0.55	0.07	0.14	0.22	0.45	0.00	0.00
440	2.605	0.014	2.307	0.007	0.36	0.69	0.44	0.85	0.28	0.54	0.07	0.14	0.23	0.44	0.00	0.00
450	2.547	0.013	2.322	0.007	0.36	0.68	0.44	0.83	0.28	0.53	0.07	0.13	0.23	0.43	0.00	0.00
460	2.492	0.013	2.315	0.007	0.36	0.66	0.44	0.81	0.28	0.52	0.07	0.13	0.23	0.42	0.00	0.00
470	2.439	0.013	2.305	0.007	0.36	0.65	0.44	0.80	0.28	0.51	0.07	0.13	0.23	0.41	0.00	0.00
480	2.369	0.013	2.295	0.007	0.36	0.63	0.44	0.77	0.28	0.49	0.07	0.12	0.23	0.40	0.00	0.00
490	2.287	0.012	2.292	0.007	0.36	0.61	0.44	0.75	0.28	0.48	0.07	0.12	0.23	0.39	0.00	0.00
500	2.204	0.012	2.302	0.007	0.36	0.59	0.44	0.72	0.28	0.46	0.07	0.11	0.23	0.37	0.00	0.00
510	2.125	0.011	2.314	0.007	0.36	0.57	0.44	0.69	0.28	0.44	0.07	0.11	0.23	0.36	0.00	0.00
520	2.046	0.011	2.333	0.007	0.36	0.55	0.44	0.67	0.28	0.43	0.07	0.11	0.23	0.35	0.00	0.00
530	1.991	0.011	2.368	0.007	0.37	0.53	0.45	0.65	0.29	0.42	0.07	0.10	0.23	0.34	0.00	0.00
540	1.935	0.010	2.405	0.007	0.37	0.52	0.46	0.63	0.29	0.40	0.07	0.10	0.24	0.33	0.00	0.00
550	1.867	0.010	2.444	0.008	0.38	0.50	0.46	0.61	0.30	0.39	0.07	0.10	0.24	0.32	0.00	0.00
560	1.775	0.009	2.468	0.008	0.38	0.47	0.47	0.58	0.30	0.37	0.07	0.09	0.24	0.30	0.00	0.00
570	1.672	0.009	2.487	0.008	0.39	0.45	0.47	0.55	0.30	0.35	0.08	0.09	0.24	0.28	0.00	0.00
580	1.573	0.008	2.496	0.008	0.39	0.42	0.47	0.51	0.30	0.33	0.08	0.08	0.25	0.27	0.00	0.00
590	1.476	0.008	2.513	0.008	0.39	0.39	0.48	0.48	0.31	0.31	0.08	0.08	0.25	0.25	0.00	0.00
600	1.350	0.007	2.498	0.008	0.39	0.36	0.47	0.44	0.30	0.28	0.08	0.07	0.25	0.23	0.00	0.00
610	1.205	0.006	2.468	0.008	0.38	0.32	0.47	0.39	0.30	0.25	0.07	0.06	0.24	0.20	0.00	0.00
620	1.079	0.006	2.439	0.008	0.38	0.29	0.46	0.35	0.30	0.23	0.07	0.06	0.24	0.18	0.00	0.00
630	0.998	0.005	2.415	0.007	0.37	0.27	0.46	0.33	0.29	0.21	0.07	0.05	0.24	0.17	0.00	0.00
640	1.032	0.005	2.551	0.008	0.40	0.28	0.48	0.34	0.31	0.22	0.08	0.05	0.25	0.17	0.00	0.00
650	1.058	0.006	2.686	0.008	0.42	0.28	0.51	0.35	0.33	0.22	0.08	0.06	0.26	0.18	0.00	0.00
660	1.039	0.005	2.764	0.009	0.43	0.28	0.52	0.34	0.34	0.22	0.08	0.05	0.27	0.18	0.00	0.00
670	1.007	0.005	2.816	0.009	0.44	0.27	0.53	0.33	0.34	0.21	0.09	0.05	0.28	0.17	0.00	0.00
680	1.009	0.005	2.868	0.009	0.45	0.27	0.54	0.33	0.35	0.21	0.09	0.05	0.28	0.17	0.00	0.00
690	1.076	0.006	3.006	0.009	0.47	0.29	0.57	0.35	0.36	0.22	0.09	0.06	0.30	0.18	0.00	0.00
700	1.204	0.006	3.245	0.010	0.50	0.32	0.62	0.39	0.39	0.25	0.10	0.06	0.32	0.20	0.00	0.00
710	1.429	0.008	3.562	0.011	0.55	0.38	0.68	0.47	0.43	0.30	0.11	0.07	0.35	0.24	0.00	0.00
720	1.614	0.009	3.746	0.012	0.58	0.43	0.71	0.53	0.45	0.34	0.11	0.08	0.37	0.27	0.00	0.00
730	1.635	0.009	3.792	0.012	0.59	0.44	0.72	0.53	0.46	0.34	0.11	0.09	0.37	0.28	0.00	0.00
740	1.595	0.008	3.795	0.012	0.59	0.43	0.72	0.52	0.46	0.33	0.12	0.08	0.37	0.27	0.00	0.00
750	1.388	0.007	3.643	0.011	0.57	0.37	0.69	0.45	0.44	0.29	0.11	0.07	0.36	0.24	0.00	0.00
760	1.249	0.007	3.606	0.011	0.56	0.33	0.68	0.41	0.44	0.26	0.11	0.07	0.36	0.21	0.00	0.00
770	1.142	0.006	3.567	0.011	0.55	0.30	0.68	0.37	0.43	0.24	0.11	0.06	0.35	0.19	0.00	0.00
780	1.113	0.006	3.500	0.011	0.54	0.30	0.66	0.36	0.42	0.23	0.11	0.06	0.34	0.19	0.00	0.00
790	1.069	0.006	3.424	0.011	0.53	0.29	0.65	0.35	0.42	0.22	0.10	0.06	0.34	0.18	0.00	0.00
800	0.982	0.005	3.317	0.010	0.51	0.26	0.63	0.32	0.40	0.20	0.10	0.05	0.33	0.17	0.00	0.00
810	1.024	0.005	3.377	0.010	0.52	0.27	0.64	0.33	0.41	0.21	0.10	0.05	0.33	0.17	0.00	0.00
820	1.091	0.006	3.483	0.011	0.54	0.29	0.66	0.36	0.42	0.23	0.11	0.06	0.34	0.18	0.00	0.00
830	1.142	0.006	3.526	0.011	0.55	0.30	0.67	0.37	0.43	0.24	0.11	0.06	0.35	0.19	0.00	0.00
840	1.120	0.006	3.362	0.010	0.52	0.30	0.64	0.37	0.41	0.23	0.10	0.06	0.33	0.19	0.00	0.00
850	1.089	0.006	3.217	0.010	0.50	0.29	0.61	0.36	0.39	0.23	0.10	0.06	0.32	0.18	0.00	0.00
860	1.033	0.005	3.117	0.010	0.48	0.28	0.59	0.34	0.38	0.22	0.09	0.05	0.31	0.17	0.00	0.00
870	0.943	0.005	2.979	0.009	0.46	0.25	0.57	0.31	0.36	0.20	0.09	0.05	0.29	0.16	0.00	0.00
880	0.875	0.005	2.958	0.009	0.46	0.23	0.56	0.29	0.36	0.18	0.09	0.05	0.29	0.15	0.00	0.00
890	0.727	0.004	2.943	0.009	0.46	0.19	0.56	0.24	0.36	0.15	0.09	0.04	0.29	0.12	0.00	0.00
900	0.613	0.003	2.927	0.009	0.45	0.16	0.56	0.20	0.36	0.13	0.09	0.03	0.29	0.10	0.00	0.00
910	0.673	0.004	3.005	0.009	0.47	0.18	0.57	0.22	0.36	0.14	0.09	0.04	0.30	0.11	0.00	0.00
920	0.676	0.004	3.019	0.009	0.47	0.18	0.57	0.22	0.37	0.14	0.09	0.04	0.30	0.11	0.00	0.00
930	0.694	0.004	3.091	0.010	0.48	0.19	0.59	0.23	0.38	0.14	0.09	0.04	0.30	0.12	0.00	0.00
940	0.638	0.003	3.116	0.010	0.48	0.17	0.59	0.21	0.38	0.13	0.09	0.03	0.31	0.11	0.00	0.00
950	0.558	0.003	3.076	0.009	0.48	0.15	0.58	0.18	0.37	0.12	0.09	0.03	0.30	0.09	0.00	0.00
960	0.513	0.003	2.824	0.009	0.44	0.14	0.54	0.17	0.34	0.11	0.09	0.03	0.28	0.09	0.00	0.00
970	0.465	0.002	2.540	0.008	0.39	0.12	0.48	0.15	0.31	0.10	0.08	0.02	0.25	0.08	0.00	0.00
980	0.433	0.002	2.284	0.007	0.35	0.12	0.43	0.14	0.28	0.09	0.07	0.02	0.22	0.07	0.00	0.00
990	0.430	0.002	2.202	0.007	0.34	0.11	0.42	0.14	0.27	0.09	0.07	0.02	0.22	0.07	0.00	0.00
1000	0.426	0.002	1.888	0.006	0.29	0.11	0.36	0.14	0.23	0.09	0.06	0.02	0.19	0.07	0.00	0.00
1010	0.423	0.002	1.694	0.005	0.26	0.11	0.32	0.14	0.21	0.09	0.05	0.02	0.17	0.07	0.00	0.00
1020	0.419	0.002	1.744	0.005	0.27	0.11	0.33	0.14	0.21	0.09	0.05	0.02	0.17	0.07	0.00	0.00
1030	0.416	0.002	1.685	0.005	0.26	0.11	0.32	0.14	0.20	0.09	0.05	0.02	0.17	0.07	0.00	0.00
1040	0.412	0.002	1.667	0.005	0.26	0.11	0.32	0.13	0.20	0.09	0.05	0.02	0.16	0.07	0.00	0.00
1050	0.409	0.002	1.649	0.005	0.26	0.11	0.31	0.13	0.20	0.09	0.05	0.02	0.16	0.07	0.00	0.00
1060	0.405	0.002	1.631	0.005	0.25	0.11	0.31	0.13	0.20	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1070	0.402	0.002	1.613	0.005	0.25	0.11	0.31	0.13	0.20	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1080	0.398	0.002	1.595	0.005	0.25	0.11	0.30	0.13	0.19	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1090	0.395	0.002	1.577	0.005	0.24	0.11	0.30	0.13	0.19	0.08	0.05	0.02	0.16	0.07	0.00	0.00
1100	0.391	0.002	1.559	0.005	0.24	0.10	0.30	0.13	0.19	0.08	0.05	0.02	0.15	0.07	0.00	0.00
1110	0.388	0.002	1.541	0.005	0.24	0.10	0.29	0.13	0.19	0.08	0.05	0.02	0.15	0.07	0.00	0.00
1120	0.384	0.002	1.523	0.005	0.24	0.10	0.29	0.13	0.18	0.08	0.05	0.02	0.15	0.07	0.00	0.00
1130	0.381	0.002	1.505	0.005	0.23	0.10	0.29	0.12	0.18	0.08	0.05	0.02	0.15	0.06	0.00	0.00
1140	0.377	0.002	1.487	0.005	0.23	0.10	0.28	0.12	0.18	0.08	0.05	0.02	0.15	0.06	0.00	0.00
1150	0.374	0.002	1.469	0.005	0.23	0.10	0.28	0.12	0.18	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1160	0.370	0.002	1.451	0.004	0.23	0.10	0.28	0.12	0.18	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1170	0.367	0.002	1.433	0.004	0.22	0.10	0.27	0.12	0.17	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1180	0.363	0.002	1.415	0.004	0.22	0.10	0.27	0.12	0.17	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1190	0.360	0.002	1.397	0.004	0.22	0.10	0.27	0.12	0.17	0.08	0.04	0.02	0.14	0.06	0.00	0.00
1200	0.356	0.002	1.379	0.004	0.21	0.09	0.26	0.12	0.17	0.07	0.04	0.02	0.14	0.06	0.00	0.00
1210	0.353	0.002	1.361	0.004	0.21	0.09	0.26	0.12	0.17	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1220	0.349	0.002	1.343	0.004	0.21	0.09	0.25	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1230	0.346	0.002	1.325	0.004	0.21	0.09	0.25	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1240	0.342	0.002	1.307	0.004	0.20	0.09	0.25	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1250	0.339	0.002	1.289	0.004	0.20	0.09	0.24	0.11	0.16	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1260	0.335	0.002	1.271	0.004	0.20	0.09	0.24	0.11	0.15	0.07	0.04	0.02	0.13	0.06	0.00	0.00
1270	0.332	0.002	1.253	0.004	0.19	0.09	0.24	0.11	0.15	0.07	0.04	0.02	0.12	0.06	0.00	0.00
1280	0.328	0.002	1.235	0.004	0.19	0.09	0.23	0.11	0.15	0.07	0.04	0.02	0.12	0.06	0.00	0.00
1290	0.325	0.002	1.217	0.004	0.19	0.09	0.23	0.11	0.15	0.07	0.04	0.02	0.12	0.05	0.00	0.00
1300	0.321	0.002	1.199	0.004	0.19	0.09	0.23	0.10	0.15	0.07	0.04	0.02	0.12	0.05	0.00	0.00
1310	0.318	0.002	1.181	0.004	0.18	0.08	0.22	0.10	0.14	0.07	0.04	0.02	0.12	0.05	0.00	0.00
1320	0.314	0.002	1.163	0.004	0.18	0.08	0.22	0.10	0.14	0.07	0.04	0.02	0.11	0.05	0.00	0.00
1330	0.311	0.002	1.145	0.004	0.18	0.08	0.22	0.10	0.14	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1340	0.307	0.002	1.127	0.003	0.17	0.08	0.21	0.10	0.14	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1350	0.304	0.002	1.109	0.003	0.17	0.08	0.21	0.10	0.13	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1360	0.300	0.002	1.091	0.003	0.17	0.08	0.21	0.10	0.13	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1370	0.297	0.002	1.073	0.003	0.17	0.08	0.20	0.10	0.13	0.06	0.03	0.02	0.11	0.05	0.00	0.00
1380	0.293	0.002	1.055	0.003	0.16	0.08	0.20	0.10	0.13	0.06	0.03	0.02	0.10	0.05	0.00	0.00
1390	0.290	0.002	1.037	0.003	0.16	0.08	0.20	0.09	0.13	0.06	0.03	0.02	0.10	0.05	0.00	0.00
1400	0.286	0.002	1.019	0.003	0.16	0.08	0.19	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1410	0.283	0.001	1.001	0.003	0.16	0.08	0.19	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1420	0.279	0.001	0.983	0.003	0.15	0.07	0.19	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1430	0.276	0.001	0.965	0.003	0.15	0.07	0.18	0.09	0.12	0.06	0.03	0.01	0.10	0.05	0.00	0.00
1440	0.272	0.001	0.947	0.003	0.15	0.07	0.18	0.09	0.11	0.06	0.03	0.01	0.09	0.05	0.00	0.00
1450	0.269	0.001	0.929	0.003	0.14	0.07	0.18	0.09	0.11	0.06	0.03	0.01	0.09	0.05	0.00	0.00
1460	0.265	0.001	0.911	0.003	0.14	0.07	0.17	0.09	0.11	0.06	0.03	0.01	0.09	0.04	0.00	0.00
1470	0.262	0.001	0.893	0.003	0.14	0.07	0.17	0.09	0.11	0.05	0.03	0.01	0.09	0.04	0.00	0.00
1480	0.258	0.001	0.875	0.003	0.14	0.07	0.17	0.08	0.11	0.05	0.03	0.01	0.09	0.04	0.00	0.00
1490	0.255	0.001	0.857	0.003	0.13	0.07	0.16	0.08	0.10	0.05	0.03	0.01	0.08	0.04	0.00	0.00
1500	0.251	0.001	0.839	0.003	0.13	0.07	0.16	0.08	0.10	0.05	0.03	0.01	0.08	0.04	0.00	0.00
1510	0.248	0.001	0.821	0.003	0.13	0.07	0.16	0.08	0.10	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1520	0.244	0.001	0.803	0.002	0.12	0.07	0.15	0.08	0.10	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1530	0.241	0.001	0.785	0.002	0.12	0.06	0.15	0.08	0.10	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1540	0.237	0.001	0.767	0.002	0.12	0.06	0.15	0.08	0.09	0.05	0.02	0.01	0.08	0.04	0.00	0.00
1550	0.234	0.001	0.749	0.002	0.12	0.06	0.14	0.08	0.09	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1560	0.230	0.001	0.731	0.002	0.11	0.06	0.14	0.08	0.09	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1570	0.227	0.001	0.713	0.002	0.11	0.06	0.14	0.07	0.09	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1580	0.223	0.001	0.695	0.002	0.11	0.06	0.13	0.07	0.08	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1590	0.220	0.001	0.677	0.002	0.11	0.06	0.13	0.07	0.08	0.05	0.02	0.01	0.07	0.04	0.00	0.00
1600	0.216	0.001	0.659	0.002	0.10	0.06	0.13	0.07	0.08	0.05	0.02	0.01	0.06	0.04	0.00	0.00
1610	0.213	0.001	0.641	0.002	0.10	0.06	0.12	0.07	0.08	0.04	0.02	0.01	0.06	0.04	0.00	0.00
1620	0.209	0.001	0.623	0.002	0.10	0.06	0.12	0.07	0.08	0.04	0.02	0.01	0.06	0.04	0.00	0.00
1630	0.206	0.001	0.605	0.002	0.09	0.05	0.11	0.07	0.07	0.04	0.02	0.01	0.06	0.03	0.00	0.00
1640	0.202	0.001	0.587	0.002	0.09	0.05	0.11	0.07	0.07	0.04	0.02	0.01	0.06	0.03	0.00	0.00
1650	0.199	0.001	0.569	0.002	0.09	0.05	0.11	0.06	0.07	0.04	0.02	0.01	0.06	0.03	0.00	0.00
1660	0.195	0.001	0.551	0.002	0.09	0.05	0.10	0.06	0.07	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1670	0.192	0.001	0.533	0.002	0.08	0.05	0.10	0.06	0.06	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1680	0.188	0.001	0.515	0.002	0.08	0.05	0.10	0.06	0.06	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1690	0.185	0.001	0.497	0.002	0.08	0.05	0.09	0.06	0.06	0.04	0.02	0.01	0.05	0.03	0.00	0.00
1700	0.181	0.001	0.479	0.001	0.07	0.05	0.09	0.06	0.06	0.04	0.01	0.01	0.05	0.03	0.00	0.00
1710	0.178	0.001	0.461	0.001	0.07	0.05	0.09	0.06	0.06	0.04	0.01	0.01	0.05	0.03	0.00	0.00
1720	0.174	0.001	0.443	0.001	0.07	0.05	0.08	0.06	0.05	0.04	0.01	0.01	0.04	0.03	0.00	0.00
1730	0.171	0.001	0.425	0.001	0.07	0.05	0.08	0.06	0.05	0.04	0.01	0.01	0.04	0.03	0.00	0.00
1740	0.167	0.001	0.407	0.001	0.06	0.04	0.08	0.05	0.05	0.03	0.01	0.01	0.04	0.03	0.00	0.00
1750	0.164	0.001	0.389	0.001	0.06	0.04	0.07	0.05	0.05	0.03	0.01	0.01	0.04	0.03	0.00	0.00
1760	0.160	0.001	0.371	0.001	0.06	0.04	0.07	0.05	0.05	0.03	0.01	0.01	0.04	0.03	0.00	0.00
1770	0.157	0.001	0.353	0.001	0.05	0.04	0.07	0.05	0.04	0.03	0.01	0.01	0.03	0.03	0.00	0.00
1780	0.153	0.001	0.335	0.001	0.05	0.04	0.06	0.05	0.04	0.03	0.01	0.01	0.03	0.03	0.00	0.00
1790	0.150	0.001	0.317	0.001	0.05	0.04	0.06	0.05	0.04	0.03	0.01	0.01	0.03	0.03	0.00	0.00
1800	0.146	0.001	0.299	0.001	0.05	0.04	0.06	0.05	0.04	0.03	0.01	0.01	0.03	0.02	0.00	0.00
1810	0.143	0.001	0.281	0.001	0.04	0.04	0.05	0.05	0.03	0.03	0.01	0.01	0.03	0.02	0.00	0.00
1820	0.139	0.001	0.263	0.001	0.04	0.04	0.05	0.05	0.03	0.03	0.01	0.01	0.03	0.02	0.00	0.00
1830	0.136	0.001	0.245	0.001	0.04	0.04	0.05	0.04	0.03	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1840	0.132	0.001	0.227	0.001	0.04	0.04	0.04	0.04	0.03	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1850	0.129	0.001	0.209	0.001	0.03	0.03	0.04	0.04	0.03	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1860	0.125	0.001	0.191	0.001	0.03	0.03	0.04	0.04	0.02	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1870	0.122	0.001	0.173	0.001	0.03	0.03	0.03	0.04	0.02	0.03	0.01	0.01	0.02	0.02	0.00	0.00
1880	0.118	0.001	0.155	0.000	0.02	0.03	0.03	0.04	0.02	0.02	0.00	0.01	0.02	0.02	0.00	0.00
1890	0.115	0.001	0.137	0.000	0.02	0.03	0.03	0.04	0.02	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1900	0.111	0.001	0.119	0.000	0.02	0.03	0.02	0.04	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1910	0.108	0.001	0.101	0.000	0.02	0.03	0.02	0.04	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1920	0.104	0.001	0.083	0.000	0.01	0.03	0.02	0.03	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1930	0.101	0.001	0.065	0.000	0.01	0.03	0.01	0.03	0.01	0.02	0.00	0.01	0.01	0.02	0.00	0.00
1940	0.097	0.001	0.047	0.000	0.01	0.03	0.01	0.03	0.01	0.02	0.00	0.01	0.00	0.02	0.00	0.00

SD-625	San Elijo	0	0	Avg. Net Sl	9.29	4.32	1.05	-2.55	6.71	-2.34						
SD-625	278.039	0	308.566	1800			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring rati	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.221	0.001	0.316	0.001	0.11	0.09	0.05	0.04	0.01	0.01	0.00	0.00	0.08	0.06	0.00	0.00
10	1.978	0.007	2.904	0.009	1.04	0.79	0.48	0.37	0.12	0.09	0.00	0.00	0.75	0.57	0.00	0.00
20	2.906	0.010	2.985	0.010	1.07	1.16	0.50	0.54	0.12	0.13	0.00	0.00	0.77	0.84	0.00	0.00
30	1.755	0.006	1.517	0.005	0.54	0.70	0.25	0.33	0.06	0.08	0.00	0.00	0.39	0.50	0.00	0.00
40	2.335	0.008	1.527	0.005	0.55	0.93	0.25	0.43	0.06	0.11	0.00	0.00	0.40	0.67	0.00	0.00
50	2.300	0.008	1.113	0.004	0.40	0.92	0.19	0.43	0.05	0.10	0.00	0.00	0.29	0.66	0.00	0.00
60	2.676	0.010	0.825	0.003	0.30	1.07	0.14	0.50	0.03	0.12	0.00	0.00	0.21	0.77	0.00	0.00
70	4.186	0.015	2.188	0.007	0.79	1.67	0.37	0.78	0.09	0.19	0.00	0.00	0.57	1.20	0.00	0.00
80	4.817	0.017	2.734	0.009	0.98	1.92	0.46	0.89	0.11	0.22	0.00	0.00	0.71	1.39	0.00	0.00
90	5.257	0.019	3.058	0.010	1.10	2.09	0.51	0.97	0.12	0.24	0.00	0.00	0.79	1.51	0.00	0.00
100	5.526	0.020	3.406	0.011	1.22	2.20	0.57	1.02	0.14	0.25	0.00	0.00	0.88	1.59	0.00	0.00
110	5.121	0.018	3.220	0.010	1.16	2.04	0.54	0.95	0.13	0.23	0.00	0.00	0.83	1.47	0.00	0.00
120	4.646	0.017	2.872	0.009	1.03	1.85	0.48	0.86	0.12	0.21	0.00	0.00	0.74	1.34	0.00	0.00
130	4.190	0.015	2.558	0.008	0.92	1.67	0.43	0.78	0.10	0.19	0.00	0.00	0.66	1.21	0.00	0.00
140	3.802	0.014	2.384	0.008	0.86	1.51	0.40	0.70	0.10	0.17	0.00	0.00	0.62	1.09	0.00	0.00
150	3.521	0.013	2.245	0.007	0.81	1.40	0.37	0.65	0.09	0.16	0.00	0.00	0.58	1.01	0.00	0.00
160	3.269	0.012	2.132	0.007	0.77	1.30	0.36	0.61	0.09	0.15	0.00	0.00	0.55	0.94	0.00	0.00
170	3.061	0.011	2.058	0.007	0.74	1.22	0.34	0.57	0.08	0.14	0.00	0.00	0.53	0.88	0.00	0.00
180	2.898	0.010	2.030	0.007	0.73	1.15	0.34	0.54	0.08	0.13	0.00	0.00	0.53	0.83	0.00	0.00
190	2.778	0.010	2.018	0.007	0.72	1.11	0.34	0.51	0.08	0.13	0.00	0.00	0.52	0.80	0.00	0.00
200	2.667	0.010	2.006	0.007	0.72	1.06	0.33	0.49	0.08	0.12	0.00	0.00	0.52	0.77	0.00	0.00
210	2.578	0.009	1.991	0.006	0.71	1.03	0.33	0.48	0.08	0.12	0.00	0.00	0.52	0.74	0.00	0.00
220	2.530	0.009	1.954	0.006	0.70	1.01	0.33	0.47	0.08	0.11	0.00	0.00	0.51	0.73	0.00	0.00
230	2.496	0.009	1.917	0.006	0.69	0.99	0.32	0.46	0.08	0.11	0.00	0.00	0.50	0.72	0.00	0.00
240	2.483	0.009	1.874	0.006	0.67	0.99	0.31	0.46	0.08	0.11	0.00	0.00	0.49	0.71	0.00	0.00
250	2.476	0.009	1.797	0.006	0.64	0.99	0.30	0.46	0.07	0.11	0.00	0.00	0.47	0.71	0.00	0.00
260	2.480	0.009	1.678	0.005	0.60	0.99	0.28	0.46	0.07	0.11	0.00	0.00	0.44	0.71	0.00	0.00
270	2.418	0.009	1.483	0.005	0.53	0.96	0.25	0.45	0.06	0.11	0.00	0.00	0.38	0.70	0.00	0.00
280	2.346	0.008	1.276	0.004	0.46	0.93	0.21	0.43	0.05	0.11	0.00	0.00	0.33	0.68	0.00	0.00
290	2.272	0.008	1.129	0.004	0.41	0.90	0.19	0.42	0.05	0.10	0.00	0.00	0.29	0.65	0.00	0.00
300	2.186	0.008	1.117	0.004	0.40	0.87	0.19	0.41	0.05	0.10	0.00	0.00	0.29	0.63	0.00	0.00
310	2.098	0.008	1.078	0.003	0.39	0.84	0.18	0.39	0.04	0.09	0.00	0.00	0.28	0.60	0.00	0.00
320	2.034	0.007	1.061	0.003	0.38	0.81	0.18	0.38	0.04	0.09	0.00	0.00	0.28	0.59	0.00	0.00
330	2.172	0.008	1.247	0.004	0.45	0.86	0.21	0.40	0.05	0.10	0.00	0.00	0.32	0.62	0.00	0.00
340	2.438	0.009	1.554	0.005	0.56	0.97	0.26	0.45	0.06	0.11	0.00	0.00	0.40	0.70	0.00	0.00
350	2.702	0.010	1.764	0.006	0.63	1.08	0.29	0.50	0.07	0.12	0.00	0.00	0.46	0.78	0.00	0.00
360	2.956	0.011	1.867	0.006	0.67	1.18	0.31	0.55	0.08	0.13	0.00	0.00	0.48	0.85	0.00	0.00
370	3.107	0.011	1.854	0.006	0.67	1.24	0.31	0.58	0.08	0.14	0.00	0.00	0.48	0.89	0.00	0.00
380	3.092	0.011	1.709	0.006	0.61	1.23	0.29	0.57	0.07	0.14	0.00	0.00	0.44	0.89	0.00	0.00
390	3.066	0.011	1.633	0.005	0.59	1.22	0.27	0.57	0.07	0.14	0.00	0.00	0.42	0.88	0.00	0.00
400	3.040	0.011	1.585	0.005	0.57	1.21	0.26	0.56	0.06	0.14	0.00	0.00	0.41	0.87	0.00	0.00
410	2.930	0.011	1.558	0.005	0.56	1.17	0.26	0.54	0.06	0.13	0.00	0.00	0.40	0.84	0.00	0.00
420	2.713	0.010	1.472	0.005	0.53	1.08	0.25	0.50	0.06	0.12	0.00	0.00	0.38	0.78	0.00	0.00
430	2.507	0.009	1.458	0.005	0.52	1.00	0.24	0.46	0.06	0.11	0.00	0.00	0.38	0.72	0.00	0.00
440	2.326	0.008	1.484	0.005	0.53	0.93	0.25	0.43	0.06	0.10	0.00	0.00	0.38	0.67	0.00	0.00
450	2.467	0.009	1.870	0.006	0.67	0.98	0.31	0.46	0.08	0.11	0.00	0.00	0.48	0.71	0.00	0.00
460	2.694	0.010	2.354	0.008	0.84	1.07	0.39	0.50	0.10	0.12	0.00	0.00	0.61	0.78	0.00	0.00
470	2.992	0.011	2.903	0.009	1.04	1.19	0.48	0.55	0.12	0.13	0.00	0.00	0.75	0.86	0.00	0.00
480	3.267	0.012	3.411	0.011	1.22	1.30	0.57	0.61	0.14	0.15	0.00	0.00	0.88	0.94	0.00	0.00
490	3.522	0.013	3.886	0.013	1.39	1.40	0.65	0.65	0.16	0.16	0.00	0.00	1.01	1.01	0.00	0.00
500	3.749	0.013	4.302	0.014	1.54	1.49	0.72	0.69	0.17	0.17	0.00	0.00	1.12	1.08	0.00	0.00
510	3.839	0.014	4.637	0.015	1.66	1.53	0.77	0.71	0.19	0.17	0.00	0.00	1.20	1.10	0.00	0.00
520	3.689	0.013	4.695	0.015	1.68	1.47	0.78	0.68	0.19	0.17	0.00	0.00	1.22	1.06	0.00	0.00
530	3.506	0.013	4.732	0.015	1.70	1.40	0.79	0.65	0.19	0.16	0.00	0.00	1.23	1.01	0.00	0.00
540	3.300	0.012	4.737	0.015	1.70	1.31	0.79	0.61	0.19	0.15	0.00	0.00	1.23	0.95	0.00	0.00
550	3.097	0.011	4.719	0.015	1.69	1.23	0.79	0.57	0.19	0.14	0.00	0.00	1.22	0.89	0.00	0.00
560	2.916	0.010	4.702	0.015	1.69	1.16	0.79	0.54	0.19	0.13	0.00	0.00	1.22	0.84	0.00	0.00
570	2.736	0.010	4.695	0.015	1.68	1.09	0.78	0.51	0.19	0.12	0.00	0.00	1.22	0.79	0.00	0.00
580	2.596	0.009	4.605	0.015	1.65	1.03	0.77	0.48	0.19	0.12	0.00	0.00	1.19	0.75	0.00	0.00
590	2.555	0.009	4.516	0.015	1.62	1.02	0.75	0.47	0.18	0.12	0.00	0.00	1.17	0.74	0.00	0.00
600	2.499	0.009	4.440	0.014	1.59	1.00	0.74	0.46	0.18	0.11	0.00	0.00	1.15	0.72	0.00	0.00
610	2.441	0.009	4.373	0.014	1.57	0.97	0.73	0.45	0.18	0.11	0.00	0.00	1.13	0.70	0.00	0.00
620	2.398	0.009	4.280	0.014	1.54	0.95	0.71	0.44	0.17	0.11	0.00	0.00	1.11	0.69	0.00	0.00
630	2.356	0.008	4.254	0.014	1.53	0.94	0.71	0.44	0.17	0.11	0.00	0.00	1.10	0.68	0.00	0.00
640	2.318	0.008	4.236	0.014	1.52	0.92	0.71	0.43	0.17	0.10	0.00	0.00	1.10	0.67	0.00	0.00
650	2.276	0.008	4.223	0.014	1.52	0.91	0.71	0.42	0.17	0.10	0.00	0.00	1.09	0.65	0.00	0.00
660	2.163	0.008	4.140	0.013	1.49	0.86	0.69	0.40	0.17	0.10	0.00	0.00	1.07	0.62	0.00	0.00
670	2.007	0.007	4.017	0.013	1.44	0.80	0.67	0.37	0.16	0.09	0.00	0.00	1.04	0.58	0.00	0.00
680	1.857	0.007	3.918	0.013	1.41	0.74	0.65	0.34	0.16	0.08	0.00	0.00	1.02	0.53	0.00	0.00
690	1.716	0.006	3.845	0.012	1.38	0.68	0.64	0.32	0.16	0.08	0.00	0.00	1.00	0.49	0.00	0.00
700	1.598	0.006	3.778	0.012	1.36	0.64	0.63	0.30	0.15	0.07	0.00	0.00	0.98	0.46	0.00	0.00
710	1.521	0.005	3.633	0.012	1.30	0.61	0.61	0.28	0.15	0.07	0.00	0.00	0.94	0.44	0.00	0.00
720	1.432	0.005	3.521	0.011	1.26	0.57	0.59	0.27	0.14	0.06	0.00	0.00	0.91	0.41	0.00	0.00
730	1.375	0.005	3.399	0.011	1.22	0.55	0.57	0.25	0.14	0.06	0.00	0.00	0.88	0.40	0.00	0.00
740	1.342	0.005	3.311	0.011	1.19	0.53	0.55	0.25	0.13	0.06	0.00	0.00	0.86	0.39	0.00	0.00
750	1.312	0.005	3.304	0.011	1.19	0.52	0.55	0.24	0.13	0.06	0.00	0.00	0.86	0.38	0.00	0.00
760	1.289	0.005	3.236	0.010	1.16	0.51	0.54	0.24	0.13	0.06	0.00	0.00	0.84	0.37	0.00	0.00
770	1.270	0.005	3.152	0.010	1.13	0.51	0.53	0.24	0.13	0.06	0.00	0.00	0.82	0.37	0.00	0.00
780	1.278	0.005	3.050	0.010	1.09	0.51	0.51	0.24	0.12	0.06	0.00	0.00	0.79	0.37	0.00	0.00
790	1.286	0.005	2.971	0.010	1.07	0.51	0.50	0.24	0.12	0.06	0.00	0.00	0.77	0.37	0.00	0.00
800	1.321	0.005	2.955	0.010	1.06	0.53	0.49	0.24	0.12	0.06	0.00	0.00	0.77	0.38	0.00	0.00
810	1.368	0.005	2.895	0.009	1.04	0.54	0.48	0.25	0.12	0.06	0.00	0.00	0.75	0.39	0.00	0.00
820	1.399	0.005	2.813	0.009	1.01	0.56	0.47	0.26	0.11	0.06	0.00	0.00	0.73	0.40	0.00	0.00
830	1.427	0.005	2.733	0.009	0.98	0.57	0.46	0.26	0.11	0.06	0.00	0.00	0.71	0.41	0.00	0.00
840	1.419	0.005	2.633	0.009	0.94	0.57	0.44	0.26	0.11	0.06	0.00	0.00	0.68	0.41	0.00	0.00
850	1.371	0.005	2.529	0.008	0.91	0.55	0.42	0.25	0.10	0.06	0.00	0.00	0.66	0.39	0.00	0.00
860	1.341	0.005	2.459	0.008	0.88	0.53	0.41	0.25	0.10	0.06	0.00	0.00	0.64	0.39	0.00	0.00
870	1.331	0.005	2.366	0.008	0.85	0.53	0.40	0.25	0.10	0.06	0.00	0.00	0.61	0.38	0.00	0.00
880	1.303	0.005	2.323	0.008	0.83	0.52	0.39	0.24	0.09	0.06	0.00	0.00	0.60	0.37	0.00	0.00
890	1.255	0.005	2.265	0.007	0.81	0.50	0.38	0.23	0.09	0.06	0.00	0.00	0.59	0.36	0.00	0.00
900	1.311	0.005	2.228	0.007	0.80	0.52	0.37	0.24	0.09	0.06	0.00	0.00	0.58	0.38	0.00	0.00
910	1.315	0.005	2.228	0.007	0.80	0.52	0.37	0.24	0.09	0.06	0.00	0.00	0.58	0.38	0.00	0.00
920	1.274	0.005	2.265	0.007	0.81	0.51	0.38	0.24	0.09	0.06	0.00	0.00	0.59	0.37	0.00	0.00
930	1.301	0.005	2.266	0.007	0.81	0.52	0.38	0.24	0.09	0.06	0.00	0.00	0.59	0.37	0.00	0.00
940	1.307	0.005	2.178	0.007	0.78	0.52	0.36	0.24	0.09	0.06	0.00	0.00	0.56	0.38	0.00	0.00
950	1.298	0.005	2.030	0.007	0.73	0.52	0.34	0.24	0.08	0.06	0.00	0.00	0.53	0.37	0.00	0.00
960	1.295	0.005	1.904	0.006	0.68	0.52	0.32	0.24	0.08	0.06	0.00	0.00	0.49	0.37	0.00	0.00
970	1.285	0.005	1.817	0.006	0.65	0.51	0.30	0.24	0.07	0.06	0.00	0.00	0.47	0.37	0.00	0.00
980	1.257	0.005	1.739	0.006	0.62	0.50	0.29	0.23	0.07	0.06	0.00	0.00	0.45	0.36	0.00	0.00
990	1.203	0.004	1.670	0.005	0.60	0.48	0.28	0.22	0.07	0.05	0.00	0.00	0.43	0.35	0.00	0.00
1000	1.164	0.004	1.622	0.005	0.58	0.46	0.27	0.22	0.07	0.05	0.00	0.00	0.42	0.33	0.00	0.00
1010	1.156	0.004	1.475	0.005	0.53	0.46	0.25	0.21	0.06	0.05	0.00	0.00	0.38	0.33	0.00	0.00
1020	1.122	0.004	1.318	0.004	0.47	0.45	0.22	0.21	0.05	0.05	0.00	0.00	0.34	0.32	0.00	0.00
1030	1.095	0.004	1.235	0.004	0.44	0.44	0.21	0.20	0.05	0.05	0.00	0.00	0.32	0.32	0.00	0.00
1040	1.091	0.004	1.156	0.004	0.41	0.43	0.19	0.20	0.05	0.05	0.00	0.00	0.30	0.31	0.00	0.00
1050	1.038	0.004	1.096	0.004	0.39	0.41	0.18	0.19	0.04	0.05	0.00	0.00	0.28	0.30	0.00	0.00
1060	0.968	0.003	1.034	0.003	0.37	0.39	0.17	0.18	0.04	0.04	0.00	0.00	0.27	0.28	0.00	0.00
1070	0.943	0.003	0.970	0.003	0.35	0.38	0.16	0.17	0.04	0.04	0.00	0.00	0.25	0.27	0.00	0.00
1080	0.931	0.003	0.940	0.003	0.34	0.37	0.16	0.17	0.04	0.04	0.00	0.00	0.24	0.27	0.00	0.00
1090	0.872	0.003	0.911	0.003	0.33	0.35	0.15	0.16	0.04	0.04	0.00	0.00	0.24	0.25	0.00	0.00
1100	0.827	0.003	0.893	0.003	0.32	0.33	0.15	0.15	0.04	0.04	0.00	0.00	0.23	0.24	0.00	0.00
1110	0.774	0.003	0.884	0.003	0.32	0.31	0.15	0.14	0.04	0.03	0.00	0.00	0.23	0.22	0.00	0.00
1120	0.772	0.003	0.908	0.003	0.33	0.31	0.15	0.14	0.04	0.03	0.00	0.00	0.24	0.22	0.00	0.00
1130	0.725	0.003	0.794	0.003	0.28	0.29	0.13	0.13	0.03	0.03	0.00	0.00	0.21	0.21	0.00	0.00
1140	0.669	0.002	0.724	0.002	0.26	0.27	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.19	0.00	0.00
1150	0.681	0.002	0.764	0.002	0.27	0.27	0.13	0.13	0.03	0.03	0.00	0.00	0.20	0.20	0.00	0.00
1160	0.671	0.002	0.753	0.002	0.27	0.27	0.13	0.12	0.03	0.03	0.00	0.00	0.20	0.19	0.00	0.00
1170	0.661	0.002	0.742	0.002	0.27	0.26	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.19	0.00	0.00
1180	0.651	0.002	0.731	0.002	0.26	0.26	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.19	0.00	0.00
1190	0.641	0.002	0.720	0.002	0.26	0.26	0.12	0.12	0.03	0.03	0.00	0.00	0.19	0.18	0.00	0.00
1200	0.631	0.002	0.709	0.002	0.25	0.25	0.12	0.12	0.03	0.03	0.00	0.00	0.18	0.18	0.00	0.00
1210	0.621	0.002	0.698	0.002	0.25	0.25	0.12	0.12	0.03	0.03	0.00	0.00	0.18	0.18	0.00	0.00
1220	0.611	0.002	0.687	0.002	0.25	0.24	0.11	0.11	0.03	0.03	0.00	0.00	0.18	0.18	0.00	0.00
1230	0.601	0.002	0.676	0.002	0.24	0.24	0.11	0.11	0.03	0.03	0.00	0.00	0.18	0.17	0.00	0.00
1240	0.591	0.002	0.665	0.002	0.24	0.24	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.17	0.00	0.00
1250	0.581	0.002	0.654	0.002	0.23	0.23	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.17	0.00	0.00
1260	0.571	0.002	0.643	0.002	0.23	0.23	0.11	0.11	0.03	0.03	0.00	0.00	0.17	0.16	0.00	0.00
1270	0.561	0.002	0.632	0.002	0.23	0.22	0.11	0.10	0.03	0.03	0.00	0.00	0.16	0.16	0.00	0.00
1280	0.551	0.002	0.621	0.002	0.22	0.22	0.10	0.10	0.03	0.02	0.00	0.00	0.16	0.16	0.00	0.00
1290	0.541	0.002	0.610	0.002	0.22	0.22	0.10	0.10	0.02	0.02	0.00	0.00	0.16	0.16	0.00	0.00
1300	0.531	0.002	0.599	0.002	0.21	0.21	0.10	0.10	0.02	0.02	0.00	0.00	0.16	0.15	0.00	0.00
1310	0.521	0.002	0.588	0.002	0.21	0.21	0.10	0.10	0.02	0.02	0.00	0.00	0.15	0.15	0.00	0.00
1320	0.511	0.002	0.577	0.002	0.21	0.20	0.10	0.09	0.02	0.02	0.00	0.00	0.15	0.15	0.00	0.00
1330	0.501	0.002	0.566	0.002	0.20	0.20	0.09	0.09	0.02	0.02	0.00	0.00	0.15	0.14	0.00	0.00
1340	0.491	0.002	0.555	0.002	0.20	0.20	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14	0.00	0.00
1350	0.481	0.002	0.544	0.002	0.20	0.19	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14	0.00	0.00
1360	0.471	0.002	0.533	0.002	0.19	0.19	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.14	0.00	0.00
1370	0.461	0.002	0.522	0.002	0.19	0.18	0.09	0.09	0.02	0.02	0.00	0.00	0.14	0.13	0.00	0.00
1380	0.451	0.002	0.511	0.002	0.18	0.18	0.09	0.08	0.02	0.02	0.00	0.00	0.13	0.13	0.00	0.00
1390	0.441	0.002	0.500	0.002	0.18	0.18	0.08	0.08	0.02	0.02	0.00	0.00	0.13	0.13	0.00	0.00
1400	0.431	0.002	0.489	0.002	0.18	0.17	0.08	0.08	0.02	0.02	0.00	0.00	0.13	0.12	0.00	0.00
1410	0.421	0.002	0.478	0.002	0.17	0.17	0.08	0.08	0.02	0.02	0.00	0.00	0.12	0.12	0.00	0.00
1420	0.411	0.001	0.467	0.002	0.17	0.16	0.08	0.08	0.02	0.02	0.00	0.00	0.12	0.12	0.00	0.00
1430	0.401	0.001	0.456	0.001	0.16	0.16	0.08	0.07	0.02	0.02	0.00	0.00	0.12	0.12	0.00	0.00
1440	0.391	0.001	0.445	0.001	0.16	0.16	0.07	0.07	0.02	0.02	0.00	0.00	0.12	0.11	0.00	0.00
1450	0.381	0.001	0.434	0.001	0.16	0.15	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.11	0.00	0.00
1460	0.371	0.001	0.423	0.001	0.15	0.15	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.11	0.00	0.00
1470	0.361	0.001	0.412	0.001	0.15	0.14	0.07	0.07	0.02	0.02	0.00	0.00	0.11	0.10	0.00	0.00
1480	0.351	0.001	0.401	0.001	0.14	0.14	0.07	0.07	0.02	0.02	0.00	0.00	0.10	0.10	0.00	0.00
1490	0.341	0.001	0.390	0.001	0.14	0.14	0.07	0.06	0.02	0.02	0.00	0.00	0.10	0.10	0.00	0.00
1500	0.331	0.001	0.379	0.001	0.14	0.13	0.06	0.06	0.02	0.01	0.00	0.00	0.10	0.10	0.00	0.00
1510	0.321	0.001	0.368	0.001	0.13	0.13	0.06	0.06	0.01	0.01	0.00	0.00	0.10	0.09	0.00	0.00
1520	0.311	0.001	0.357	0.001	0.13	0.12	0.06	0.06	0.01	0.01	0.00	0.00	0.09	0.09	0.00	0.00
1530	0.301	0.001	0.346	0.001	0.12	0.12	0.06	0.06	0.01	0.01	0.00	0.00	0.09	0.09	0.00	0.00
1540	0.291	0.001	0.335	0.001	0.12	0.12	0.06	0.05	0.01	0.01	0.00	0.00	0.09	0.08	0.00	0.00
1550	0.281	0.001	0.324	0.001	0.12	0.11	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08	0.00	0.00
1560	0.271	0.001	0.313	0.001	0.11	0.11	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08	0.00	0.00
1570	0.261	0.001	0.302	0.001	0.11	0.10	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.08	0.00	0.00
1580	0.251	0.001	0.291	0.001	0.10	0.10	0.05	0.05	0.01	0.01	0.00	0.00	0.08	0.07	0.00	0.00
1590	0.241	0.001	0.280	0.001	0.10	0.10	0.05	0.04	0.01	0.01	0.00	0.00	0.07	0.07	0.00	0.00
1600	0.231	0.001	0.269	0.001	0.10	0.09	0.04	0.04	0.01	0.01	0.00	0.00	0.07	0.07	0.00	0.00
1610	0.221	0.001	0.258	0.001	0.09	0.09	0.04	0.04	0.01	0.01	0.00	0.00	0.07	0.06	0.00	0.00
1620	0.211	0.001	0.247	0.001	0.09	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.06	0.00	0.00
1630	0.201	0.001	0.236	0.001	0.08	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.06	0.00	0.00
1640	0.191	0.001	0.225	0.001	0.08	0.08	0.04	0.04	0.01	0.01	0.00	0.00	0.06	0.05	0.00	0.00
1650	0.181	0.001	0.214	0.001	0.08	0.07	0.04	0.03	0.01	0.01	0.00	0.00	0.06	0.05	0.00	0.00
1660	0.171	0.001	0.203	0.001	0.07	0.07	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.05	0.00	0.00
1670	0.161	0.001	0.192	0.001	0.07	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.05	0.00	0.00
1680	0.151	0.001	0.181	0.001	0.06	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.05	0.04	0.00	0.00
1690	0.141	0.001	0.170	0.001	0.06	0.06	0.03	0.03	0.01	0.01	0.00	0.00	0.04	0.04	0.00	0.00
1700	0.131	0.000	0.159	0.001	0.06	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.04	0.04	0.00	0.00
1710	0.121	0.000	0.148	0.000	0.05	0.05	0.02	0.02	0.01	0.01	0.00	0.00	0.04	0.03	0.00	0.00
1720	0.111	0.000	0.137	0.000	0.05	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1730	0.101	0.000	0.126	0.000	0.05	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.03	0.03	0.00	0.00
1740	0.091	0.000	0.115	0.000	0.04	0.04	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00
1750	0.081	0.000	0.104	0.000	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1760	0.071	0.000	0.093	0.000	0.03	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1770	0.061	0.000	0.082	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1780	0.051	0.000	0.071	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1790	0.041	0.000	0.060	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1800	0.031	0.000	0.049	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00

SD-630	Cardiff	0	0	Avg. Net SL	5.40	2.81	0.24	-2.30	6.37	-0.46						
SD-630	513.913	0	488.544	1808			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring rati	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	1.123	0.002	1.209	0.002	0.16	0.14	0.08	0.07	0.01	0.01	0.00	0.00	0.19	0.17	0.00	0.00
10	1.475	0.003	1.577	0.003	0.21	0.18	0.11	0.10	0.01	0.01	0.00	0.00	0.25	0.22	0.00	0.00
20	3.577	0.007	3.748	0.008	0.49	0.45	0.26	0.23	0.02	0.02	0.00	0.00	0.58	0.53	0.00	0.00
30	5.485	0.011	5.785	0.012	0.76	0.69	0.40	0.36	0.03	0.03	0.00	0.00	0.90	0.81	0.00	0.00
40	6.164	0.012	6.451	0.013	0.85	0.77	0.44	0.40	0.04	0.03	0.00	0.00	1.00	0.91	0.00	0.00
50	6.742	0.013	6.470	0.013	0.85	0.84	0.44	0.44	0.04	0.04	0.00	0.00	1.01	1.00	0.00	0.00
60	7.154	0.014	5.793	0.012	0.76	0.90	0.40	0.47	0.03	0.04	0.00	0.00	0.90	1.06	0.00	0.00
70	7.416	0.014	5.270	0.011	0.69	0.93	0.36	0.48	0.03	0.04	0.00	0.00	0.82	1.10	0.00	0.00
80	7.705	0.015	5.198	0.011	0.68	0.96	0.36	0.50	0.03	0.04	0.00	0.00	0.81	1.14	0.00	0.00
90	7.892	0.015	5.150	0.011	0.68	0.99	0.35	0.51	0.03	0.04	0.00	0.00	0.80	1.17	0.00	0.00
100	8.461	0.016	5.535	0.011	0.73	1.06	0.38	0.55	0.03	0.05	0.00	0.00	0.86	1.25	0.00	0.00
110	9.379	0.018	6.359	0.013	0.84	1.17	0.44	0.61	0.04	0.05	0.00	0.00	0.99	1.39	0.00	0.00
120	9.517	0.019	6.490	0.013	0.85	1.19	0.44	0.62	0.04	0.05	0.00	0.00	1.01	1.41	0.00	0.00
130	9.208	0.018	6.186	0.013	0.81	1.15	0.42	0.60	0.04	0.05	0.00	0.00	0.96	1.36	0.00	0.00
140	8.831	0.017	5.932	0.012	0.78	1.11	0.41	0.58	0.03	0.05	0.00	0.00	0.92	1.30	0.00	0.00
150	8.367	0.016	5.742	0.012	0.76	1.05	0.39	0.55	0.03	0.05	0.00	0.00	0.89	1.24	0.00	0.00
160	7.888	0.015	5.569	0.011	0.73	0.99	0.38	0.51	0.03	0.04	0.00	0.00	0.87	1.17	0.00	0.00
170	7.344	0.014	5.232	0.011	0.69	0.92	0.36	0.48	0.03	0.04	0.00	0.00	0.81	1.08	0.00	0.00
180	6.820	0.013	4.804	0.010	0.63	0.85	0.33	0.44	0.03	0.04	0.00	0.00	0.75	1.01	0.00	0.00
190	6.470	0.013	4.479	0.009	0.59	0.81	0.31	0.42	0.03	0.04	0.00	0.00	0.70	0.96	0.00	0.00
200	6.488	0.013	4.555	0.009	0.60	0.81	0.31	0.42	0.03	0.04	0.00	0.00	0.71	0.96	0.00	0.00
210	6.673	0.013	4.851	0.010	0.64	0.84	0.33	0.43	0.03	0.04	0.00	0.00	0.75	0.99	0.00	0.00
220	6.690	0.013	4.944	0.010	0.65	0.84	0.34	0.44	0.03	0.04	0.00	0.00	0.77	0.99	0.00	0.00
230	6.557	0.013	4.896	0.010	0.64	0.82	0.34	0.43	0.03	0.04	0.00	0.00	0.76	0.97	0.00	0.00
240	6.399	0.012	4.831	0.010	0.64	0.80	0.33	0.42	0.03	0.04	0.00	0.00	0.75	0.95	0.00	0.00
250	6.244	0.012	4.760	0.010	0.63	0.78	0.33	0.41	0.03	0.03	0.00	0.00	0.74	0.92	0.00	0.00
260	5.990	0.012	4.599	0.009	0.61	0.75	0.32	0.39	0.03	0.03	0.00	0.00	0.71	0.88	0.00	0.00
270	5.685	0.011	4.385	0.009	0.58	0.71	0.30	0.37	0.03	0.03	0.00	0.00	0.68	0.84	0.00	0.00
280	5.389	0.010	4.132	0.008	0.54	0.67	0.28	0.35	0.02	0.03	0.00	0.00	0.64	0.80	0.00	0.00
290	5.105	0.010	3.844	0.008	0.51	0.64	0.26	0.33	0.02	0.03	0.00	0.00	0.60	0.75	0.00	0.00
300	4.841	0.009	3.547	0.007	0.47	0.61	0.24	0.32	0.02	0.03	0.00	0.00	0.55	0.72	0.00	0.00
310	4.759	0.009	3.417	0.007	0.45	0.60	0.23	0.31	0.02	0.03	0.00	0.00	0.53	0.70	0.00	0.00
320	4.795	0.009	3.403	0.007	0.45	0.60	0.23	0.31	0.02	0.03	0.00	0.00	0.53	0.71	0.00	0.00
330	4.892	0.010	3.454	0.007	0.45	0.61	0.24	0.32	0.02	0.03	0.00	0.00	0.54	0.72	0.00	0.00
340	5.029	0.010	3.538	0.007	0.47	0.63	0.24	0.33	0.02	0.03	0.00	0.00	0.55	0.74	0.00	0.00
350	5.179	0.010	3.676	0.008	0.48	0.65	0.25	0.34	0.02	0.03	0.00	0.00	0.57	0.77	0.00	0.00
360	5.312	0.010	3.840	0.008	0.51	0.67	0.26	0.35	0.02	0.03	0.00	0.00	0.60	0.78	0.00	0.00
370	5.414	0.011	3.975	0.008	0.52	0.68	0.27	0.35	0.02	0.03	0.00	0.00	0.62	0.80	0.00	0.00
380	5.510	0.011	4.087	0.008	0.54	0.69	0.28	0.36	0.02	0.03	0.00	0.00	0.64	0.81	0.00	0.00
390	5.606	0.011	4.198	0.009	0.55	0.70	0.29	0.37	0.02	0.03	0.00	0.00	0.65	0.83	0.00	0.00
400	5.679	0.011	4.327	0.009	0.57	0.71	0.30	0.37	0.03	0.03	0.00	0.00	0.67	0.84	0.00	0.00
410	5.744	0.011	4.433	0.009	0.58	0.72	0.30	0.37	0.03	0.03	0.00	0.00	0.69	0.85	0.00	0.00
420	5.829	0.011	4.521	0.009	0.60	0.73	0.31	0.38	0.03	0.03	0.00	0.00	0.70	0.86	0.00	0.00
430	5.971	0.012	4.647	0.010	0.61	0.75	0.32	0.39	0.03	0.03	0.00	0.00	0.72	0.88	0.00	0.00
440	6.134	0.012	4.784	0.010	0.63	0.77	0.33	0.40	0.03	0.03	0.00	0.00	0.74	0.91	0.00	0.00
450	6.276	0.012	4.918	0.010	0.65	0.79	0.34	0.41	0.03	0.03	0.00	0.00	0.76	0.93	0.00	0.00
460	6.410	0.012	5.044	0.010	0.66	0.80	0.35	0.42	0.03	0.04	0.00	0.00	0.78	0.95	0.00	0.00
470	6.544	0.013	5.128	0.010	0.68	0.82	0.35	0.43	0.03	0.04	0.00	0.00	0.80	0.97	0.00	0.00
480	6.668	0.013	5.213	0.011	0.69	0.83	0.36	0.43	0.03	0.04	0.00	0.00	0.81	0.98	0.00	0.00
490	6.699	0.013	5.297	0.011	0.70	0.84	0.36	0.44	0.03	0.04	0.00	0.00	0.82	0.99	0.00	0.00
500	6.640	0.013	5.338	0.011	0.70	0.83	0.37	0.43	0.03	0.04	0.00	0.00	0.83	0.98	0.00	0.00
510	6.565	0.013	5.364	0.011	0.71	0.82	0.37	0.43	0.03	0.04	0.00	0.00	0.83	0.97	0.00	0.00
520	6.480	0.013	5.387	0.011	0.71	0.81	0.37	0.42	0.03	0.04	0.00	0.00	0.84	0.96	0.00	0.00
530	5.845	0.011	4.897	0.010	0.64	0.73	0.34	0.38	0.03	0.03	0.00	0.00	0.76	0.86	0.00	0.00
540	5.470	0.011	4.677	0.010	0.62	0.68	0.32	0.36	0.03	0.03	0.00	0.00	0.73	0.81	0.00	0.00
550	5.378	0.010	4.746	0.010	0.63	0.67	0.33	0.35	0.03	0.03	0.00	0.00	0.74	0.79	0.00	0.00
560	5.247	0.010	4.806	0.010	0.63	0.66	0.33	0.34	0.03	0.03	0.00	0.00	0.75	0.78	0.00	0.00
570	5.101	0.010	4.866	0.010	0.64	0.64	0.33	0.33	0.03	0.03	0.00	0.00	0.76	0.75	0.00	0.00
580	4.948	0.010	4.921	0.010	0.65	0.62	0.34	0.32	0.03	0.03	0.00	0.00	0.76	0.73	0.00	0.00
590	4.777	0.009	4.953	0.010	0.65	0.60	0.34	0.31	0.03	0.03	0.00	0.00	0.77	0.71	0.00	0.00
600	4.626	0.009	4.967	0.010	0.65	0.58	0.34	0.30	0.03	0.03	0.00	0.00	0.77	0.68	0.00	0.00
610	4.481	0.009	4.956	0.010	0.65	0.56	0.34	0.29	0.03	0.02	0.00	0.00	0.77	0.66	0.00	0.00
620	4.357	0.008	4.924	0.010	0.65	0.55	0.34	0.28	0.03	0.02	0.00	0.00	0.77	0.64	0.00	0.00
630	4.260	0.008	4.854	0.010	0.64	0.53	0.33	0.28	0.03	0.02	0.00	0.00	0.75	0.63	0.00	0.00
640	4.129	0.008	4.755	0.010	0.63	0.52	0.33	0.27	0.03	0.02	0.00	0.00	0.74	0.61	0.00	0.00
650	3.956	0.008	4.656	0.010	0.61	0.50	0.32	0.26	0.03	0.02	0.00	0.00	0.72	0.58	0.00	0.00
660	3.752	0.007	4.561	0.009	0.60	0.47	0.31	0.24	0.03	0.02	0.00	0.00	0.71	0.55	0.00	0.00
670	3.520	0.007	4.452	0.009	0.59	0.44	0.31	0.23	0.03	0.02	0.00	0.00	0.69	0.52	0.00	0.00
680	3.289	0.006	4.327	0.009	0.57	0.41	0.30	0.21	0.03	0.02	0.00	0.00	0.67	0.49	0.00	0.00
690	3.098	0.006	4.219	0.009	0.56	0.39	0.29	0.20	0.02	0.02	0.00	0.00	0.66	0.46	0.00	0.00
700	2.865	0.006	4.039	0.008	0.53	0.36	0.28	0.19	0.02	0.02	0.00	0.00	0.63	0.42	0.00	0.00
710	2.734	0.005	3.924	0.008	0.52	0.34	0.27	0.18	0.02	0.02	0.00	0.00	0.61	0.40	0.00	0.00
720	2.659	0.005	3.866	0.008	0.51	0.33	0.26	0.17	0.02	0.01	0.00	0.00	0.60	0.39	0.00	0.00
730	2.546	0.005	3.815	0.008	0.50	0.32	0.26	0.17	0.02	0.01	0.00	0.00	0.59	0.38	0.00	0.00
740	2.443	0.005	3.801	0.008	0.50	0.31	0.26	0.16	0.02	0.01	0.00	0.00	0.59	0.36	0.00	0.00
750	2.358	0.005	3.785	0.008	0.50	0.30	0.26	0.15	0.02	0.01	0.00	0.00	0.59	0.35	0.00	0.00
760	2.247	0.004	3.753	0.008	0.49	0.28	0.26	0.15	0.02	0.01	0.00	0.00	0.58	0.33	0.00	0.00
770	2.216	0.004	3.717	0.008	0.49	0.28	0.25	0.14	0.02	0.01	0.00	0.00	0.58	0.33	0.00	0.00
780	2.267	0.004	3.686	0.008	0.49	0.28	0.25	0.15	0.02	0.01	0.00	0.00	0.57	0.33	0.00	0.00
790	2.315	0.005	3.689	0.008	0.49	0.29	0.25	0.15	0.02	0.01	0.00	0.00	0.57	0.34	0.00	0.00
800	2.307	0.004	3.645	0.007	0.48	0.29	0.25	0.15	0.02	0.01	0.00	0.00	0.57	0.34	0.00	0.00
810	2.202	0.004	3.530	0.007	0.46	0.28	0.24	0.14	0.02	0.01	0.00	0.00	0.55	0.33	0.00	0.00
820	2.133	0.004	3.384	0.007	0.45	0.27	0.23	0.14	0.02	0.01	0.00	0.00	0.53	0.32	0.00	0.00
830	2.113	0.004	3.268	0.007	0.43	0.26	0.22	0.14	0.02	0.01	0.00	0.00	0.51	0.31	0.00	0.00
840	2.072	0.004	3.173	0.006	0.42	0.26	0.22	0.14	0.02	0.01	0.00	0.00	0.49	0.31	0.00	0.00
850	2.009	0.004	3.063	0.006	0.40	0.25	0.21	0.13	0.02	0.01	0.00	0.00	0.48	0.30	0.00	0.00
860	1.994	0.004	3.045	0.006	0.40	0.25	0.21	0.13	0.02	0.01	0.00	0.00	0.47	0.29	0.00	0.00
870	2.048	0.004	3.125	0.006	0.41	0.26	0.21	0.13	0.02	0.01	0.00	0.00	0.49	0.30	0.00	0.00
880	2.113	0.004	3.197	0.007	0.42	0.26	0.22	0.14	0.02	0.01	0.00	0.00	0.50	0.31	0.00	0.00
890	2.171	0.004	3.252	0.007	0.43	0.27	0.22	0.14	0.02	0.01	0.00	0.00	0.51	0.32	0.00	0.00
900	2.191	0.004	3.246	0.007	0.43	0.27	0.22	0.14	0.02	0.01	0.00	0.00	0.50	0.32	0.00	0.00
910	2.163	0.004	3.170	0.006	0.42	0.27	0.22	0.14	0.02	0.01	0.00	0.00	0.49	0.32	0.00	0.00
920	2.119	0.004	3.071	0.006	0.40	0.27	0.21	0.14	0.02	0.01	0.00	0.00	0.48	0.31	0.00	0.00
930	2.084	0.004	2.977	0.006	0.39	0.26	0.20	0.14	0.02	0.01	0.00	0.00	0.46	0.31	0.00	0.00
940	2.042	0.004	2.865	0.006	0.38	0.26	0.20	0.13	0.02	0.01	0.00	0.00	0.45	0.30	0.00	0.00
950	1.962	0.004	2.742	0.006	0.36	0.25	0.19	0.13	0.02	0.01	0.00	0.00	0.43	0.29	0.00	0.00
960	1.890	0.004	2.634	0.005	0.35	0.24	0.18	0.12	0.02	0.01	0.00	0.00	0.41	0.28	0.00	0.00
970	1.826	0.004	2.570	0.005	0.34	0.23	0.18	0.12	0.02	0.01	0.00	0.00	0.40	0.27	0.00	0.00
980	1.740	0.003	2.524	0.005	0.33	0.22	0.17	0.11	0.01	0.01	0.00	0.00	0.39	0.26	0.00	0.00
990	1.651	0.003	2.470	0.005	0.33	0.21	0.17	0.11	0.01	0.01	0.00	0.00	0.38	0.24	0.00	0.00
1000	1.575	0.003	2.409	0.005	0.32	0.20	0.17	0.10	0.01	0.01	0.00	0.00	0.37	0.23	0.00	0.00
1010	1.512	0.003	2.346	0.005	0.31	0.19	0.16	0.10	0.01	0.01	0.00	0.00	0.36	0.22	0.00	0.00
1020	1.463	0.003	2.269	0.005	0.30	0.18	0.16	0.10	0.01	0.01	0.00	0.00	0.35	0.22	0.00	0.00
1030	1.413	0.003	2.190	0.004	0.29	0.18	0.15	0.09	0.01	0.01	0.00	0.00	0.34	0.21	0.00	0.00
1040	1.353	0.003	2.125	0.004	0.28	0.17	0.15	0.09	0.01	0.01	0.00	0.00	0.33	0.20	0.00	0.00
1050	1.331	0.003	2.078	0.004	0.27	0.17	0.14	0.09	0.01	0.01	0.00	0.00	0.32	0.20	0.00	0.00
1060	1.287	0.003	2.004	0.004	0.26	0.16	0.14	0.08	0.01	0.01	0.00	0.00	0.31	0.19	0.00	0.00
1070	1.170	0.002	1.893	0.004	0.25	0.15	0.13	0.08	0.01	0.01	0.00	0.00	0.29	0.17	0.00	0.00
1080	1.079	0.002	1.805	0.004	0.24	0.14	0.12	0.07	0.01	0.01	0.00	0.00	0.28	0.16	0.00	0.00
1090	1.053	0.002	1.701	0.003	0.22	0.13	0.12	0.07	0.01	0.01	0.00	0.00	0.26	0.16	0.00	0.00
1100	1.050	0.002	1.609	0.003	0.21	0.13	0.11	0.07	0.01	0.01	0.00	0.00	0.25	0.16	0.00	0.00
1110	1.033	0.002	1.551	0.003	0.20	0.13	0.11	0.07	0.01	0.01	0.00	0.00	0.24	0.15	0.00	0.00
1120	0.963	0.002	1.466	0.003	0.19	0.12	0.10	0.06	0.01	0.01	0.00	0.00	0.23	0.14	0.00	0.00
1130	0.912	0.002	1.385	0.003	0.18	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.22	0.13	0.00	0.00
1140	0.907	0.002	1.305	0.003	0.17	0.11	0.09	0.06	0.01	0.01	0.00	0.00	0.20	0.13	0.00	0.00
1150	0.856	0.002	1.255	0.003	0.17	0.11	0.09	0.06	0.01	0.00	0.00	0.00	0.20	0.13	0.00	0.00
1160	0.795	0.002	1.234	0.003	0.16	0.10	0.08	0.05	0.01	0.00	0.00	0.00	0.19	0.12	0.00	0.00
1170	0.734	0.001	1.189	0.002	0.16	0.09	0.08	0.05	0.01	0.00	0.00	0.00	0.18	0.11	0.00	0.00
1180	0.674	0.001	1.078	0.002	0.14	0.08	0.07	0.04	0.01	0.00	0.00	0.00	0.17	0.10	0.00	0.00
1190	0.638	0.001	0.965	0.002	0.13	0.08	0.07	0.04	0.01	0.00	0.00	0.00	0.15	0.09	0.00	0.00
1200	0.614	0.001	0.905	0.002	0.12	0.08	0.06	0.04	0.01	0.00	0.00	0.00	0.14	0.09	0.00	0.00
1210	0.595	0.001	0.858	0.002	0.11	0.07	0.06	0.04	0.01	0.00	0.00	0.00	0.13	0.09	0.00	0.00
1220	0.603	0.001	0.800	0.002	0.11	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.12	0.09	0.00	0.00
1230	0.695	0.001	0.825	0.002	0.11	0.09	0.06	0.05	0.00	0.00	0.00	0.00	0.13	0.10	0.00	0.00
1240	0.688	0.001	0.793	0.002	0.10	0.09	0.05	0.04	0.00	0.00	0.00	0.00	0.12	0.10	0.00	0.00
1250	0.648	0.001	0.709	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.10	0.00	0.00
1260	0.638	0.001	0.699	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.00
1270	0.692	0.001	0.751	0.002	0.10	0.09	0.05	0.05	0.00	0.00	0.00	0.00	0.12	0.10	0.00	0.00
1280	0.657	0.001	0.701	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.10	0.00	0.00
1290	0.640	0.001	0.695	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.00
1300	0.600	0.001	0.673	0.001	0.09	0.08	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1310	0.549	0.001	0.640	0.001	0.08	0.07	0.04	0.04	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1320	0.522	0.001	0.617	0.001	0.08	0.07	0.04	0.03	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1330	0.576	0.001	0.658	0.001	0.09	0.07	0.05	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1340	0.581	0.001	0.652	0.001	0.09	0.07	0.04	0.04	0.00	0.00	0.00	0.00	0.10	0.09	0.00	0.00
1350	0.517	0.001	0.624	0.001	0.08	0.06	0.04	0.03	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.00
1360	0.433	0.001	0.588	0.001	0.08	0.05	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00
1370	0.376	0.001	0.578	0.001	0.08	0.05	0.04	0.02	0.00	0.00	0.00	0.00	0.09	0.06	0.00	0.00
1380	0.350	0.001	0.563	0.001	0.07	0.04	0.04	0.02	0.00	0.00	0.00	0.00	0.09	0.05	0.00	0.00
1390	0.338	0.001	0.500	0.001	0.07	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
1400	0.331	0.001	0.487	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
1410	0.324	0.001	0.476	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1420	0.317	0.001	0.465	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1430	0.310	0.001	0.454	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
1440	0.303	0.001	0.443	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1450	0.296	0.001	0.432	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1460	0.289	0.001	0.421	0.001	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.04	0.00	0.00
1470	0.282	0.001	0.410	0.001	0.05	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1480	0.275	0.001	0.399	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1490	0.268	0.001	0.388	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1500	0.261	0.001	0.377	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1510	0.254	0.000	0.366	0.001	0.05	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1520	0.247	0.000	0.355	0.001	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
1530	0.240	0.000	0.344	0.001	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00
1540	0.233	0.000	0.333	0.001	0.04	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1550	0.226	0.000	0.322	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1560	0.219	0.000	0.311	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1570	0.212	0.000	0.300	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
1580	0.205	0.000	0.289	0.001	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1590	0.198	0.000	0.278	0.001	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1600	0.191	0.000	0.267	0.001	0.04	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1610	0.184	0.000	0.256	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1620	0.177	0.000	0.245	0.001	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1630	0.170	0.000	0.234	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
1640	0.163	0.000	0.223	0.000	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1650	0.156	0.000	0.212	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1660	0.149	0.000	0.201	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1670	0.142	0.000	0.190	0.000	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1680	0.135	0.000	0.179	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1690	0.128	0.000	0.168	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
1700	0.121	0.000	0.157	0.000	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1710	0.114	0.000	0.146	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1720	0.107	0.000	0.135	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
1730	0.100	0.000	0.124	0.000	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1740	0.093	0.000	0.113	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1750	0.086	0.000	0.102	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
1760	0.079	0.000	0.091	0.000	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1770	0.072	0.000	0.080	0.000	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1780	0.065	0.000	0.069	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1790	0.058	0.000	0.058	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1800	0.051	0.000	0.047	0.000	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1810	0.044	0.000	0.036	0.000	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00

SD-650	San Elijo Park	0	0	Avg. Net SL	-0.025	0.856	1.357	1.291	0.429	2.210						
SD-650	93.595	0	109.041	1590	Sand Depth (ft)											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring rati	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	1.541	0.016	1.133	0.010	0.00	0.00	0.11	0.17	0.17	0.27	0.16	0.25	0.05	0.08	0.27	0.43
40	1.643	0.018	1.061	0.010	0.00	0.00	0.10	0.18	0.16	0.28	0.15	0.27	0.05	0.09	0.26	0.46
50	2.469	0.026	1.874	0.017	0.00	0.00	0.18	0.27	0.28	0.43	0.26	0.41	0.09	0.13	0.45	0.69
60	2.150	0.023	1.612	0.015	0.00	0.00	0.15	0.23	0.24	0.37	0.23	0.35	0.08	0.12	0.39	0.60
70	1.846	0.020	1.415	0.013	0.00	0.00	0.13	0.20	0.21	0.32	0.20	0.30	0.07	0.10	0.34	0.52
80	1.674	0.018	1.327	0.012	0.00	0.00	0.12	0.18	0.20	0.29	0.19	0.28	0.06	0.09	0.32	0.47
90	1.505	0.016	1.169	0.011	0.00	0.00	0.11	0.16	0.17	0.26	0.17	0.25	0.05	0.08	0.28	0.42
100	1.258	0.013	0.944	0.009	0.00	0.00	0.09	0.14	0.14	0.22	0.13	0.21	0.04	0.07	0.23	0.35
110	1.088	0.012	0.804	0.007	0.00	0.00	0.08	0.12	0.12	0.19	0.11	0.18	0.04	0.06	0.19	0.31
120	1.046	0.011	0.718	0.007	0.00	0.00	0.07	0.11	0.11	0.18	0.10	0.17	0.03	0.06	0.17	0.29
130	1.001	0.011	0.646	0.006	0.00	0.00	0.06	0.11	0.10	0.17	0.09	0.16	0.03	0.05	0.16	0.28
140	0.890	0.010	0.537	0.005	0.00	0.00	0.05	0.10	0.08	0.15	0.08	0.15	0.03	0.05	0.13	0.25
150	0.835	0.009	0.502	0.005	0.00	0.00	0.05	0.09	0.07	0.14	0.07	0.14	0.02	0.05	0.12	0.23
160	0.837	0.009	0.545	0.005	0.00	0.00	0.05	0.09	0.08	0.14	0.08	0.14	0.03	0.05	0.13	0.24
170	0.751	0.008	0.476	0.004	0.00	0.00	0.04	0.08	0.07	0.13	0.07	0.12	0.02	0.04	0.11	0.21
180	0.745	0.008	0.487	0.004	0.00	0.00	0.05	0.08	0.07	0.13	0.07	0.12	0.02	0.04	0.12	0.21
190	0.769	0.008	0.560	0.005	0.00	0.00	0.05	0.08	0.08	0.13	0.08	0.13	0.03	0.04	0.14	0.22
200	0.860	0.009	0.700	0.006	0.00	0.00	0.07	0.09	0.10	0.15	0.10	0.14	0.03	0.05	0.17	0.24
210	1.045	0.011	0.912	0.008	0.00	0.00	0.09	0.11	0.14	0.18	0.13	0.17	0.04	0.06	0.22	0.29
220	1.224	0.013	1.064	0.010	0.00	0.00	0.10	0.13	0.16	0.21	0.15	0.20	0.05	0.07	0.26	0.34
230	1.276	0.014	1.116	0.010	0.00	0.00	0.10	0.14	0.17	0.22	0.16	0.21	0.05	0.07	0.27	0.36
240	1.574	0.017	1.359	0.012	0.00	0.00	0.13	0.17	0.20	0.27	0.19	0.26	0.06	0.09	0.33	0.44
250	1.963	0.021	1.670	0.015	0.00	0.00	0.16	0.21	0.25	0.34	0.24	0.32	0.08	0.11	0.40	0.55
260	1.722	0.018	1.480	0.014	0.00	0.00	0.14	0.19	0.22	0.30	0.21	0.28	0.07	0.09	0.36	0.48
270	1.304	0.014	1.150	0.011	0.00	0.00	0.11	0.14	0.17	0.23	0.16	0.21	0.05	0.07	0.28	0.37
280	0.867	0.009	0.844	0.008	0.00	0.00	0.08	0.09	0.13	0.15	0.12	0.14	0.04	0.05	0.20	0.24
290	0.935	0.010	1.017	0.009	0.00	0.00	0.10	0.10	0.15	0.16	0.14	0.15	0.05	0.05	0.25	0.26
300	1.113	0.012	1.250	0.011	0.00	0.00	0.12	0.12	0.19	0.19	0.18	0.18	0.06	0.06	0.30	0.31
310	1.296	0.014	1.460	0.013	0.00	0.00	0.14	0.14	0.22	0.22	0.21	0.21	0.07	0.07	0.35	0.36
320	1.469	0.016	1.637	0.015	0.00	0.00	0.15	0.16	0.24	0.25	0.23	0.24	0.08	0.08	0.40	0.41
330	1.564	0.017	1.795	0.016	0.00	0.00	0.17	0.17	0.27	0.27	0.25	0.26	0.08	0.09	0.43	0.44
340	1.648	0.018	1.946	0.018	0.00	0.00	0.18	0.18	0.29	0.28	0.27	0.27	0.09	0.09	0.47	0.46
350	1.696	0.018	2.077	0.019	0.00	0.00	0.19	0.18	0.31	0.29	0.29	0.28	0.10	0.09	0.50	0.48
360	1.518	0.016	1.956	0.018	0.00	0.00	0.18	0.17	0.29	0.26	0.28	0.25	0.09	0.08	0.47	0.43
370	1.374	0.015	1.836	0.017	0.00	0.00	0.17	0.15	0.27	0.24	0.26	0.23	0.09	0.08	0.44	0.39
380	1.221	0.013	1.713	0.016	0.00	0.00	0.16	0.13	0.25	0.21	0.24	0.20	0.08	0.07	0.41	0.34
390	1.192	0.013	1.720	0.016	0.00	0.00	0.16	0.13	0.26	0.21	0.24	0.20	0.08	0.07	0.42	0.34
400	1.168	0.012	1.742	0.016	0.00	0.00	0.16	0.13	0.26	0.20	0.25	0.19	0.08	0.06	0.42	0.33
410	1.111	0.012	1.757	0.016	0.00	0.00	0.16	0.12	0.26	0.19	0.25	0.18	0.08	0.06	0.42	0.31
420	1.017	0.011	1.751	0.016	0.00	0.00	0.16	0.11	0.26	0.18	0.25	0.17	0.08	0.06	0.42	0.29
430	0.820	0.009	1.653	0.015	0.00	0.00	0.15	0.09	0.25	0.14	0.23	0.13	0.08	0.04	0.40	0.23
440	0.561	0.006	1.545	0.014	0.00	0.00	0.14	0.06	0.23	0.10	0.22	0.09	0.07	0.03	0.37	0.16
450	0.388	0.004	1.557	0.014	0.00	0.00	0.15	0.04	0.23	0.07	0.22	0.06	0.07	0.02	0.38	0.11
460	0.865	0.009	2.181	0.020	0.00	0.00	0.20	0.09	0.32	0.15	0.31	0.14	0.10	0.05	0.53	0.24
470	1.222	0.013	2.518	0.023	0.00	0.00	0.24	0.13	0.37	0.21	0.36	0.20	0.12	0.07	0.61	0.34
480	0.833	0.009	1.905	0.017	0.00	0.00	0.18	0.09	0.28	0.14	0.27	0.14	0.09	0.05	0.46	0.23
490	0.429	0.005	1.286	0.012	0.00	0.00	0.12	0.05	0.19	0.07	0.18	0.07	0.06	0.02	0.31	0.12
500	0.707	0.008	1.362	0.012	0.00	0.00	0.13	0.08	0.20	0.12	0.19	0.12	0.06	0.04	0.33	0.20
510	1.108	0.012	1.599	0.015	0.00	0.00	0.15	0.12	0.24	0.19	0.23	0.18	0.07	0.06	0.39	0.31
520	1.457	0.016	1.828	0.017	0.00	0.00	0.17	0.16	0.27	0.25	0.26	0.24	0.09	0.08	0.44	0.41
530	1.282	0.014	1.383	0.013	0.00	0.00	0.13	0.14	0.21	0.22	0.20	0.21	0.06	0.07	0.33	0.36
540	0.981	0.010	0.942	0.009	0.00	0.00	0.09	0.11	0.14	0.17	0.13	0.16	0.04	0.05	0.23	0.28
550	0.875	0.009	0.782	0.007	0.00	0.00	0.07	0.10	0.12	0.15	0.11	0.14	0.04	0.05	0.19	0.25
560	1.112	0.012	1.209	0.011	0.00	0.00	0.11	0.12	0.18	0.19	0.17	0.18	0.06	0.06	0.29	0.31
570	0.862	0.009	1.011	0.009	0.00	0.00	0.09	0.09	0.15	0.15	0.14	0.14	0.05	0.05	0.24	0.24
580	0.719	0.008	0.764	0.007	0.00	0.00	0.07	0.08	0.11	0.12	0.11	0.12	0.04	0.04	0.18	0.20
590	0.519	0.006	0.654	0.006	0.00	0.00	0.06	0.06	0.10	0.09	0.09	0.09	0.03	0.03	0.16	0.15
600	0.514	0.005	0.648	0.006	0.00	0.00	0.06	0.06	0.10	0.09	0.09	0.08	0.03	0.03	0.16	0.14
610	0.509	0.005	0.642	0.006	0.00	0.00	0.06	0.06	0.10	0.09	0.09	0.08	0.03	0.03	0.16	0.14
620	0.504	0.005	0.636	0.006	0.00	0.00	0.06	0.05	0.09	0.09	0.09	0.08	0.03	0.03	0.15	0.14
630	0.499	0.005	0.630	0.006	0.00	0.00	0.06	0.05	0.09	0.09	0.09	0.08	0.03	0.03	0.15	0.14
640	0.494	0.005	0.624	0.006	0.00	0.00	0.06	0.05	0.09	0.09	0.09	0.08	0.03	0.03	0.15	0.14
650	0.489	0.005	0.618	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.09	0.08	0.03	0.03	0.15	0.14
660	0.484	0.005	0.612	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.09	0.08	0.03	0.03	0.15	0.14
670	0.479	0.005	0.606	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.09	0.08	0.03	0.03	0.15	0.13
680	0.474	0.005	0.600	0.006	0.00	0.00	0.06	0.05	0.09	0.08	0.08	0.08	0.03	0.03	0.14	0.13
690	0.469	0.005	0.594	0.005	0.00	0.00	0.06	0.05	0.09	0.08	0.08	0.08	0.03	0.03	0.14	0.13
700	0.464	0.005	0.588	0.005	0.00	0.00	0.06	0.05	0.09	0.08	0.08	0.08	0.03	0.03	0.14	0.13
710	0.459	0.005	0.582	0.005	0.00	0.00	0.05	0.05	0.09	0.08	0.08	0.08	0.03	0.03	0.14	0.13
720	0.454	0.005	0.576	0.005	0.00	0.00	0.05	0.05	0.09	0.08	0.08	0.07	0.03	0.02	0.14	0.13
730	0.449	0.005	0.570	0.005	0.00	0.00	0.05	0.05	0.08	0.08	0.08	0.07	0.03	0.02	0.14	0.13
740	0.444	0.005	0.564	0.005	0.00	0.00	0.05	0.05	0.08	0.08	0.08	0.07	0.03	0.02	0.14	0.12
750	0.439	0.005	0.558	0.005	0.00	0.00	0.05	0.05	0.08	0.08	0.08	0.07	0.03	0.02	0.13	0.12
760	0.434	0.005	0.552	0.005	0.00	0.00	0.05	0.05	0.08	0.08	0.08	0.07	0.03	0.02	0.13	0.12
770	0.429	0.005	0.546	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.08	0.07	0.03	0.02	0.13	0.12
780	0.424	0.005	0.540	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.08	0.07	0.03	0.02	0.13	0.12
790	0.419	0.004	0.534	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.08	0.07	0.03	0.02	0.13	0.12
800	0.414	0.004	0.528	0.005	0.00	0.00	0.05	0.05	0.08	0.07	0.07	0.07	0.02	0.02	0.13	0.12
810	0.409	0.004	0.522	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.07	0.07	0.02	0.02	0.13	0.12
820	0.404	0.004	0.516	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.07	0.07	0.02	0.02	0.12	0.11
830	0.399	0.004	0.510	0.005	0.00	0.00	0.05	0.04	0.08	0.07	0.07	0.07	0.02	0.02	0.12	0.11
840	0.394	0.004	0.504	0.005	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
850	0.389	0.004	0.498	0.005	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
860	0.384	0.004	0.492	0.005	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
870	0.379	0.004	0.486	0.004	0.00	0.00	0.05	0.04	0.07	0.07	0.07	0.06	0.02	0.02	0.12	0.11
880	0.374	0.004	0.480	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.07	0.06	0.02	0.02	0.12	0.11
890	0.369	0.004	0.474	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.07	0.06	0.02	0.02	0.11	0.10
900	0.364	0.004	0.468	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.07	0.06	0.02	0.02	0.11	0.10
910	0.359	0.004	0.462	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.07	0.06	0.02	0.02	0.11	0.10
920	0.354	0.004	0.456	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.06	0.06	0.02	0.02	0.11	0.10
930	0.349	0.004	0.450	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.06	0.06	0.02	0.02	0.11	0.10
940	0.344	0.004	0.444	0.004	0.00	0.00	0.04	0.04	0.07	0.06	0.06	0.06	0.02	0.02	0.11	0.10
950	0.339	0.004	0.438	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.06	0.02	0.02	0.11	0.10
960	0.334	0.004	0.432	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
970	0.329	0.004	0.426	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
980	0.324	0.003	0.420	0.004	0.00	0.00	0.04	0.04	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
990	0.319	0.003	0.414	0.004	0.00	0.00	0.04	0.03	0.06	0.06	0.06	0.05	0.02	0.02	0.10	0.09
1000	0.314	0.003	0.408	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.02	0.02	0.10	0.09
1010	0.309	0.003	0.402	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.02	0.02	0.10	0.09
1020	0.304	0.003	0.396	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.02	0.02	0.10	0.09
1030	0.299	0.003	0.390	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.06	0.05	0.02	0.02	0.09	0.08
1040	0.294	0.003	0.384	0.004	0.00	0.00	0.04	0.03	0.06	0.05	0.05	0.05	0.02	0.02	0.09	0.08
1050	0.289	0.003	0.378	0.003	0.00	0.00	0.04	0.03	0.06	0.05	0.05	0.05	0.02	0.02	0.09	0.08
1060	0.284	0.003	0.372	0.003	0.00	0.00	0.03	0.03	0.06	0.05	0.05	0.05	0.02	0.02	0.09	0.08
1070	0.279	0.003	0.366	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.02	0.02	0.09	0.08
1080	0.274	0.003	0.360	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.05	0.02	0.01	0.09	0.08
1090	0.269	0.003	0.354	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.04	0.02	0.01	0.09	0.08
1100	0.264	0.003	0.348	0.003	0.00	0.00	0.03	0.03	0.05	0.05	0.05	0.04	0.02	0.01	0.08	0.07
1110	0.259	0.003	0.342	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.02	0.01	0.08	0.07
1120	0.254	0.003	0.336	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.02	0.01	0.08	0.07
1130	0.249	0.003	0.330	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.02	0.01	0.08	0.07
1140	0.244	0.003	0.324	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.05	0.04	0.02	0.01	0.08	0.07
1150	0.239	0.003	0.318	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.04	0.01	0.01	0.08	0.07
1160	0.234	0.003	0.312	0.003	0.00	0.00	0.03	0.03	0.05	0.04	0.04	0.04	0.01	0.01	0.08	0.07
1170	0.229	0.002	0.306	0.003	0.00	0.00	0.03	0.02	0.05	0.04	0.04	0.04	0.01	0.01	0.07	0.06
1180	0.224	0.002	0.300	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.07	0.06
1190	0.219	0.002	0.294	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.07	0.06
1200	0.214	0.002	0.288	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.04	0.01	0.01	0.07	0.06
1210	0.209	0.002	0.282	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.03	0.01	0.01	0.07	0.06
1220	0.204	0.002	0.276	0.003	0.00	0.00	0.03	0.02	0.04	0.04	0.04	0.03	0.01	0.01	0.07	0.06
1230	0.199	0.002	0.270	0.002	0.00	0.00	0.03	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.07	0.06
1240	0.194	0.002	0.264	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.06	0.05
1250	0.189	0.002	0.258	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.06	0.05
1260	0.184	0.002	0.252	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.04	0.03	0.01	0.01	0.06	0.05
1270	0.179	0.002	0.246	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1280	0.174	0.002	0.240	0.002	0.00	0.00	0.02	0.02	0.04	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1290	0.169	0.002	0.234	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1300	0.164	0.002	0.228	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.06	0.05
1310	0.159	0.002	0.222	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.05	0.04
1320	0.154	0.002	0.216	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.05	0.04
1330	0.149	0.002	0.210	0.002	0.00	0.00	0.02	0.02	0.03	0.03	0.03	0.02	0.01	0.01	0.05	0.04
1340	0.144	0.002	0.204	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.02	0.01	0.01	0.05	0.04
1350	0.139	0.001	0.198	0.002	0.00	0.00	0.02	0.02	0.03	0.02	0.03	0.02	0.01	0.01	0.05	0.04
1360	0.134	0.001	0.192	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.01	0.01	0.05	0.04
1370	0.129	0.001	0.186	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.01	0.01	0.04	0.04
1380	0.124	0.001	0.180	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.01	0.01	0.04	0.03
1390	0.119	0.001	0.174	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1400	0.114	0.001	0.168	0.002	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1410	0.109	0.001	0.162	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1420	0.104	0.001	0.156	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1430	0.099	0.001	0.150	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.04	0.03
1440	0.094	0.001	0.144	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.03	0.03
1450	0.089	0.001	0.138	0.001	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.00	0.03	0.03
1460	0.084	0.001	0.132	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1470	0.079	0.001	0.126	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1480	0.074	0.001	0.120	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1490	0.069	0.001	0.114	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1500	0.064	0.001	0.108	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.03	0.02
1510	0.059	0.001	0.102	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.02	0.02
1520	0.054	0.001	0.096	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.02
1530	0.049	0.001	0.090	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1540	0.044	0.000	0.084	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1550	0.039	0.000	0.078	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1560	0.034	0.000	0.072	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.01
1570	0.029	0.000	0.066	0.001	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.01
1580	0.024	0.000	0.060	0.001	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01
1590	0.019	0.000	0.054	0.000	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01

SD-660	Swami's	0	0	Avg. Net SL	0.65	2.12	2.64	2.90	2.87	2.45						
SD-660	123.382	0	130.419	1650			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.020	0.000	0.018	0.000	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00
10	1.817	0.015	1.191	0.009	0.07	0.11	0.23	0.37	0.29	0.46	0.32	0.51	0.31	0.50	0.27	0.43
20	1.657	0.013	0.985	0.008	0.06	0.10	0.19	0.34	0.24	0.42	0.26	0.46	0.26	0.46	0.22	0.39
30	1.733	0.014	0.955	0.007	0.06	0.11	0.18	0.35	0.23	0.44	0.25	0.49	0.25	0.48	0.21	0.41
40	2.067	0.017	1.046	0.008	0.06	0.13	0.20	0.42	0.25	0.53	0.28	0.58	0.27	0.57	0.23	0.49
50	2.331	0.019	1.025	0.008	0.06	0.15	0.20	0.48	0.25	0.59	0.27	0.65	0.27	0.65	0.23	0.55
60	2.459	0.020	0.958	0.007	0.06	0.15	0.19	0.50	0.23	0.63	0.25	0.69	0.25	0.68	0.21	0.58
70	2.523	0.020	0.954	0.007	0.06	0.16	0.18	0.52	0.23	0.64	0.25	0.71	0.25	0.70	0.21	0.60
80	2.615	0.021	1.005	0.008	0.06	0.16	0.19	0.53	0.24	0.67	0.27	0.73	0.26	0.72	0.22	0.62
90	2.572	0.021	1.067	0.008	0.06	0.16	0.21	0.53	0.26	0.66	0.28	0.72	0.28	0.71	0.24	0.61
100	2.285	0.019	0.960	0.007	0.06	0.14	0.19	0.47	0.23	0.58	0.25	0.64	0.25	0.63	0.21	0.54
110	2.142	0.017	0.888	0.007	0.05	0.13	0.17	0.44	0.21	0.55	0.24	0.60	0.23	0.59	0.20	0.51
120	2.067	0.017	0.871	0.007	0.05	0.13	0.17	0.42	0.21	0.53	0.23	0.58	0.23	0.57	0.19	0.49
130	2.017	0.016	0.879	0.007	0.05	0.13	0.17	0.41	0.21	0.51	0.23	0.57	0.23	0.56	0.20	0.48
140	1.977	0.016	0.855	0.007	0.05	0.12	0.17	0.40	0.21	0.50	0.23	0.55	0.22	0.55	0.19	0.47
150	1.811	0.015	0.798	0.006	0.05	0.11	0.15	0.37	0.19	0.46	0.21	0.51	0.21	0.50	0.18	0.43
160	1.683	0.014	0.804	0.006	0.05	0.11	0.16	0.34	0.19	0.43	0.21	0.47	0.21	0.47	0.18	0.40
170	1.539	0.012	0.804	0.006	0.05	0.10	0.16	0.31	0.19	0.39	0.21	0.43	0.21	0.43	0.18	0.36
180	1.398	0.011	0.803	0.006	0.05	0.09	0.16	0.29	0.19	0.36	0.21	0.39	0.21	0.39	0.18	0.33
190	1.272	0.010	0.786	0.006	0.05	0.08	0.15	0.26	0.19	0.32	0.21	0.36	0.21	0.35	0.18	0.30
200	1.152	0.009	0.761	0.006	0.05	0.07	0.15	0.24	0.18	0.29	0.20	0.32	0.20	0.32	0.17	0.27
210	0.984	0.008	0.673	0.005	0.04	0.06	0.13	0.20	0.16	0.25	0.18	0.28	0.18	0.27	0.15	0.23
220	0.893	0.007	0.661	0.005	0.04	0.06	0.13	0.18	0.16	0.23	0.18	0.25	0.17	0.25	0.15	0.21
230	0.855	0.007	0.703	0.005	0.04	0.05	0.14	0.17	0.17	0.22	0.19	0.24	0.18	0.24	0.16	0.20
240	0.947	0.008	0.855	0.007	0.05	0.06	0.17	0.19	0.21	0.24	0.23	0.27	0.22	0.26	0.19	0.22
250	1.048	0.008	1.007	0.008	0.06	0.07	0.19	0.21	0.24	0.27	0.27	0.29	0.26	0.29	0.23	0.25
260	1.285	0.010	1.248	0.010	0.07	0.08	0.24	0.26	0.30	0.33	0.33	0.36	0.33	0.36	0.28	0.30
270	1.684	0.014	1.676	0.013	0.10	0.11	0.32	0.34	0.40	0.43	0.44	0.47	0.44	0.47	0.38	0.40
280	1.980	0.016	2.106	0.016	0.12	0.12	0.41	0.40	0.51	0.51	0.56	0.56	0.55	0.55	0.47	0.47
290	2.248	0.018	2.535	0.019	0.15	0.14	0.49	0.46	0.61	0.57	0.67	0.63	0.66	0.62	0.57	0.53
300	2.678	0.022	3.141	0.024	0.19	0.17	0.61	0.55	0.76	0.68	0.83	0.75	0.82	0.74	0.70	0.63
310	2.115	0.017	2.742	0.021	0.16	0.13	0.53	0.43	0.66	0.54	0.73	0.59	0.72	0.59	0.61	0.50
320	1.577	0.013	2.387	0.018	0.14	0.10	0.46	0.32	0.58	0.40	0.63	0.44	0.63	0.44	0.53	0.37
330	1.620	0.013	2.592	0.020	0.15	0.10	0.50	0.33	0.63	0.41	0.69	0.45	0.68	0.45	0.58	0.38
340	1.512	0.012	2.578	0.020	0.15	0.09	0.50	0.31	0.62	0.39	0.68	0.42	0.68	0.42	0.58	0.36
350	1.542	0.012	2.476	0.019	0.15	0.10	0.48	0.32	0.60	0.39	0.66	0.43	0.65	0.43	0.55	0.36
360	1.539	0.012	2.395	0.018	0.14	0.10	0.46	0.31	0.58	0.39	0.64	0.43	0.63	0.43	0.54	0.36
370	1.464	0.012	2.361	0.018	0.14	0.09	0.46	0.30	0.57	0.37	0.63	0.41	0.62	0.41	0.53	0.35
380	1.337	0.011	2.569	0.020	0.15	0.08	0.50	0.27	0.62	0.34	0.68	0.37	0.67	0.37	0.57	0.32
390	1.212	0.010	2.461	0.019	0.15	0.08	0.48	0.25	0.59	0.31	0.65	0.34	0.65	0.34	0.55	0.29
400	1.269	0.010	2.614	0.020	0.15	0.08	0.51	0.26	0.63	0.32	0.69	0.36	0.69	0.35	0.58	0.30
410	1.648	0.013	2.532	0.019	0.15	0.10	0.49	0.34	0.61	0.42	0.67	0.46	0.66	0.46	0.57	0.39
420	1.024	0.008	2.038	0.016	0.12	0.06	0.39	0.21	0.49	0.26	0.54	0.29	0.53	0.28	0.46	0.24
430	0.716	0.006	1.695	0.013	0.10	0.04	0.33	0.15	0.41	0.18	0.45	0.20	0.44	0.20	0.38	0.17
440	0.644	0.005	1.468	0.011	0.09	0.04	0.28	0.13	0.35	0.16	0.39	0.18	0.38	0.18	0.33	0.15
450	1.158	0.009	1.615	0.012	0.10	0.07	0.31	0.24	0.39	0.30	0.43	0.32	0.42	0.32	0.36	0.27
460	0.842	0.007	1.335	0.010	0.08	0.05	0.26	0.17	0.32	0.21	0.35	0.24	0.35	0.23	0.30	0.20
470	1.413	0.011	1.602	0.012	0.09	0.09	0.31	0.29	0.39	0.36	0.43	0.40	0.42	0.39	0.36	0.33
480	1.711	0.014	1.716	0.013	0.10	0.11	0.33	0.35	0.41	0.44	0.46	0.48	0.45	0.47	0.38	0.40
490	1.088	0.009	1.476	0.011	0.09	0.07	0.29	0.22	0.36	0.28	0.39	0.31	0.39	0.30	0.33	0.26
500	0.696	0.006	0.574	0.004	0.03	0.04	0.11	0.14	0.14	0.18	0.15	0.20	0.15	0.19	0.13	0.16
510	0.949	0.008	0.447	0.003	0.03	0.06	0.09	0.19	0.11	0.24	0.12	0.27	0.12	0.26	0.10	0.22
520	1.179	0.010	0.361	0.003	0.02	0.07	0.07	0.24	0.09	0.30	0.10	0.33	0.09	0.33	0.08	0.28
530	1.068	0.009	0.332	0.003	0.02	0.07	0.06	0.22	0.08	0.27	0.09	0.30	0.09	0.30	0.07	0.25
540	1.501	0.012	0.665	0.005	0.04	0.09	0.13	0.31	0.16	0.38	0.18	0.42	0.17	0.42	0.15	0.36
550	1.490	0.012	0.504	0.004	0.03	0.09	0.10	0.30	0.12	0.38	0.13	0.42	0.13	0.41	0.11	0.35
560	1.946	0.016	1.877	0.014	0.11	0.12	0.36	0.40	0.45	0.50	0.50	0.55	0.49	0.54	0.42	0.46
570	2.474	0.020	2.860	0.022	0.17	0.15	0.55	0.51	0.69	0.63	0.76	0.69	0.75	0.69	0.64	0.59
580	2.059	0.017	1.870	0.014	0.11	0.13	0.36	0.42	0.45	0.53	0.50	0.58	0.49	0.57	0.42	0.49
590	0.587	0.005	0.831	0.006	0.05	0.04	0.16	0.12	0.20	0.15	0.22	0.16	0.22	0.16	0.19	0.14
600	0.548	0.004	0.858	0.007	0.05	0.03	0.17	0.11	0.21	0.14	0.23	0.15	0.22	0.15	0.19	0.13
610	0.543	0.004	0.850	0.007	0.05	0.03	0.16	0.11	0.21	0.14	0.23	0.15	0.22	0.15	0.19	0.13
620	0.538	0.004	0.842	0.006	0.05	0.03	0.16	0.11	0.20	0.14	0.22	0.15	0.22	0.15	0.19	0.13
630	0.533	0.004	0.834	0.006	0.05	0.03	0.16	0.11	0.20	0.14	0.22	0.15	0.22	0.15	0.19	0.13
640	0.528	0.004	0.826	0.006	0.05	0.03	0.16	0.11	0.20	0.13	0.22	0.15	0.22	0.15	0.18	0.12
650	0.523	0.004	0.818	0.006	0.05	0.03	0.16	0.11	0.20	0.13	0.22	0.15	0.21	0.14	0.18	0.12
660	0.518	0.004	0.810	0.006	0.05	0.03	0.16	0.11	0.20	0.13	0.21	0.15	0.21	0.14	0.18	0.12
670	0.513	0.004	0.802	0.006	0.05	0.03	0.16	0.10	0.19	0.13	0.21	0.14	0.21	0.14	0.18	0.12
680	0.508	0.004	0.794	0.006	0.05	0.03	0.15	0.10	0.19	0.13	0.21	0.14	0.21	0.14	0.18	0.12
690	0.503	0.004	0.786	0.006	0.05	0.03	0.15	0.10	0.19	0.13	0.21	0.14	0.21	0.14	0.18	0.12
700	0.498	0.004	0.778	0.006	0.05	0.03	0.15	0.10	0.19	0.13	0.21	0.14	0.20	0.14	0.17	0.12
710	0.493	0.004	0.770	0.006	0.05	0.03	0.15	0.10	0.19	0.13	0.20	0.14	0.20	0.14	0.17	0.12
720	0.488	0.004	0.762	0.006	0.05	0.03	0.15	0.10	0.18	0.12	0.20	0.14	0.20	0.14	0.17	0.12
730	0.483	0.004	0.754	0.006	0.04	0.03	0.15	0.10	0.18	0.12	0.20	0.14	0.20	0.13	0.17	0.11
740	0.478	0.004	0.746	0.006	0.04	0.03	0.14	0.10	0.18	0.12	0.20	0.13	0.20	0.13	0.17	0.11
750	0.473	0.004	0.738	0.006	0.04	0.03	0.14	0.10	0.18	0.12	0.20	0.13	0.19	0.13	0.17	0.11
760	0.468	0.004	0.730	0.006	0.04	0.03	0.14	0.10	0.18	0.12	0.19	0.13	0.19	0.13	0.16	0.11
770	0.463	0.004	0.722	0.006	0.04	0.03	0.14	0.09	0.17	0.12	0.19	0.13	0.19	0.13	0.16	0.11
780	0.458	0.004	0.714	0.005	0.04	0.03	0.14	0.09	0.17	0.12	0.19	0.13	0.19	0.13	0.16	0.11
790	0.453	0.004	0.706	0.005	0.04	0.03	0.14	0.09	0.17	0.12	0.19	0.13	0.19	0.13	0.16	0.11
800	0.448	0.004	0.698	0.005	0.04	0.03	0.14	0.09	0.17	0.11	0.19	0.13	0.18	0.12	0.16	0.11
810	0.443	0.004	0.690	0.005	0.04	0.03	0.13	0.09	0.17	0.11	0.18	0.12	0.18	0.12	0.15	0.10
820	0.438	0.004	0.682	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.18	0.12	0.18	0.12	0.15	0.10
830	0.433	0.004	0.674	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.18	0.12	0.18	0.12	0.15	0.10
840	0.428	0.003	0.666	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.18	0.12	0.17	0.12	0.15	0.10
850	0.423	0.003	0.658	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.17	0.12	0.17	0.12	0.15	0.10
860	0.418	0.003	0.650	0.005	0.04	0.03	0.13	0.09	0.16	0.11	0.17	0.12	0.17	0.12	0.15	0.10
870	0.413	0.003	0.642	0.005	0.04	0.03	0.12	0.08	0.16	0.11	0.17	0.12	0.17	0.11	0.14	0.10
880	0.408	0.003	0.634	0.005	0.04	0.03	0.12	0.08	0.15	0.10	0.17	0.11	0.17	0.11	0.14	0.10
890	0.403	0.003	0.626	0.005	0.04	0.03	0.12	0.08	0.15	0.10	0.17	0.11	0.16	0.11	0.14	0.10
900	0.398	0.003	0.618	0.005	0.04	0.02	0.12	0.08	0.15	0.10	0.16	0.11	0.16	0.11	0.14	0.09
910	0.393	0.003	0.610	0.005	0.04	0.02	0.12	0.08	0.15	0.10	0.16	0.11	0.16	0.11	0.14	0.09
920	0.388	0.003	0.602	0.005	0.04	0.02	0.12	0.08	0.15	0.10	0.16	0.11	0.16	0.11	0.13	0.09
930	0.383	0.003	0.594	0.005	0.04	0.02	0.11	0.08	0.14	0.10	0.16	0.11	0.16	0.11	0.13	0.09
940	0.378	0.003	0.586	0.004	0.03	0.02	0.11	0.08	0.14	0.10	0.16	0.11	0.15	0.10	0.13	0.09
950	0.373	0.003	0.578	0.004	0.03	0.02	0.11	0.08	0.14	0.10	0.15	0.10	0.15	0.10	0.13	0.09
960	0.368	0.003	0.570	0.004	0.03	0.02	0.11	0.08	0.14	0.09	0.15	0.10	0.15	0.10	0.13	0.09
970	0.363	0.003	0.562	0.004	0.03	0.02	0.11	0.07	0.14	0.09	0.15	0.10	0.15	0.10	0.13	0.09
980	0.358	0.003	0.554	0.004	0.03	0.02	0.11	0.07	0.13	0.09	0.15	0.10	0.15	0.10	0.12	0.08
990	0.353	0.003	0.546	0.004	0.03	0.02	0.11	0.07	0.13	0.09	0.14	0.10	0.14	0.10	0.12	0.08
1000	0.348	0.003	0.538	0.004	0.03	0.02	0.10	0.07	0.13	0.09	0.14	0.10	0.14	0.10	0.12	0.08
1010	0.343	0.003	0.530	0.004	0.03	0.02	0.10	0.07	0.13	0.09	0.14	0.10	0.14	0.10	0.12	0.08
1020	0.338	0.003	0.522	0.004	0.03	0.02	0.10	0.07	0.13	0.09	0.14	0.09	0.14	0.09	0.12	0.08
1030	0.333	0.003	0.514	0.004	0.03	0.02	0.10	0.07	0.12	0.08	0.14	0.09	0.13	0.09	0.12	0.08
1040	0.328	0.003	0.506	0.004	0.03	0.02	0.10	0.07	0.12	0.08	0.13	0.09	0.13	0.09	0.11	0.08
1050	0.323	0.003	0.498	0.004	0.03	0.02	0.10	0.07	0.12	0.08	0.13	0.09	0.13	0.09	0.11	0.08
1060	0.318	0.003	0.490	0.004	0.03	0.02	0.09	0.07	0.12	0.08	0.13	0.09	0.13	0.09	0.11	0.08
1070	0.313	0.003	0.482	0.004	0.03	0.02	0.09	0.06	0.12	0.08	0.13	0.09	0.13	0.09	0.11	0.07
1080	0.308	0.002	0.474	0.004	0.03	0.02	0.09	0.06	0.11	0.08	0.13	0.09	0.12	0.09	0.11	0.07
1090	0.303	0.002	0.466	0.004	0.03	0.02	0.09	0.06	0.11	0.08	0.12	0.08	0.12	0.08	0.10	0.07
1100	0.298	0.002	0.458	0.004	0.03	0.02	0.09	0.06	0.11	0.08	0.12	0.08	0.12	0.08	0.10	0.07
1110	0.293	0.002	0.450	0.003	0.03	0.02	0.09	0.06	0.11	0.07	0.12	0.08	0.12	0.08	0.10	0.07
1120	0.288	0.002	0.442	0.003	0.03	0.02	0.09	0.06	0.11	0.07	0.12	0.08	0.12	0.08	0.10	0.07
1130	0.283	0.002	0.434	0.003	0.03	0.02	0.08	0.06	0.10	0.07	0.12	0.08	0.11	0.08	0.10	0.07
1140	0.278	0.002	0.426	0.003	0.03	0.02	0.08	0.06	0.10	0.07	0.11	0.08	0.11	0.08	0.10	0.07
1150	0.273	0.002	0.418	0.003	0.02	0.02	0.08	0.06	0.10	0.07	0.11	0.08	0.11	0.08	0.09	0.06
1160	0.268	0.002	0.410	0.003	0.02	0.02	0.08	0.05	0.10	0.07	0.11	0.08	0.11	0.07	0.09	0.06
1170	0.263	0.002	0.402	0.003	0.02	0.02	0.08	0.05	0.10	0.07	0.11	0.07	0.11	0.07	0.09	0.06
1180	0.258	0.002	0.394	0.003	0.02	0.02	0.08	0.05	0.10	0.07	0.10	0.07	0.10	0.07	0.09	0.06
1190	0.253	0.002	0.386	0.003	0.02	0.02	0.07	0.05	0.09	0.06	0.10	0.07	0.10	0.07	0.09	0.06
1200	0.248	0.002	0.378	0.003	0.02	0.02	0.07	0.05	0.09	0.06	0.10	0.07	0.10	0.07	0.08	0.06
1210	0.243	0.002	0.370	0.003	0.02	0.02	0.07	0.05	0.09	0.06	0.10	0.07	0.10	0.07	0.08	0.06
1220	0.238	0.002	0.362	0.003	0.02	0.01	0.07	0.05	0.09	0.06	0.10	0.07	0.09	0.07	0.08	0.06
1230	0.233	0.002	0.354	0.003	0.02	0.01	0.07	0.05	0.09	0.06	0.09	0.07	0.09	0.06	0.08	0.06
1240	0.228	0.002	0.346	0.003	0.02	0.01	0.07	0.05	0.08	0.06	0.09	0.06	0.09	0.06	0.08	0.05
1250	0.223	0.002	0.338	0.003	0.02	0.01	0.07	0.05	0.08	0.06	0.09	0.06	0.09	0.06	0.08	0.05
1260	0.218	0.002	0.330	0.003	0.02	0.01	0.06	0.04	0.08	0.06	0.09	0.06	0.09	0.06	0.07	0.05
1270	0.213	0.002	0.322	0.002	0.02	0.01	0.06	0.04	0.08	0.05	0.09	0.06	0.08	0.06	0.07	0.05
1280	0.208	0.002	0.314	0.002	0.02	0.01	0.06	0.04	0.08	0.05	0.08	0.06	0.08	0.06	0.07	0.05
1290	0.203	0.002	0.306	0.002	0.02	0.01	0.06	0.04	0.07	0.05	0.08	0.06	0.08	0.06	0.07	0.05
1300	0.198	0.002	0.298	0.002	0.02	0.01	0.06	0.04	0.07	0.05	0.08	0.06	0.08	0.05	0.07	0.05
1310	0.193	0.002	0.290	0.002	0.02	0.01	0.06	0.04	0.07	0.05	0.08	0.05	0.08	0.05	0.06	0.05
1320	0.188	0.002	0.282	0.002	0.02	0.01	0.05	0.04	0.07	0.05	0.07	0.05	0.07	0.05	0.06	0.04
1330	0.183	0.001	0.274	0.002	0.02	0.01	0.05	0.04	0.07	0.05	0.07	0.05	0.07	0.05	0.06	0.04
1340	0.178	0.001	0.266	0.002	0.02	0.01	0.05	0.04	0.06	0.05	0.07	0.05	0.07	0.05	0.06	0.04
1350	0.173	0.001	0.258	0.002	0.02	0.01	0.05	0.04	0.06	0.04	0.07	0.05	0.07	0.05	0.06	0.04
1360	0.168	0.001	0.250	0.002	0.01	0.01	0.05	0.03	0.06	0.04	0.07	0.05	0.07	0.05	0.06	0.04
1370	0.163	0.001	0.242	0.002	0.01	0.01	0.05	0.03	0.06	0.04	0.06	0.05	0.06	0.05	0.05	0.04
1380	0.158	0.001	0.234	0.002	0.01	0.01	0.05	0.03	0.06	0.04	0.06	0.04	0.06	0.04	0.05	0.04
1390	0.153	0.001	0.226	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.06	0.04	0.06	0.04	0.05	0.04
1400	0.148	0.001	0.218	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.06	0.04	0.06	0.04	0.05	0.04
1410	0.143	0.001	0.210	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.06	0.04	0.06	0.04	0.05	0.03
1420	0.138	0.001	0.202	0.002	0.01	0.01	0.04	0.03	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.03
1430	0.133	0.001	0.194	0.001	0.01	0.01	0.04	0.03	0.05	0.03	0.05	0.04	0.05	0.04	0.04	0.03
1440	0.128	0.001	0.186	0.001	0.01	0.01	0.04	0.03	0.04	0.03	0.05	0.04	0.05	0.04	0.04	0.03
1450	0.123	0.001	0.178	0.001	0.01	0.01	0.03	0.03	0.04	0.03	0.05	0.03	0.05	0.03	0.04	0.03
1460	0.118	0.001	0.170	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.05	0.03	0.04	0.03	0.04	0.03
1470	0.113	0.001	0.162	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.04	0.03
1480	0.108	0.001	0.154	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.03	0.03
1490	0.103	0.001	0.146	0.001	0.01	0.01	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.03	0.03	0.02
1500	0.098	0.001	0.138	0.001	0.01	0.01	0.03	0.02	0.03	0.03	0.04	0.03	0.04	0.03	0.03	0.02
1510	0.093	0.001	0.130	0.001	0.01	0.01	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.02
1520	0.088	0.001	0.122	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1530	0.083	0.001	0.114	0.001	0.01	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
1540	0.078	0.001	0.106	0.001	0.01	0.00	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.02	0.02
1550	0.073	0.001	0.098	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
1560	0.068	0.001	0.090	0.001	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1570	0.063	0.001	0.082	0.001	0.00	0.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
1580	0.058	0.000	0.074	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01
1590	0.053	0.000	0.066	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1600	0.048	0.000	0.058	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1610	0.043	0.000	0.050	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1620	0.038	0.000	0.042	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1630	0.033	0.000	0.034	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1640	0.028	0.000	0.026	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1650	0.023	0.000	0.018	0.000	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01

SD-670	Moonlight	0	0	Avg. Net SL	8.33	5.70	4.72	4.22	3.92	2.93						
SD-670	325.763	0	308.756	1639			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.034	0.000	0.023	0.000	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
10	1.162	0.004	1.487	0.005	0.48	0.35	0.33	0.24	0.27	0.20	0.24	0.18	0.22	0.17	0.17	0.12
20	1.676	0.005	2.424	0.008	0.78	0.51	0.53	0.35	0.44	0.29	0.39	0.26	0.37	0.24	0.27	0.18
30	1.370	0.004	2.808	0.009	0.90	0.42	0.62	0.29	0.51	0.24	0.46	0.21	0.42	0.20	0.32	0.15
40	3.433	0.011	3.493	0.011	1.12	1.05	0.77	0.72	0.64	0.59	0.57	0.53	0.53	0.49	0.40	0.37
50	4.577	0.014	3.212	0.010	1.03	1.40	0.71	0.95	0.59	0.79	0.52	0.71	0.49	0.66	0.36	0.49
60	4.658	0.014	2.564	0.008	0.82	1.42	0.56	0.97	0.47	0.81	0.42	0.72	0.39	0.67	0.29	0.50
70	5.139	0.016	2.956	0.010	0.95	1.57	0.65	1.07	0.54	0.89	0.48	0.79	0.45	0.74	0.33	0.55
80	5.959	0.018	3.605	0.012	1.16	1.82	0.79	1.24	0.66	1.03	0.59	0.92	0.55	0.85	0.41	0.64
90	6.271	0.019	3.584	0.012	1.15	1.91	0.79	1.31	0.65	1.08	0.58	0.97	0.54	0.90	0.41	0.67
100	6.669	0.020	3.647	0.012	1.17	2.03	0.80	1.39	0.67	1.15	0.59	1.03	0.55	0.96	0.41	0.71
110	7.059	0.022	3.925	0.013	1.26	2.15	0.86	1.47	0.72	1.22	0.64	1.09	0.59	1.01	0.44	0.76
120	6.703	0.021	3.559	0.012	1.15	2.04	0.78	1.40	0.65	1.16	0.58	1.03	0.54	0.96	0.40	0.72
130	6.357	0.020	3.247	0.011	1.04	1.94	0.71	1.33	0.59	1.10	0.53	0.98	0.49	0.91	0.37	0.68
140	6.045	0.019	3.002	0.010	0.97	1.84	0.66	1.26	0.55	1.04	0.49	0.93	0.45	0.87	0.34	0.65
150	5.749	0.018	2.783	0.009	0.90	1.75	0.61	1.20	0.51	0.99	0.45	0.89	0.42	0.82	0.31	0.62
160	5.418	0.017	2.524	0.008	0.81	1.65	0.56	1.13	0.46	0.94	0.41	0.84	0.38	0.78	0.29	0.58
170	5.081	0.016	2.162	0.007	0.70	1.55	0.48	1.06	0.39	0.88	0.35	0.78	0.33	0.73	0.24	0.54
180	4.839	0.015	1.882	0.006	0.61	1.48	0.41	1.01	0.34	0.84	0.31	0.75	0.28	0.69	0.21	0.52
190	4.694	0.014	1.686	0.005	0.54	1.43	0.37	0.98	0.31	0.81	0.27	0.72	0.25	0.67	0.19	0.50
200	4.563	0.014	1.551	0.005	0.50	1.39	0.34	0.95	0.28	0.79	0.25	0.70	0.23	0.65	0.18	0.49
210	4.279	0.013	1.474	0.005	0.47	1.30	0.32	0.89	0.27	0.74	0.24	0.66	0.22	0.61	0.17	0.46
220	4.091	0.013	1.592	0.005	0.51	1.25	0.35	0.85	0.29	0.71	0.26	0.63	0.24	0.59	0.18	0.44
230	3.920	0.012	1.711	0.006	0.55	1.20	0.38	0.82	0.31	0.68	0.28	0.60	0.26	0.56	0.19	0.42
240	3.838	0.012	1.866	0.006	0.60	1.17	0.41	0.80	0.34	0.66	0.30	0.59	0.28	0.55	0.21	0.41
250	4.034	0.012	2.114	0.007	0.68	1.23	0.47	0.84	0.39	0.70	0.34	0.62	0.32	0.58	0.24	0.43
260	4.249	0.013	2.371	0.008	0.76	1.30	0.52	0.89	0.43	0.73	0.39	0.66	0.36	0.61	0.27	0.46
270	4.462	0.014	2.638	0.009	0.85	1.36	0.58	0.93	0.48	0.77	0.43	0.69	0.40	0.64	0.30	0.48
280	4.478	0.014	2.709	0.009	0.87	1.37	0.60	0.93	0.49	0.77	0.44	0.69	0.41	0.64	0.31	0.48
290	4.102	0.013	2.427	0.008	0.78	1.25	0.53	0.86	0.44	0.71	0.40	0.63	0.37	0.59	0.27	0.44
300	3.767	0.012	2.134	0.007	0.69	1.15	0.47	0.79	0.39	0.65	0.35	0.58	0.32	0.54	0.24	0.40
310	3.449	0.011	1.840	0.006	0.59	1.05	0.41	0.72	0.34	0.60	0.30	0.53	0.28	0.49	0.21	0.37
320	3.138	0.010	1.543	0.005	0.50	0.96	0.34	0.65	0.28	0.54	0.25	0.48	0.23	0.45	0.17	0.34
330	2.953	0.009	1.351	0.004	0.43	0.90	0.30	0.62	0.25	0.51	0.22	0.46	0.20	0.42	0.15	0.32
340	3.102	0.010	1.425	0.005	0.46	0.95	0.31	0.65	0.26	0.54	0.23	0.48	0.22	0.44	0.16	0.33
350	3.678	0.011	1.897	0.006	0.61	1.12	0.42	0.77	0.35	0.64	0.31	0.57	0.29	0.53	0.21	0.39
360	4.179	0.013	2.300	0.007	0.74	1.27	0.51	0.87	0.42	0.72	0.37	0.64	0.35	0.60	0.26	0.45
370	4.272	0.013	2.363	0.008	0.76	1.30	0.52	0.89	0.43	0.74	0.38	0.66	0.36	0.61	0.27	0.46
380	4.371	0.013	2.422	0.008	0.78	1.33	0.53	0.91	0.44	0.76	0.39	0.67	0.37	0.63	0.27	0.47
390	4.410	0.014	2.398	0.008	0.77	1.34	0.53	0.92	0.44	0.76	0.39	0.68	0.36	0.63	0.27	0.47
400	4.636	0.014	2.588	0.008	0.83	1.41	0.57	0.97	0.47	0.80	0.42	0.72	0.39	0.66	0.29	0.50
410	5.291	0.016	3.282	0.011	1.06	1.61	0.72	1.10	0.60	0.91	0.53	0.82	0.50	0.76	0.37	0.57
420	5.948	0.018	3.984	0.013	1.28	1.81	0.88	1.24	0.73	1.03	0.65	0.92	0.60	0.85	0.45	0.64
430	5.817	0.018	3.911	0.013	1.26	1.77	0.86	1.21	0.71	1.01	0.64	0.90	0.59	0.83	0.44	0.62
440	5.456	0.017	3.617	0.012	1.16	1.66	0.80	1.14	0.66	0.94	0.59	0.84	0.55	0.78	0.41	0.58
450	5.043	0.015	3.317	0.011	1.07	1.54	0.73	1.05	0.60	0.87	0.54	0.78	0.50	0.72	0.38	0.54
460	4.617	0.014	2.961	0.010	0.95	1.41	0.65	0.96	0.54	0.80	0.48	0.71	0.45	0.66	0.33	0.49
470	4.338	0.013	2.808	0.009	0.90	1.32	0.62	0.91	0.51	0.75	0.46	0.67	0.42	0.62	0.32	0.46
480	4.048	0.012	2.653	0.009	0.85	1.23	0.58	0.84	0.48	0.70	0.43	0.62	0.40	0.58	0.30	0.43
490	3.754	0.012	2.498	0.008	0.80	1.14	0.55	0.78	0.46	0.65	0.41	0.58	0.38	0.54	0.28	0.40
500	3.463	0.011	2.382	0.008	0.77	1.06	0.52	0.72	0.43	0.60	0.39	0.53	0.36	0.50	0.27	0.37
510	3.219	0.010	2.358	0.008	0.76	0.98	0.52	0.67	0.43	0.56	0.38	0.50	0.36	0.46	0.27	0.35
520	3.006	0.009	2.382	0.008	0.77	0.92	0.52	0.63	0.43	0.52	0.39	0.46	0.36	0.43	0.27	0.32
530	2.795	0.009	2.401	0.008	0.77	0.85	0.53	0.58	0.44	0.48	0.39	0.43	0.36	0.40	0.27	0.30
540	2.516	0.008	2.415	0.008	0.78	0.77	0.53	0.52	0.44	0.43	0.39	0.39	0.37	0.36	0.27	0.27
550	2.130	0.007	2.429	0.008	0.78	0.65	0.53	0.44	0.44	0.37	0.40	0.33	0.37	0.31	0.27	0.23
560	1.826	0.006	2.493	0.008	0.80	0.56	0.55	0.38	0.45	0.32	0.41	0.28	0.38	0.26	0.28	0.20
570	1.716	0.005	2.732	0.009	0.88	0.52	0.60	0.36	0.50	0.30	0.44	0.26	0.41	0.25	0.31	0.18
580	1.655	0.005	3.058	0.010	0.98	0.50	0.67	0.35	0.56	0.29	0.50	0.26	0.46	0.24	0.35	0.18
590	1.644	0.005	3.319	0.011	1.07	0.50	0.73	0.34	0.61	0.28	0.54	0.25	0.50	0.24	0.38	0.18
600	1.620	0.005	3.527	0.011	1.13	0.49	0.78	0.34	0.64	0.28	0.57	0.25	0.53	0.23	0.40	0.17
610	1.602	0.005	3.685	0.012	1.19	0.49	0.81	0.33	0.67	0.28	0.60	0.25	0.56	0.23	0.42	0.17
620	1.633	0.005	3.862	0.013	1.24	0.50	0.85	0.34	0.70	0.28	0.63	0.25	0.58	0.23	0.44	0.18
630	1.732	0.005	4.112	0.013	1.32	0.53	0.91	0.36	0.75	0.30	0.67	0.27	0.62	0.25	0.47	0.19
640	1.825	0.006	4.357	0.014	1.40	0.56	0.96	0.38	0.79	0.32	0.71	0.28	0.66	0.26	0.49	0.20
650	1.778	0.005	4.391	0.014	1.41	0.54	0.97	0.37	0.80	0.31	0.71	0.27	0.66	0.25	0.50	0.19
660	1.328	0.004	3.916	0.013	1.26	0.40	0.86	0.28	0.71	0.23	0.64	0.20	0.59	0.19	0.44	0.14
670	1.241	0.004	3.775	0.012	1.21	0.38	0.83	0.26	0.69	0.21	0.61	0.19	0.57	0.18	0.43	0.13
680	1.183	0.004	3.715	0.012	1.20	0.36	0.82	0.25	0.68	0.20	0.60	0.18	0.56	0.17	0.42	0.13
690	1.055	0.003	3.671	0.012	1.18	0.32	0.81	0.22	0.67	0.18	0.60	0.16	0.56	0.15	0.42	0.11
700	0.912	0.003	3.574	0.012	1.15	0.28	0.79	0.19	0.65	0.16	0.58	0.14	0.54	0.13	0.40	0.10
710	0.863	0.003	3.522	0.011	1.13	0.26	0.78	0.18	0.64	0.15	0.57	0.13	0.53	0.12	0.40	0.09
720	0.849	0.003	3.485	0.011	1.12	0.26	0.77	0.18	0.64	0.15	0.57	0.13	0.53	0.12	0.39	0.09
730	0.775	0.002	3.410	0.011	1.10	0.24	0.75	0.16	0.62	0.13	0.55	0.12	0.52	0.11	0.39	0.08
740	0.946	0.003	3.549	0.011	1.14	0.29	0.78	0.20	0.65	0.16	0.58	0.15	0.54	0.14	0.40	0.10
750	1.159	0.004	3.711	0.012	1.19	0.35	0.82	0.24	0.68	0.20	0.60	0.18	0.56	0.17	0.42	0.12
760	0.922	0.003	3.370	0.011	1.08	0.28	0.74	0.19	0.61	0.16	0.55	0.14	0.51	0.13	0.38	0.10
770	0.679	0.002	2.777	0.009	0.89	0.21	0.61	0.14	0.51	0.12	0.45	0.10	0.42	0.10	0.31	0.07
780	0.689	0.002	2.689	0.009	0.87	0.21	0.59	0.14	0.49	0.12	0.44	0.11	0.41	0.10	0.30	0.07
790	0.753	0.002	2.797	0.009	0.90	0.23	0.62	0.16	0.51	0.13	0.46	0.12	0.42	0.11	0.32	0.08
800	0.999	0.003	3.001	0.010	0.97	0.30	0.66	0.21	0.55	0.17	0.49	0.15	0.45	0.14	0.34	0.11
810	0.738	0.002	2.566	0.008	0.83	0.23	0.56	0.15	0.47	0.13	0.42	0.11	0.39	0.11	0.29	0.08
820	0.859	0.003	2.532	0.008	0.81	0.26	0.56	0.18	0.46	0.15	0.41	0.13	0.38	0.12	0.29	0.09
830	1.154	0.004	2.761	0.009	0.89	0.35	0.61	0.24	0.50	0.20	0.45	0.18	0.42	0.17	0.31	0.12
840	1.305	0.004	2.843	0.009	0.91	0.40	0.63	0.27	0.52	0.23	0.46	0.20	0.43	0.19	0.32	0.14
850	0.927	0.003	2.366	0.008	0.76	0.28	0.52	0.19	0.43	0.16	0.39	0.14	0.36	0.13	0.27	0.10
860	1.035	0.003	2.454	0.008	0.79	0.32	0.54	0.22	0.45	0.18	0.40	0.16	0.37	0.15	0.28	0.11
870	1.427	0.004	2.863	0.009	0.92	0.44	0.63	0.30	0.52	0.25	0.47	0.22	0.43	0.20	0.32	0.15
880	0.982	0.003	2.428	0.008	0.78	0.30	0.53	0.20	0.44	0.17	0.40	0.15	0.37	0.14	0.27	0.11
890	1.512	0.005	2.347	0.008	0.76	0.46	0.52	0.32	0.43	0.26	0.38	0.23	0.35	0.22	0.27	0.16
900	0.710	0.002	1.232	0.004	0.40	0.22	0.27	0.15	0.22	0.12	0.20	0.11	0.19	0.10	0.14	0.08
910	0.604	0.002	1.177	0.004	0.38	0.18	0.26	0.13	0.21	0.10	0.19	0.09	0.18	0.09	0.13	0.06
920	0.830	0.003	1.603	0.005	0.52	0.25	0.35	0.17	0.29	0.14	0.26	0.13	0.24	0.12	0.18	0.09
930	0.531	0.002	1.094	0.004	0.35	0.16	0.24	0.11	0.20	0.09	0.18	0.08	0.17	0.08	0.12	0.06
940	0.760	0.002	1.194	0.004	0.38	0.23	0.26	0.16	0.22	0.13	0.19	0.12	0.18	0.11	0.14	0.08
950	0.878	0.003	1.246	0.004	0.40	0.27	0.27	0.18	0.23	0.15	0.20	0.14	0.19	0.13	0.14	0.09
960	0.973	0.003	1.266	0.004	0.41	0.30	0.28	0.20	0.23	0.17	0.21	0.15	0.19	0.14	0.14	0.10
970	0.990	0.003	1.296	0.004	0.42	0.30	0.29	0.21	0.24	0.17	0.21	0.15	0.20	0.14	0.15	0.11
980	0.906	0.003	1.280	0.004	0.41	0.28	0.28	0.19	0.23	0.16	0.21	0.14	0.19	0.13	0.14	0.10
990	0.781	0.002	1.159	0.004	0.37	0.24	0.26	0.16	0.21	0.13	0.19	0.12	0.18	0.11	0.13	0.08
1000	0.782	0.002	1.194	0.004	0.38	0.24	0.26	0.16	0.22	0.14	0.19	0.12	0.18	0.11	0.14	0.08
1010	0.775	0.002	1.226	0.004	0.39	0.24	0.27	0.16	0.22	0.13	0.20	0.12	0.19	0.11	0.14	0.08
1020	0.783	0.002	1.302	0.004	0.42	0.24	0.29	0.16	0.24	0.14	0.21	0.12	0.20	0.11	0.15	0.08
1030	0.712	0.002	1.262	0.004	0.41	0.22	0.28	0.15	0.23	0.12	0.21	0.11	0.19	0.10	0.14	0.08
1040	0.886	0.003	1.608	0.005	0.52	0.27	0.35	0.18	0.29	0.15	0.26	0.14	0.24	0.13	0.18	0.09
1050	1.141	0.004	1.899	0.006	0.61	0.35	0.42	0.24	0.35	0.20	0.31	0.18	0.29	0.16	0.21	0.12
1060	1.431	0.004	1.864	0.006	0.60	0.44	0.41	0.30	0.34	0.25	0.30	0.22	0.28	0.21	0.21	0.15
1070	1.255	0.004	1.777	0.006	0.57	0.38	0.39	0.26	0.32	0.22	0.29	0.19	0.27	0.18	0.20	0.13
1080	1.059	0.003	1.600	0.005	0.51	0.32	0.35	0.22	0.29	0.18	0.26	0.16	0.24	0.15	0.18	0.11
1090	0.864	0.003	1.449	0.005	0.47	0.26	0.32	0.18	0.26	0.15	0.24	0.13	0.22	0.12	0.16	0.09
1100	0.982	0.003	1.579	0.005	0.51	0.30	0.35	0.20	0.29	0.17	0.26	0.15	0.24	0.14	0.18	0.11
1110	0.726	0.002	1.491	0.005	0.48	0.22	0.33	0.15	0.27	0.13	0.24	0.11	0.23	0.10	0.17	0.08
1120	0.636	0.002	1.316	0.004	0.42	0.19	0.29	0.13	0.24	0.11	0.21	0.10	0.20	0.09	0.15	0.07
1130	1.177	0.004	1.740	0.006	0.56	0.36	0.38	0.25	0.32	0.20	0.28	0.18	0.26	0.17	0.20	0.13
1140	0.953	0.003	1.430	0.005	0.46	0.29	0.31	0.20	0.26	0.16	0.23	0.15	0.22	0.14	0.16	0.10
1150	0.745	0.002	1.410	0.005	0.45	0.23	0.31	0.16	0.26	0.13	0.23	0.11	0.21	0.11	0.16	0.08
1160	0.802	0.002	1.696	0.005	0.55	0.24	0.37	0.17	0.31	0.14	0.28	0.12	0.26	0.11	0.19	0.09
1170	0.966	0.003	1.837	0.006	0.59	0.29	0.40	0.20	0.33	0.17	0.30	0.15	0.28	0.14	0.21	0.10
1180	1.101	0.003	1.670	0.005	0.54	0.34	0.37	0.23	0.30	0.19	0.27	0.17	0.25	0.16	0.19	0.12
1190	1.291	0.004	1.231	0.004	0.40	0.39	0.27	0.27	0.22	0.22	0.20	0.20	0.19	0.19	0.14	0.14
1200	1.916	0.006	1.352	0.004	0.44	0.58	0.30	0.40	0.25	0.33	0.22	0.30	0.20	0.27	0.15	0.21
1210	1.570	0.005	0.779	0.003	0.25	0.48	0.17	0.33	0.14	0.27	0.13	0.24	0.12	0.23	0.09	0.17
1220	1.175	0.004	0.645	0.002	0.21	0.36	0.14	0.25	0.12	0.20	0.10	0.18	0.10	0.17	0.07	0.13
1230	1.011	0.003	0.588	0.002	0.19	0.31	0.13	0.21	0.11	0.17	0.10	0.16	0.09	0.14	0.07	0.11
1240	1.018	0.003	0.572	0.002	0.18	0.31	0.13	0.21	0.10	0.18	0.09	0.16	0.09	0.15	0.06	0.11
1250	0.917	0.003	0.525	0.002	0.17	0.28	0.12	0.19	0.10	0.16	0.09	0.14	0.08	0.13	0.06	0.10
1260	0.818	0.003	0.518	0.002	0.17	0.25	0.11	0.17	0.09	0.14	0.08	0.13	0.08	0.12	0.06	0.09
1270	0.715	0.002	0.501	0.002	0.16	0.22	0.11	0.15	0.09	0.12	0.08	0.11	0.08	0.10	0.06	0.08
1280	0.599	0.002	0.481	0.002	0.15	0.18	0.11	0.12	0.09	0.10	0.08	0.09	0.07	0.09	0.05	0.06
1290	0.516	0.002	0.469	0.002	0.15	0.16	0.10	0.11	0.09	0.09	0.08	0.08	0.07	0.07	0.05	0.06
1300	0.520	0.002	0.457	0.001	0.15	0.16	0.10	0.11	0.08	0.09	0.07	0.08	0.07	0.07	0.05	0.06
1310	0.476	0.001	0.445	0.001	0.14	0.15	0.10	0.10	0.08	0.08	0.07	0.07	0.07	0.07	0.05	0.05
1320	0.462	0.001	0.433	0.001	0.14	0.14	0.10	0.10	0.08	0.08	0.07	0.07	0.07	0.07	0.05	0.05
1330	0.448	0.001	0.421	0.001	0.14	0.14	0.09	0.09	0.08	0.08	0.07	0.07	0.06	0.06	0.05	0.05
1340	0.434	0.001	0.409	0.001	0.13	0.13	0.09	0.09	0.07	0.08	0.07	0.07	0.06	0.06	0.05	0.05
1350	0.420	0.001	0.397	0.001	0.13	0.13	0.09	0.09	0.07	0.07	0.06	0.06	0.06	0.06	0.04	0.05
1360	0.406	0.001	0.385	0.001	0.12	0.12	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06	0.04	0.04
1370	0.392	0.001	0.373	0.001	0.12	0.12	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06	0.04	0.04
1380	0.378	0.001	0.361	0.001	0.12	0.12	0.08	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04
1390	0.364	0.001	0.349	0.001	0.11	0.11	0.08	0.08	0.06	0.06	0.06	0.06	0.05	0.05	0.04	0.04
1400	0.350	0.001	0.337	0.001	0.11	0.11	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04
1410	0.336	0.001	0.325	0.001	0.10	0.10	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04
1420	0.322	0.001	0.313	0.001	0.10	0.10	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.03
1430	0.308	0.001	0.301	0.001	0.10	0.09	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.03	0.03
1440	0.294	0.001	0.289	0.001	0.09	0.09	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.03
1450	0.280	0.001	0.277	0.001	0.09	0.09	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03
1460	0.266	0.001	0.265	0.001	0.09	0.08	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03
1470	0.252	0.001	0.253	0.001	0.08	0.08	0.06	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.03	0.03
1480	0.238	0.001	0.241	0.001	0.08	0.07	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03
1490	0.224	0.001	0.229	0.001	0.07	0.07	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02
1500	0.210	0.001	0.217	0.001	0.07	0.06	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02
1510	0.196	0.001	0.205	0.001	0.07	0.06	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.02
1520	0.182	0.001	0.193	0.001	0.06	0.06	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.02
1530	0.168	0.001	0.181	0.001	0.06	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
1540	0.154	0.000	0.169	0.001	0.05	0.05	0.04	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02
1550	0.140	0.000	0.157	0.001	0.05	0.04	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
1560	0.126	0.000	0.145	0.000	0.05	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01
1570	0.112	0.000	0.133	0.000	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
1580	0.098	0.000	0.121	0.000	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01
1590	0.084	0.000	0.109	0.000	0.04	0.03	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01
1600	0.070	0.000	0.097	0.000	0.03	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01
1610	0.056	0.000	0.085	0.000	0.03	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1620	0.042	0.000	0.073	0.000	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
1630	0.028	0.000	0.061	0.000	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00
1640	0.014	0.000	0.049	0.000	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00

SD-0675	Stone Steps	0	0	Avg. Net SL	3.97	4.52	4.05	3.73	3.43	3.80						
SD-675	188.01	0	174.875	1230	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
-10	0.434	0.002308	0.606	0.003465	0.16	0.11	0.19	0.12	0.17	0.11	0.15	0.10	0.14	0.09	0.16	0.10
0	2.983	0.015866	3.417	0.01954	0.92	0.75	1.05	0.85	0.94	0.77	0.87	0.70	0.80	0.65	0.89	0.72
10	3.43	0.018244	3.368	0.019259	0.91	0.86	1.04	0.98	0.93	0.88	0.86	0.81	0.79	0.75	0.87	0.83
20	3.048	0.016212	3.046	0.017418	0.82	0.77	0.94	0.87	0.84	0.78	0.77	0.72	0.71	0.66	0.79	0.73
30	2.753	0.014643	2.687	0.015365	0.73	0.69	0.83	0.79	0.74	0.71	0.68	0.65	0.63	0.60	0.70	0.66
40	2.424	0.012893	2.359	0.01349	0.64	0.61	0.73	0.69	0.65	0.62	0.60	0.57	0.55	0.53	0.61	0.58
50	2.172	0.011553	1.99	0.01138	0.54	0.55	0.61	0.62	0.55	0.56	0.51	0.51	0.46	0.47	0.52	0.52
60	1.996	0.010616	1.779	0.010173	0.48	0.50	0.55	0.57	0.49	0.51	0.45	0.47	0.42	0.43	0.46	0.48
70	1.883	0.010015	1.629	0.009315	0.44	0.47	0.50	0.54	0.45	0.48	0.41	0.44	0.38	0.41	0.42	0.45
80	1.786	0.009499	1.433	0.008194	0.39	0.45	0.44	0.51	0.40	0.46	0.36	0.42	0.33	0.39	0.37	0.43
90	1.825	0.009707	1.341	0.007668	0.36	0.46	0.41	0.52	0.37	0.47	0.34	0.43	0.31	0.40	0.35	0.44
100	2.285	0.012154	1.634	0.009344	0.44	0.57	0.50	0.65	0.45	0.59	0.41	0.54	0.38	0.50	0.42	0.55
110	2.716	0.014446	1.922	0.010991	0.52	0.68	0.59	0.78	0.53	0.70	0.49	0.64	0.45	0.59	0.50	0.65
120	2.907	0.015462	2.048	0.011711	0.55	0.73	0.63	0.83	0.56	0.75	0.52	0.69	0.48	0.63	0.53	0.70
130	3.161	0.016813	2.177	0.012449	0.59	0.79	0.67	0.91	0.60	0.81	0.55	0.75	0.51	0.69	0.56	0.76
140	3.484	0.018531	2.313	0.013227	0.63	0.88	0.71	1.00	0.64	0.89	0.59	0.82	0.54	0.76	0.60	0.84
150	3.789	0.020153	2.427	0.013878	0.66	0.95	0.75	1.08	0.67	0.97	0.62	0.89	0.57	0.82	0.63	0.91
160	3.91	0.020797	2.362	0.013507	0.64	0.98	0.73	1.12	0.65	1.00	0.60	0.92	0.55	0.85	0.61	0.94
170	3.627	0.019292	1.935	0.011065	0.52	0.91	0.60	1.04	0.53	0.93	0.49	0.86	0.45	0.79	0.50	0.87
180	3.355	0.017845	1.548	0.008852	0.42	0.84	0.48	0.96	0.43	0.86	0.39	0.79	0.36	0.73	0.40	0.81
190	3.083	0.016398	1.235	0.007062	0.33	0.77	0.38	0.88	0.34	0.79	0.31	0.73	0.29	0.67	0.32	0.74
200	2.866	0.015244	1.084	0.006199	0.29	0.72	0.33	0.82	0.30	0.74	0.28	0.68	0.25	0.62	0.28	0.69
210	2.939	0.015632	1.211	0.006925	0.33	0.74	0.37	0.84	0.33	0.75	0.31	0.69	0.28	0.64	0.31	0.71
220	2.989	0.015898	1.279	0.007314	0.35	0.75	0.39	0.86	0.35	0.77	0.32	0.71	0.30	0.65	0.33	0.72
230	2.846	0.015137	1.188	0.006793	0.32	0.72	0.37	0.81	0.33	0.73	0.30	0.67	0.28	0.62	0.31	0.69
240	2.958	0.015733	1.343	0.00768	0.36	0.74	0.41	0.85	0.37	0.76	0.34	0.70	0.31	0.64	0.35	0.71
250	3.214	0.017095	1.626	0.009298	0.44	0.81	0.50	0.92	0.45	0.82	0.41	0.76	0.38	0.70	0.42	0.77
260	3.423	0.018206	1.843	0.010539	0.50	0.86	0.57	0.98	0.51	0.88	0.47	0.81	0.43	0.74	0.48	0.83
270	3.258	0.017329	1.674	0.009573	0.45	0.82	0.52	0.93	0.46	0.84	0.43	0.77	0.39	0.71	0.43	0.79
280	2.95	0.015691	1.347	0.007703	0.36	0.74	0.41	0.84	0.37	0.76	0.34	0.70	0.31	0.64	0.35	0.71
290	3.176	0.016893	1.535	0.008778	0.41	0.80	0.47	0.91	0.42	0.81	0.39	0.75	0.36	0.69	0.40	0.77
300	3.394	0.018052	1.704	0.009744	0.46	0.85	0.52	0.97	0.47	0.87	0.43	0.80	0.40	0.74	0.44	0.82
310	3.608	0.01919	1.86	0.010636	0.50	0.91	0.57	1.03	0.51	0.93	0.47	0.85	0.43	0.78	0.48	0.87
320	3.725	0.019813	1.937	0.011076	0.52	0.94	0.60	1.07	0.53	0.96	0.49	0.88	0.45	0.81	0.50	0.90
330	3.291	0.017504	1.566	0.008955	0.42	0.83	0.48	0.94	0.43	0.84	0.40	0.78	0.37	0.72	0.41	0.79
340	2.743	0.01459	1.12	0.006405	0.30	0.69	0.34	0.79	0.31	0.70	0.28	0.65	0.26	0.60	0.29	0.66
350	2.23	0.011861	0.721	0.004123	0.19	0.56	0.22	0.64	0.20	0.57	0.18	0.53	0.17	0.48	0.19	0.54
360	1.967	0.010462	0.574	0.003282	0.16	0.49	0.18	0.56	0.16	0.50	0.15	0.46	0.13	0.43	0.15	0.47
370	1.831	0.009739	0.518	0.002962	0.14	0.46	0.16	0.52	0.14	0.47	0.13	0.43	0.12	0.40	0.13	0.44
380	1.702	0.009053	0.474	0.002711	0.13	0.43	0.15	0.49	0.13	0.44	0.12	0.40	0.11	0.37	0.12	0.41
390	1.62	0.008617	0.477	0.002728	0.13	0.41	0.15	0.46	0.13	0.42	0.12	0.38	0.11	0.35	0.12	0.39
400	1.505	0.008005	0.479	0.002739	0.13	0.38	0.15	0.43	0.13	0.39	0.12	0.36	0.11	0.33	0.12	0.36
410	1.371	0.007292	0.509	0.002911	0.14	0.34	0.16	0.39	0.14	0.35	0.13	0.32	0.12	0.30	0.13	0.33
420	1.271	0.00676	0.57	0.003259	0.15	0.32	0.18	0.36	0.16	0.33	0.14	0.30	0.13	0.28	0.15	0.31
430	1.27	0.006755	0.698	0.003991	0.19	0.32	0.21	0.36	0.19	0.33	0.18	0.30	0.16	0.28	0.18	0.31
440	1.394	0.007414	0.913	0.005221	0.25	0.35	0.28	0.40	0.25	0.36	0.23	0.33	0.21	0.30	0.24	0.34
450	1.468	0.007808	1.113	0.006365	0.30	0.37	0.34	0.42	0.31	0.38	0.28	0.35	0.26	0.32	0.29	0.35
460	1.528	0.008127	1.306	0.007468	0.35	0.38	0.40	0.44	0.36	0.39	0.33	0.36	0.31	0.33	0.34	0.37
470	1.547	0.008228	1.494	0.008543	0.40	0.39	0.46	0.44	0.41	0.40	0.38	0.37	0.35	0.34	0.39	0.37
480	1.585	0.00843	1.654	0.009458	0.45	0.40	0.51	0.45	0.46	0.41	0.42	0.37	0.39	0.34	0.43	0.38
490	1.584	0.008425	1.817	0.01039	0.49	0.40	0.56	0.45	0.50	0.41	0.46	0.37	0.42	0.34	0.47	0.38
500	1.663	0.008845	2.115	0.012094	0.57	0.42	0.65	0.48	0.58	0.43	0.54	0.39	0.49	0.36	0.55	0.40
510	1.741	0.00926	2.418	0.013827	0.65	0.44	0.74	0.50	0.67	0.45	0.61	0.41	0.56	0.38	0.63	0.42
520	1.542	0.008202	2.352	0.01345	0.64	0.39	0.72	0.44	0.65	0.40	0.60	0.36	0.55	0.34	0.61	0.37
530	1.143	0.006079	2.02	0.011551	0.55	0.29	0.62	0.33	0.56	0.29	0.51	0.27	0.47	0.25	0.52	0.28
540	0.99	0.005266	1.978	0.011311	0.53	0.25	0.61	0.28	0.55	0.25	0.50	0.23	0.46	0.22	0.51	0.24
550	0.793	0.004218	1.983	0.01134	0.54	0.20	0.61	0.23	0.55	0.20	0.50	0.19	0.46	0.17	0.51	0.19
560	0.898	0.004776	2.342	0.013392	0.63	0.23	0.72	0.26	0.65	0.23	0.59	0.21	0.55	0.20	0.61	0.22
570	1.033	0.005494	2.745	0.015697	0.74	0.26	0.84	0.30	0.76	0.26	0.70	0.24	0.64	0.22	0.71	0.25
580	1.474	0.00784	3.276	0.018733	0.89	0.37	1.01	0.42	0.90	0.38	0.83	0.35	0.77	0.32	0.85	0.36
590	1.822	0.009691	3.306	0.018905	0.89	0.46	1.02	0.52	0.91	0.47	0.84	0.43	0.77	0.40	0.86	0.44
600	1.541	0.008196	3.109	0.017778	0.84	0.39	0.96	0.44	0.86	0.40	0.79	0.36	0.73	0.33	0.81	0.37
610	1.153	0.006133	2.907	0.016623	0.79	0.29	0.89	0.33	0.80	0.30	0.74	0.27	0.68	0.25	0.75	0.28
620	1.097	0.005835	2.819	0.01612	0.76	0.28	0.87	0.31	0.78	0.28	0.72	0.26	0.66	0.24	0.73	0.26
630	0.938	0.004989	2.341	0.013387	0.63	0.24	0.72	0.27	0.65	0.24	0.59	0.22	0.55	0.20	0.61	0.23
640	0.882	0.004691	2.226	0.012729	0.60	0.22	0.69	0.25	0.61	0.23	0.57	0.21	0.52	0.19	0.58	0.21
650	1.16	0.00617	2.173	0.012426	0.59	0.29	0.67	0.33	0.60	0.30	0.55	0.27	0.51	0.25	0.56	0.28
660	1.43	0.007606	2.158	0.01234	0.58	0.36	0.66	0.41	0.60	0.37	0.55	0.34	0.50	0.31	0.56	0.34
670	1.436	0.007638	2.119	0.012117	0.57	0.36	0.65	0.41	0.58	0.37	0.54	0.34	0.49	0.31	0.55	0.35
680	0.943	0.005016	1.856	0.010613	0.50	0.24	0.57	0.27	0.51	0.24	0.47	0.22	0.43	0.20	0.48	0.23
690	0.652	0.003468	1.523	0.008709	0.41	0.16	0.47	0.19	0.42	0.17	0.39	0.15	0.36	0.14	0.39	0.16
700	0.774	0.004117	1.373	0.007851	0.37	0.19	0.42	0.22	0.38	0.20	0.35	0.18	0.32	0.17	0.36	0.19
710	0.568	0.003021	1.288	0.007365	0.35	0.14	0.40	0.16	0.36	0.15	0.33	0.13	0.30	0.12	0.33	0.14
720	0.424	0.002255	1.107	0.00633	0.30	0.11	0.34	0.12	0.31	0.11	0.28	0.10	0.26	0.09	0.29	0.10
730	0.721	0.003835	1.083	0.006193	0.29	0.18	0.33	0.21	0.30	0.18	0.28	0.17	0.25	0.16	0.28	0.17
740	0.759	0.004037	1.049	0.005999	0.28	0.19	0.32	0.22	0.29	0.19	0.27	0.18	0.25	0.16	0.27	0.18
750	0.683	0.003633	0.762	0.004357	0.21	0.17	0.23	0.20	0.21	0.18	0.19	0.16	0.18	0.15	0.20	0.16
760	0.961	0.005111	0.94	0.005375	0.25	0.24	0.29	0.28	0.26	0.25	0.24	0.23	0.22	0.21	0.24	0.23
770	1.002	0.00533	1.234	0.007056	0.33	0.25	0.38	0.29	0.34	0.26	0.31	0.24	0.29	0.22	0.32	0.24
780	0.658	0.0035	1.345	0.007691	0.36	0.17	0.41	0.19	0.37	0.17	0.34	0.16	0.31	0.14	0.35	0.16
790	0.563	0.002995	1.383	0.007909	0.37	0.14	0.43	0.16	0.38	0.14	0.35	0.13	0.32	0.12	0.36	0.14
800	0.52	0.002766	0.876	0.005009	0.24	0.13	0.27	0.15	0.24	0.13	0.22	0.12	0.20	0.11	0.23	0.13
810	0.485	0.00258	0.704	0.004026	0.19	0.12	0.22	0.14	0.19	0.12	0.18	0.11	0.16	0.11	0.18	0.12
820	0.467	0.002484	0.783	0.004477	0.21	0.12	0.24	0.13	0.22	0.12	0.20	0.11	0.18	0.10	0.20	0.11
830	0.485	0.00258	1.168	0.006679	0.32	0.12	0.36	0.14	0.32	0.12	0.30	0.11	0.27	0.11	0.30	0.12
840	0.615	0.003271	1.266	0.007239	0.34	0.15	0.39	0.18	0.35	0.16	0.32	0.15	0.30	0.13	0.33	0.15
850	0.562	0.002989	1.12	0.006405	0.30	0.14	0.34	0.16	0.31	0.14	0.28	0.13	0.26	0.12	0.29	0.14
860	0.524	0.002787	0.87	0.004975	0.24	0.13	0.27	0.15	0.24	0.13	0.22	0.12	0.20	0.11	0.23	0.13
870	0.451	0.002399	0.843	0.004821	0.23	0.11	0.26	0.13	0.23	0.12	0.21	0.11	0.20	0.10	0.22	0.11
880	0.333	0.001771	0.807	0.004615	0.22	0.08	0.25	0.10	0.22	0.09	0.20	0.08	0.19	0.07	0.21	0.08
890	0.76	0.004042	1.454	0.008315	0.39	0.19	0.45	0.22	0.40	0.19	0.37	0.18	0.34	0.17	0.38	0.18
900	0.348	0.001851	0.931	0.005324	0.25	0.09	0.29	0.10	0.26	0.09	0.24	0.08	0.22	0.08	0.24	0.08
910	0.597	0.003175	1.135	0.00649	0.31	0.15	0.35	0.17	0.31	0.15	0.29	0.14	0.27	0.13	0.29	0.14
920	0.964	0.005127	1.312	0.007503	0.35	0.24	0.40	0.28	0.36	0.25	0.33	0.23	0.31	0.21	0.34	0.23
930	1.392	0.007404	1.67	0.00955	0.45	0.35	0.51	0.40	0.46	0.36	0.42	0.33	0.39	0.30	0.43	0.34
940	1.405	0.007473	1.602	0.009161	0.43	0.35	0.49	0.40	0.44	0.36	0.41	0.33	0.37	0.31	0.42	0.34
950	1.29	0.006861	1.448	0.00828	0.39	0.32	0.45	0.37	0.40	0.33	0.37	0.30	0.34	0.28	0.38	0.31
960	1.102	0.005861	1.13	0.006462	0.31	0.28	0.35	0.32	0.31	0.28	0.29	0.26	0.26	0.24	0.29	0.27
970	1.122	0.005968	0.81	0.004632	0.22	0.28	0.25	0.32	0.22	0.29	0.21	0.27	0.19	0.24	0.21	0.27
980	1.198	0.006372	0.653	0.003734	0.18	0.30	0.20	0.34	0.18	0.31	0.17	0.28	0.15	0.26	0.17	0.29
990	1.046	0.005564	0.697	0.003986	0.19	0.26	0.21	0.30	0.19	0.27	0.18	0.25	0.16	0.23	0.18	0.25
1000	1.078	0.005734	0.847	0.004843	0.23	0.27	0.26	0.31	0.23	0.28	0.22	0.25	0.20	0.23	0.22	0.26
1010	0.981	0.005218	0.89	0.005089	0.24	0.25	0.27	0.28	0.25	0.25	0.23	0.23	0.21	0.21	0.23	0.24
1020	0.871	0.004633	0.886	0.005066	0.24	0.22	0.27	0.25	0.24	0.22	0.22	0.21	0.21	0.19	0.23	0.21
1030	0.895	0.00476	1.006	0.005753	0.27	0.22	0.31	0.26	0.28	0.23	0.26	0.21	0.23	0.19	0.26	0.22
1040	0.948	0.005042	1.235	0.007062	0.33	0.24	0.38	0.27	0.34	0.24	0.31	0.22	0.29	0.21	0.32	0.23
1050	1.046	0.005564	1.528	0.008738	0.41	0.26	0.47	0.30	0.42	0.27	0.39	0.25	0.36	0.23	0.40	0.25
1060	1.033	0.005494	1.624	0.009287	0.44	0.26	0.50	0.30	0.45	0.26	0.41	0.24	0.38	0.22	0.42	0.25
1070	0.759	0.004037	1.303	0.007451	0.35	0.19	0.40	0.22	0.36	0.19	0.33	0.18	0.30	0.16	0.34	0.18
1080	0.872	0.004638	1.273	0.007279	0.34	0.22	0.39	0.25	0.35	0.22	0.32	0.21	0.30	0.19	0.33	0.21
1090	0.473	0.002516	0.738	0.00422	0.20	0.12	0.23	0.14	0.20	0.12	0.19	0.11	0.17	0.10	0.19	0.11
1100	0.455	0.00242	0.549	0.003139	0.15	0.11	0.17	0.13	0.15	0.12	0.14	0.11	0.13	0.10	0.14	0.11
1110	0.425	0.002261	0.509	0.002911	0.14	0.11	0.16	0.12	0.14	0.11	0.13	0.10	0.12	0.09	0.13	0.10
1120	0.395	0.002101	0.469	0.002682	0.13	0.10	0.14	0.11	0.13	0.10	0.12	0.09	0.11	0.09	0.12	0.10
1130	0.365	0.001941	0.429	0.002453	0.12	0.09	0.13	0.10	0.12	0.09	0.11	0.09	0.10	0.08	0.11	0.09
1140	0.335	0.001782	0.389	0.002224	0.11	0.08	0.12	0.10	0.11	0.09	0.10	0.08	0.09	0.07	0.10	0.08
1150	0.305	0.001622	0.349	0.001996	0.09	0.08	0.11	0.09	0.10	0.08	0.09	0.07	0.08	0.07	0.09	0.07
1160	0.275	0.001463	0.309	0.001767	0.08	0.07	0.10	0.08	0.09	0.07	0.08	0.06	0.07	0.06	0.08	0.07
1170	0.245	0.001303	0.269	0.001538	0.07	0.06	0.08	0.07	0.07	0.06	0.07	0.06	0.06	0.05	0.07	0.06
1180	0.215	0.001144	0.229	0.00131	0.06	0.05	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.06	0.05
1190	0.185	0.000984	0.189	0.001081	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.05	0.04
1200	0.155	0.000824	0.149	0.000852	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.04
1210	0.125	0.000665	0.109	0.000623	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
1220	0.095	0.000505	0.069	0.000395	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1230	0.065	0.000346	0.029	0.000166	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.02

SD-0680	Beacons	0	0	Avg. Net Sl	0.05	1.29	1.81	2.01	2.08	2.85						
SD-680	269.71	0	210.742	1357			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.030	0.000	0.023	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	6.439	0.024	6.588	0.031	0.02	0.01	0.48	0.37	0.67	0.51	0.75	0.57	0.77	0.59	1.06	0.81
20	6.008	0.022	6.548	0.031	0.02	0.01	0.48	0.34	0.67	0.48	0.74	0.53	0.77	0.55	1.05	0.76
30	5.776	0.021	5.975	0.028	0.02	0.01	0.43	0.33	0.61	0.46	0.68	0.51	0.70	0.53	0.96	0.73
40	5.631	0.021	5.842	0.028	0.02	0.01	0.43	0.32	0.60	0.45	0.66	0.50	0.69	0.52	0.94	0.71
50	5.291	0.020	5.651	0.027	0.01	0.01	0.41	0.30	0.58	0.42	0.64	0.47	0.66	0.49	0.91	0.67
60	5.073	0.019	5.112	0.024	0.01	0.01	0.37	0.29	0.52	0.41	0.58	0.45	0.60	0.47	0.82	0.64
70	4.867	0.018	4.607	0.022	0.01	0.01	0.34	0.28	0.47	0.39	0.52	0.43	0.54	0.45	0.74	0.61
80	4.740	0.018	4.172	0.020	0.01	0.01	0.30	0.27	0.43	0.38	0.47	0.42	0.49	0.44	0.67	0.60
90	4.701	0.017	3.913	0.019	0.01	0.01	0.28	0.27	0.40	0.38	0.44	0.42	0.46	0.43	0.63	0.59
100	4.587	0.017	3.725	0.018	0.01	0.01	0.27	0.26	0.38	0.37	0.42	0.41	0.44	0.42	0.60	0.58
110	4.312	0.016	3.366	0.016	0.01	0.01	0.24	0.25	0.34	0.34	0.38	0.38	0.40	0.40	0.54	0.54
120	4.130	0.015	3.084	0.015	0.01	0.01	0.22	0.23	0.32	0.33	0.35	0.37	0.36	0.38	0.50	0.52
130	4.056	0.015	2.950	0.014	0.01	0.01	0.21	0.23	0.30	0.32	0.34	0.36	0.35	0.37	0.48	0.51
140	4.007	0.015	2.888	0.014	0.01	0.01	0.21	0.23	0.30	0.32	0.33	0.36	0.34	0.37	0.47	0.50
150	3.948	0.015	2.845	0.013	0.01	0.01	0.21	0.22	0.29	0.32	0.32	0.35	0.33	0.36	0.46	0.50
160	3.889	0.014	2.824	0.013	0.01	0.01	0.21	0.22	0.29	0.31	0.32	0.35	0.33	0.36	0.45	0.49
170	3.879	0.014	2.840	0.013	0.01	0.01	0.21	0.22	0.29	0.31	0.32	0.34	0.33	0.36	0.46	0.49
180	3.903	0.014	2.864	0.014	0.01	0.01	0.21	0.22	0.29	0.31	0.33	0.35	0.34	0.36	0.46	0.49
190	3.952	0.015	2.898	0.014	0.01	0.01	0.21	0.22	0.30	0.32	0.33	0.35	0.34	0.36	0.47	0.50
200	4.007	0.015	2.926	0.014	0.01	0.01	0.21	0.23	0.30	0.32	0.33	0.36	0.34	0.37	0.47	0.50
210	3.967	0.015	2.848	0.014	0.01	0.01	0.21	0.23	0.29	0.32	0.32	0.35	0.33	0.36	0.46	0.50
220	3.817	0.014	2.656	0.013	0.01	0.01	0.19	0.22	0.27	0.31	0.30	0.34	0.31	0.35	0.43	0.48
230	3.686	0.014	2.462	0.012	0.01	0.01	0.18	0.21	0.25	0.29	0.28	0.33	0.29	0.34	0.40	0.46
240	3.555	0.013	2.270	0.011	0.01	0.01	0.17	0.20	0.23	0.28	0.26	0.32	0.27	0.33	0.37	0.45
250	3.428	0.013	2.076	0.010	0.01	0.01	0.15	0.19	0.21	0.27	0.24	0.30	0.24	0.31	0.33	0.43
260	3.301	0.012	1.880	0.009	0.00	0.01	0.14	0.19	0.19	0.26	0.21	0.29	0.22	0.30	0.30	0.42
270	3.181	0.012	1.680	0.008	0.00	0.01	0.12	0.18	0.17	0.25	0.19	0.28	0.20	0.29	0.27	0.40
280	3.267	0.012	1.686	0.008	0.00	0.01	0.12	0.19	0.17	0.26	0.19	0.29	0.20	0.30	0.27	0.41
290	3.500	0.013	1.848	0.009	0.00	0.01	0.13	0.20	0.19	0.28	0.21	0.31	0.22	0.32	0.30	0.44
300	3.760	0.014	2.081	0.010	0.01	0.01	0.15	0.21	0.21	0.30	0.24	0.33	0.24	0.35	0.34	0.47
310	3.746	0.014	2.053	0.010	0.01	0.01	0.15	0.21	0.21	0.30	0.23	0.33	0.24	0.34	0.33	0.47
320	3.274	0.012	1.576	0.007	0.00	0.01	0.11	0.19	0.16	0.26	0.18	0.29	0.19	0.30	0.25	0.41
330	3.014	0.011	1.327	0.006	0.00	0.01	0.10	0.17	0.14	0.24	0.15	0.27	0.16	0.28	0.21	0.38
340	3.683	0.014	2.024	0.010	0.01	0.01	0.15	0.21	0.21	0.29	0.23	0.33	0.24	0.34	0.33	0.46
350	3.063	0.011	1.427	0.007	0.00	0.01	0.10	0.17	0.15	0.24	0.16	0.27	0.17	0.28	0.23	0.39
360	2.517	0.009	0.871	0.004	0.00	0.01	0.06	0.14	0.09	0.20	0.10	0.22	0.10	0.23	0.14	0.32
370	2.475	0.009	0.761	0.004	0.00	0.00	0.06	0.14	0.08	0.20	0.09	0.22	0.09	0.23	0.12	0.31
380	2.788	0.010	1.023	0.005	0.00	0.01	0.07	0.16	0.10	0.22	0.12	0.25	0.12	0.26	0.16	0.35
390	3.154	0.012	1.332	0.006	0.00	0.01	0.10	0.18	0.14	0.25	0.15	0.28	0.16	0.29	0.21	0.40
400	3.505	0.013	1.595	0.008	0.00	0.01	0.12	0.20	0.16	0.28	0.18	0.31	0.19	0.32	0.26	0.44
410	3.843	0.014	1.842	0.009	0.00	0.01	0.13	0.22	0.19	0.31	0.21	0.34	0.22	0.35	0.30	0.48
420	4.046	0.015	1.984	0.009	0.01	0.01	0.14	0.23	0.20	0.32	0.23	0.36	0.23	0.37	0.32	0.51
430	3.971	0.015	1.921	0.009	0.00	0.01	0.14	0.23	0.20	0.32	0.22	0.35	0.23	0.36	0.31	0.50
440	3.890	0.014	1.846	0.009	0.00	0.01	0.13	0.22	0.19	0.31	0.21	0.35	0.22	0.36	0.30	0.49
450	3.783	0.014	1.782	0.008	0.00	0.01	0.13	0.22	0.18	0.30	0.20	0.34	0.21	0.35	0.29	0.48
460	3.621	0.013	1.719	0.008	0.00	0.01	0.13	0.21	0.18	0.29	0.20	0.32	0.20	0.33	0.28	0.46
470	3.458	0.013	1.654	0.008	0.00	0.01	0.12	0.20	0.17	0.28	0.19	0.31	0.19	0.32	0.27	0.44
480	3.438	0.013	1.692	0.008	0.00	0.01	0.12	0.20	0.17	0.27	0.19	0.31	0.20	0.32	0.27	0.43
490	3.373	0.013	1.724	0.008	0.00	0.01	0.13	0.19	0.18	0.27	0.20	0.30	0.20	0.31	0.28	0.42
500	3.047	0.011	1.673	0.008	0.00	0.01	0.12	0.17	0.17	0.24	0.19	0.27	0.20	0.28	0.27	0.38
510	2.745	0.010	1.761	0.008	0.00	0.01	0.13	0.16	0.18	0.22	0.20	0.24	0.21	0.25	0.28	0.35
520	2.599	0.010	1.945	0.009	0.01	0.01	0.14	0.15	0.20	0.21	0.22	0.23	0.23	0.24	0.31	0.33
530	2.178	0.008	1.783	0.008	0.00	0.00	0.13	0.12	0.18	0.17	0.20	0.19	0.21	0.20	0.29	0.27
540	1.856	0.007	1.508	0.007	0.00	0.00	0.11	0.11	0.15	0.15	0.17	0.16	0.18	0.17	0.24	0.23
550	1.694	0.006	1.593	0.008	0.00	0.00	0.12	0.10	0.16	0.14	0.18	0.15	0.19	0.16	0.26	0.21
560	2.406	0.009	2.000	0.009	0.01	0.00	0.15	0.14	0.20	0.19	0.23	0.21	0.23	0.22	0.32	0.30
570	2.532	0.009	2.045	0.010	0.01	0.01	0.15	0.14	0.21	0.20	0.23	0.22	0.24	0.23	0.33	0.32
580	2.378	0.009	1.988	0.009	0.01	0.00	0.14	0.14	0.20	0.19	0.23	0.21	0.23	0.22	0.32	0.30
590	1.942	0.007	1.792	0.009	0.00	0.00	0.13	0.11	0.18	0.16	0.20	0.17	0.21	0.18	0.29	0.24
600	1.874	0.007	1.865	0.009	0.00	0.00	0.14	0.11	0.19	0.15	0.21	0.17	0.22	0.17	0.30	0.24
610	1.934	0.007	1.859	0.009	0.00	0.00	0.14	0.11	0.19	0.15	0.21	0.17	0.22	0.18	0.30	0.24
620	2.065	0.008	1.517	0.007	0.00	0.00	0.11	0.12	0.16	0.17	0.17	0.18	0.18	0.19	0.24	0.26
630	2.251	0.008	1.772	0.008	0.00	0.00	0.13	0.13	0.18	0.18	0.20	0.20	0.21	0.21	0.29	0.28
640	2.138	0.008	1.193	0.006	0.00	0.00	0.09	0.12	0.12	0.17	0.14	0.19	0.14	0.20	0.19	0.27
650	2.007	0.007	1.164	0.006	0.00	0.00	0.08	0.11	0.12	0.16	0.13	0.18	0.14	0.18	0.19	0.25
660	2.416	0.009	1.748	0.008	0.00	0.00	0.13	0.14	0.18	0.19	0.20	0.21	0.21	0.22	0.28	0.30
670	2.641	0.010	1.764	0.008	0.00	0.01	0.13	0.15	0.18	0.21	0.20	0.23	0.21	0.24	0.28	0.33
680	2.367	0.009	1.423	0.007	0.00	0.00	0.10	0.13	0.15	0.19	0.16	0.21	0.17	0.22	0.23	0.30
690	2.785	0.010	1.484	0.007	0.00	0.01	0.11	0.16	0.15	0.22	0.17	0.25	0.17	0.26	0.24	0.35
700	1.671	0.006	1.062	0.005	0.00	0.00	0.08	0.10	0.11	0.13	0.12	0.15	0.12	0.15	0.17	0.21
710	1.797	0.007	2.164	0.010	0.01	0.00	0.16	0.10	0.22	0.14	0.25	0.16	0.25	0.16	0.35	0.23
720	1.634	0.006	2.247	0.011	0.01	0.00	0.16	0.09	0.23	0.13	0.26	0.15	0.26	0.15	0.36	0.21
730	1.350	0.005	1.860	0.009	0.00	0.00	0.14	0.08	0.19	0.11	0.21	0.12	0.22	0.12	0.30	0.17
740	0.823	0.003	1.251	0.006	0.00	0.00	0.09	0.05	0.13	0.07	0.14	0.07	0.15	0.08	0.20	0.10
750	0.680	0.003	1.165	0.006	0.00	0.00	0.08	0.04	0.12	0.05	0.13	0.06	0.14	0.06	0.19	0.09
760	0.670	0.002	1.555	0.007	0.00	0.00	0.11	0.04	0.16	0.05	0.18	0.06	0.18	0.06	0.25	0.08
770	0.660	0.002	1.010	0.005	0.00	0.00	0.07	0.04	0.10	0.05	0.11	0.06	0.12	0.06	0.16	0.08
780	0.650	0.002	0.994	0.005	0.00	0.00	0.07	0.04	0.10	0.05	0.11	0.06	0.12	0.06	0.16	0.08
790	0.640	0.002	0.978	0.005	0.00	0.00	0.07	0.04	0.10	0.05	0.11	0.06	0.11	0.06	0.16	0.08
800	0.630	0.002	0.962	0.005	0.00	0.00	0.07	0.04	0.10	0.05	0.11	0.06	0.11	0.06	0.15	0.08
810	0.620	0.002	0.946	0.004	0.00	0.00	0.07	0.04	0.10	0.05	0.11	0.06	0.11	0.06	0.15	0.08
820	0.610	0.002	0.930	0.004	0.00	0.00	0.07	0.03	0.10	0.05	0.11	0.05	0.11	0.06	0.15	0.08
830	0.600	0.002	0.914	0.004	0.00	0.00	0.07	0.03	0.09	0.05	0.10	0.05	0.11	0.06	0.15	0.08
840	0.590	0.002	0.898	0.004	0.00	0.00	0.07	0.03	0.09	0.05	0.10	0.05	0.11	0.05	0.14	0.07
850	0.580	0.002	0.882	0.004	0.00	0.00	0.06	0.03	0.09	0.05	0.10	0.05	0.10	0.05	0.14	0.07
860	0.570	0.002	0.866	0.004	0.00	0.00	0.06	0.03	0.09	0.05	0.10	0.05	0.10	0.05	0.14	0.07
870	0.560	0.002	0.850	0.004	0.00	0.00	0.06	0.03	0.09	0.04	0.10	0.05	0.10	0.05	0.14	0.07
880	0.550	0.002	0.834	0.004	0.00	0.00	0.06	0.03	0.09	0.04	0.09	0.05	0.10	0.05	0.13	0.07
890	0.540	0.002	0.818	0.004	0.00	0.00	0.06	0.03	0.08	0.04	0.09	0.05	0.10	0.05	0.13	0.07
900	0.530	0.002	0.802	0.004	0.00	0.00	0.06	0.03	0.08	0.04	0.09	0.05	0.09	0.05	0.13	0.07
910	0.520	0.002	0.786	0.004	0.00	0.00	0.06	0.03	0.08	0.04	0.09	0.05	0.09	0.05	0.13	0.07
920	0.510	0.002	0.770	0.004	0.00	0.00	0.06	0.03	0.08	0.04	0.09	0.05	0.09	0.05	0.12	0.06
930	0.500	0.002	0.754	0.004	0.00	0.00	0.05	0.03	0.08	0.04	0.09	0.04	0.09	0.05	0.12	0.06
940	0.490	0.002	0.738	0.004	0.00	0.00	0.05	0.03	0.08	0.04	0.08	0.04	0.09	0.04	0.12	0.06
950	0.480	0.002	0.722	0.003	0.00	0.00	0.05	0.03	0.07	0.04	0.08	0.04	0.08	0.04	0.12	0.06
960	0.470	0.002	0.706	0.003	0.00	0.00	0.05	0.03	0.07	0.04	0.08	0.04	0.08	0.04	0.11	0.06
970	0.460	0.002	0.690	0.003	0.00	0.00	0.05	0.03	0.07	0.04	0.08	0.04	0.08	0.04	0.11	0.06
980	0.450	0.002	0.674	0.003	0.00	0.00	0.05	0.03	0.07	0.04	0.08	0.04	0.08	0.04	0.11	0.06
990	0.440	0.002	0.658	0.003	0.00	0.00	0.05	0.03	0.07	0.04	0.07	0.04	0.08	0.04	0.11	0.06
1000	0.430	0.002	0.642	0.003	0.00	0.00	0.05	0.02	0.07	0.03	0.07	0.04	0.08	0.04	0.10	0.05
1010	0.420	0.002	0.626	0.003	0.00	0.00	0.05	0.02	0.06	0.03	0.07	0.04	0.07	0.04	0.10	0.05
1020	0.410	0.002	0.610	0.003	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.04	0.07	0.04	0.10	0.05
1030	0.400	0.001	0.594	0.003	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.04	0.07	0.04	0.10	0.05
1040	0.390	0.001	0.578	0.003	0.00	0.00	0.04	0.02	0.06	0.03	0.07	0.03	0.07	0.04	0.09	0.05
1050	0.380	0.001	0.562	0.003	0.00	0.00	0.04	0.02	0.06	0.03	0.06	0.03	0.07	0.03	0.09	0.05
1060	0.370	0.001	0.546	0.003	0.00	0.00	0.04	0.02	0.06	0.03	0.06	0.03	0.06	0.03	0.09	0.05
1070	0.360	0.001	0.530	0.003	0.00	0.00	0.04	0.02	0.05	0.03	0.06	0.03	0.06	0.03	0.09	0.05
1080	0.350	0.001	0.514	0.002	0.00	0.00	0.04	0.02	0.05	0.03	0.06	0.03	0.06	0.03	0.08	0.04
1090	0.340	0.001	0.498	0.002	0.00	0.00	0.04	0.02	0.05	0.03	0.06	0.03	0.06	0.03	0.08	0.04
1100	0.330	0.001	0.482	0.002	0.00	0.00	0.04	0.02	0.05	0.03	0.05	0.03	0.06	0.03	0.08	0.04
1110	0.320	0.001	0.466	0.002	0.00	0.00	0.03	0.02	0.05	0.03	0.05	0.03	0.05	0.03	0.08	0.04
1120	0.310	0.001	0.450	0.002	0.00	0.00	0.03	0.02	0.05	0.02	0.05	0.03	0.05	0.03	0.07	0.04
1130	0.300	0.001	0.434	0.002	0.00	0.00	0.03	0.02	0.04	0.02	0.05	0.03	0.05	0.03	0.07	0.04
1140	0.290	0.001	0.418	0.002	0.00	0.00	0.03	0.02	0.04	0.02	0.05	0.03	0.05	0.03	0.07	0.04
1150	0.280	0.001	0.402	0.002	0.00	0.00	0.03	0.02	0.04	0.02	0.05	0.02	0.05	0.03	0.06	0.04
1160	0.270	0.001	0.386	0.002	0.00	0.00	0.03	0.02	0.04	0.02	0.04	0.02	0.05	0.02	0.06	0.03
1170	0.260	0.001	0.370	0.002	0.00	0.00	0.03	0.01	0.04	0.02	0.04	0.02	0.04	0.02	0.06	0.03
1180	0.250	0.001	0.354	0.002	0.00	0.00	0.03	0.01	0.04	0.02	0.04	0.02	0.04	0.02	0.06	0.03
1190	0.240	0.001	0.338	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.02	0.05	0.03
1200	0.230	0.001	0.322	0.002	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.02	0.04	0.02	0.05	0.03
1210	0.220	0.001	0.306	0.001	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02	0.05	0.03
1220	0.210	0.001	0.290	0.001	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.05	0.03
1230	0.200	0.001	0.274	0.001	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.03
1240	0.190	0.001	0.258	0.001	0.00	0.00	0.02	0.01	0.03	0.02	0.03	0.02	0.03	0.02	0.04	0.02
1250	0.180	0.001	0.242	0.001	0.00	0.00	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02
1260	0.170	0.001	0.226	0.001	0.00	0.00	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.02	0.04	0.02
1270	0.160	0.001	0.210	0.001	0.00	0.00	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1280	0.150	0.001	0.194	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1290	0.140	0.001	0.178	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1300	0.130	0.000	0.162	0.001	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.03	0.02
1310	0.120	0.000	0.146	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.02
1320	0.110	0.000	0.130	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01
1330	0.100	0.000	0.114	0.001	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1340	0.090	0.000	0.098	0.000	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
1350	0.080	0.000	0.082	0.000	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1360	0.070	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

SD-0690	Leucadia	0	0	Avg. Net Sl	-0.11	-0.07	0.41	0.73	0.96	0.13						
SD-690	98.1278	0	105.601	1470	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	2.782	0.028	3.016	0.029	0.00	0.00	0.00	0.00	0.14	0.14	0.25	0.25	0.33	0.33	0.04	0.04
10	2.570	0.026	3.304	0.031	0.00	0.00	0.00	0.00	0.15	0.13	0.27	0.23	0.36	0.30	0.05	0.04
20	3.050	0.031	3.749	0.036	0.00	0.00	0.00	0.00	0.17	0.15	0.31	0.27	0.41	0.36	0.05	0.05
30	2.836	0.029	3.376	0.032	0.00	0.00	0.00	0.00	0.16	0.14	0.28	0.25	0.37	0.33	0.05	0.04
40	2.546	0.026	2.914	0.028	0.00	0.00	0.00	0.00	0.14	0.13	0.24	0.23	0.32	0.30	0.04	0.04
50	2.130	0.022	2.434	0.023	0.00	0.00	0.00	0.00	0.11	0.11	0.20	0.19	0.26	0.25	0.03	0.03
60	1.736	0.018	2.024	0.019	0.00	0.00	0.00	0.00	0.09	0.09	0.17	0.15	0.22	0.20	0.03	0.03
70	1.302	0.013	1.549	0.015	0.00	0.00	0.00	0.00	0.07	0.07	0.13	0.12	0.17	0.15	0.02	0.02
80	1.020	0.010	1.179	0.011	0.00	0.00	0.00	0.00	0.05	0.05	0.10	0.09	0.13	0.12	0.02	0.02
90	0.912	0.009	0.963	0.009	0.00	0.00	0.00	0.00	0.04	0.05	0.08	0.08	0.10	0.11	0.01	0.01
100	0.802	0.008	0.777	0.007	0.00	0.00	0.00	0.00	0.04	0.04	0.06	0.07	0.08	0.09	0.01	0.01
110	0.661	0.007	0.592	0.006	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06	0.06	0.08	0.01	0.01
120	0.646	0.007	0.547	0.005	0.00	0.00	0.00	0.00	0.03	0.03	0.04	0.06	0.06	0.08	0.01	0.01
130	0.665	0.007	0.533	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.06	0.06	0.08	0.01	0.01
140	0.652	0.007	0.506	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.06	0.05	0.08	0.01	0.01
150	0.778	0.008	0.612	0.006	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.07	0.07	0.09	0.01	0.01
160	0.926	0.009	0.704	0.007	0.00	0.00	0.00	0.00	0.03	0.05	0.06	0.08	0.08	0.11	0.01	0.01
170	1.085	0.011	0.798	0.008	0.00	0.00	0.00	0.00	0.04	0.05	0.07	0.10	0.09	0.13	0.01	0.02
180	1.134	0.012	0.805	0.008	0.00	0.00	0.00	0.00	0.04	0.06	0.07	0.10	0.09	0.13	0.01	0.02
190	1.126	0.011	0.756	0.007	0.00	0.00	0.00	0.00	0.04	0.06	0.06	0.10	0.08	0.13	0.01	0.02
200	1.153	0.012	0.714	0.007	0.00	0.00	0.00	0.00	0.03	0.06	0.06	0.10	0.08	0.13	0.01	0.02
210	1.213	0.012	0.680	0.006	0.00	0.00	0.00	0.00	0.03	0.06	0.06	0.11	0.07	0.14	0.01	0.02
220	1.219	0.012	0.613	0.006	0.00	0.00	0.00	0.00	0.03	0.06	0.05	0.11	0.07	0.14	0.01	0.02
230	1.361	0.014	0.710	0.007	0.00	0.00	0.00	0.00	0.03	0.07	0.06	0.12	0.08	0.16	0.01	0.02
240	1.512	0.015	0.818	0.008	0.00	0.00	0.00	0.00	0.04	0.08	0.07	0.13	0.09	0.18	0.01	0.02
250	1.717	0.017	1.010	0.010	0.00	0.00	0.00	0.00	0.05	0.09	0.08	0.15	0.11	0.20	0.01	0.03
260	1.942	0.020	1.264	0.012	0.00	0.00	0.00	0.00	0.06	0.10	0.10	0.17	0.14	0.23	0.02	0.03
270	1.865	0.019	1.226	0.012	0.00	0.00	0.00	0.00	0.06	0.09	0.10	0.16	0.13	0.22	0.02	0.03
280	1.466	0.015	0.848	0.008	0.00	0.00	0.00	0.00	0.04	0.07	0.07	0.13	0.09	0.17	0.01	0.02
290	1.108	0.011	0.486	0.005	0.00	0.00	0.00	0.00	0.02	0.06	0.04	0.10	0.05	0.13	0.01	0.02
300	1.250	0.013	0.632	0.006	0.00	0.00	0.00	0.00	0.03	0.06	0.05	0.11	0.07	0.15	0.01	0.02
310	1.437	0.015	0.842	0.008	0.00	0.00	0.00	0.00	0.04	0.07	0.07	0.13	0.09	0.17	0.01	0.02
320	1.587	0.016	1.059	0.010	0.00	0.00	0.00	0.00	0.05	0.08	0.09	0.14	0.12	0.19	0.02	0.02
330	1.702	0.017	1.287	0.012	0.00	0.00	0.00	0.00	0.06	0.09	0.11	0.15	0.14	0.20	0.02	0.03
340	1.748	0.018	1.454	0.014	0.00	0.00	0.00	0.00	0.07	0.09	0.12	0.15	0.16	0.20	0.02	0.03
350	1.750	0.018	1.572	0.015	0.00	0.00	0.00	0.00	0.07	0.09	0.13	0.15	0.17	0.20	0.02	0.03
360	1.759	0.018	1.681	0.016	0.00	0.00	0.00	0.00	0.08	0.09	0.14	0.16	0.18	0.21	0.02	0.03
370	1.649	0.017	1.697	0.016	0.00	0.00	0.00	0.00	0.08	0.08	0.14	0.15	0.18	0.19	0.02	0.03
380	1.349	0.014	1.569	0.015	0.00	0.00	0.00	0.00	0.07	0.07	0.13	0.12	0.17	0.16	0.02	0.02
390	1.019	0.010	1.427	0.014	0.00	0.00	0.00	0.00	0.07	0.05	0.12	0.09	0.16	0.12	0.02	0.02
400	0.832	0.008	1.364	0.013	0.00	0.00	0.00	0.00	0.06	0.04	0.11	0.07	0.15	0.10	0.02	0.01
410	0.794	0.008	1.349	0.013	0.00	0.00	0.00	0.00	0.06	0.04	0.11	0.07	0.15	0.09	0.02	0.01
420	0.697	0.007	1.270	0.012	0.00	0.00	0.00	0.00	0.06	0.03	0.10	0.06	0.14	0.08	0.02	0.01
430	0.607	0.006	1.172	0.011	0.00	0.00	0.00	0.00	0.05	0.03	0.10	0.05	0.13	0.07	0.02	0.01
440	0.521	0.005	1.061	0.010	0.00	0.00	0.00	0.00	0.05	0.03	0.09	0.05	0.12	0.06	0.02	0.01
450	0.398	0.004	0.889	0.008	0.00	0.00	0.00	0.00	0.04	0.02	0.07	0.04	0.10	0.05	0.01	0.01
460	0.255	0.003	0.658	0.006	0.00	0.00	0.00	0.00	0.03	0.01	0.05	0.02	0.07	0.03	0.01	0.00
470	0.472	0.005	0.785	0.007	0.00	0.00	0.00	0.00	0.04	0.02	0.06	0.04	0.09	0.06	0.01	0.01
480	0.729	0.007	0.949	0.009	0.00	0.00	0.00	0.00	0.04	0.04	0.08	0.06	0.10	0.09	0.01	0.01
490	0.586	0.006	0.712	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.08	0.07	0.01	0.01
500	0.579	0.006	0.638	0.006	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05	0.07	0.07	0.01	0.01
510	0.686	0.007	0.703	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.06	0.08	0.08	0.01	0.01
520	0.704	0.007	0.678	0.006	0.00	0.00	0.00	0.00	0.03	0.04	0.06	0.06	0.07	0.08	0.01	0.01
530	0.691	0.007	0.612	0.006	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06	0.07	0.08	0.01	0.01
540	0.709	0.007	0.599	0.006	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.06	0.07	0.08	0.01	0.01
550	0.742	0.008	0.647	0.006	0.00	0.00	0.00	0.00	0.03	0.04	0.05	0.07	0.07	0.09	0.01	0.01
560	0.599	0.006	0.518	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.01	0.01
570	0.579	0.006	0.531	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.01	0.01
580	0.531	0.005	0.487	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.05	0.06	0.01	0.01
590	0.601	0.006	0.534	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.01	0.01
600	0.594	0.006	0.523	0.005	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.01	0.01
610	0.588	0.006	0.548	0.005	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05	0.06	0.07	0.01	0.01
620	0.581	0.006	0.814	0.008	0.00	0.00	0.00	0.00	0.04	0.03	0.07	0.05	0.09	0.07	0.01	0.01
630	0.574	0.006	0.805	0.008	0.00	0.00	0.00	0.00	0.04	0.03	0.07	0.05	0.09	0.07	0.01	0.01
640	0.568	0.006	0.795	0.008	0.00	0.00	0.00	0.00	0.04	0.03	0.07	0.05	0.09	0.07	0.01	0.01
650	0.561	0.006	0.786	0.007	0.00	0.00	0.00	0.00	0.04	0.03	0.06	0.05	0.09	0.07	0.01	0.01
660	0.554	0.006	0.776	0.007	0.00	0.00	0.00	0.00	0.04	0.03	0.06	0.05	0.08	0.06	0.01	0.01
670	0.547	0.006	0.767	0.007	0.00	0.00	0.00	0.00	0.04	0.03	0.06	0.05	0.08	0.06	0.01	0.01
680	0.541	0.006	0.758	0.007	0.00	0.00	0.00	0.00	0.04	0.03	0.06	0.05	0.08	0.06	0.01	0.01
690	0.534	0.005	0.748	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.08	0.06	0.01	0.01
700	0.527	0.005	0.739	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.08	0.06	0.01	0.01
710	0.521	0.005	0.729	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.08	0.06	0.01	0.01
720	0.514	0.005	0.720	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.08	0.06	0.01	0.01
730	0.507	0.005	0.711	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.04	0.08	0.06	0.01	0.01
740	0.500	0.005	0.701	0.007	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.04	0.08	0.06	0.01	0.01
750	0.494	0.005	0.692	0.007	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04	0.08	0.06	0.01	0.01
760	0.487	0.005	0.682	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04	0.07	0.06	0.01	0.01
770	0.480	0.005	0.673	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04	0.07	0.06	0.01	0.01
780	0.474	0.005	0.664	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.07	0.06	0.01	0.01
790	0.467	0.005	0.654	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.07	0.05	0.01	0.01
800	0.460	0.005	0.645	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.07	0.05	0.01	0.01
810	0.454	0.005	0.635	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.07	0.05	0.01	0.01
820	0.447	0.005	0.626	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.07	0.05	0.01	0.01
830	0.440	0.004	0.617	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.07	0.05	0.01	0.01
840	0.434	0.004	0.607	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.07	0.05	0.01	0.01
850	0.427	0.004	0.598	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.06	0.05	0.01	0.01
860	0.420	0.004	0.588	0.006	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.06	0.05	0.01	0.01
870	0.413	0.004	0.579	0.005	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.06	0.05	0.01	0.01
880	0.407	0.004	0.570	0.005	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.06	0.05	0.01	0.01
890	0.400	0.004	0.560	0.005	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.06	0.05	0.01	0.01
900	0.393	0.004	0.551	0.005	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.03	0.06	0.05	0.01	0.01
910	0.387	0.004	0.541	0.005	0.00	0.00	0.00	0.00	0.03	0.02	0.04	0.03	0.06	0.05	0.01	0.01
920	0.380	0.004	0.532	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.06	0.04	0.01	0.01
930	0.373	0.004	0.523	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.06	0.04	0.01	0.01
940	0.367	0.004	0.513	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.06	0.04	0.01	0.01
950	0.360	0.004	0.504	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
960	0.353	0.004	0.494	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
970	0.346	0.004	0.485	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
980	0.340	0.003	0.476	0.005	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
990	0.333	0.003	0.466	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.01
1000	0.326	0.003	0.457	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.00
1010	0.320	0.003	0.447	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.00
1020	0.313	0.003	0.438	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.00
1030	0.306	0.003	0.429	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.05	0.04	0.01	0.00
1040	0.300	0.003	0.419	0.004	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.05	0.04	0.01	0.00
1050	0.293	0.003	0.410	0.004	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.04	0.03	0.01	0.00
1060	0.286	0.003	0.400	0.004	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.04	0.03	0.01	0.00
1070	0.279	0.003	0.391	0.004	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.01	0.00
1080	0.273	0.003	0.382	0.004	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.01	0.00
1090	0.266	0.003	0.372	0.004	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.01	0.00
1100	0.259	0.003	0.363	0.003	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.01	0.00
1110	0.253	0.003	0.353	0.003	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.01	0.00
1120	0.246	0.003	0.344	0.003	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.00	0.00
1130	0.239	0.002	0.335	0.003	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.00	0.00
1140	0.233	0.002	0.325	0.003	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.04	0.03	0.00	0.00
1150	0.226	0.002	0.316	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.03	0.00	0.00
1160	0.219	0.002	0.306	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.03	0.00	0.00
1170	0.212	0.002	0.297	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.00	0.00
1180	0.206	0.002	0.288	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.00	0.00
1190	0.199	0.002	0.278	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.00	0.00
1200	0.192	0.002	0.269	0.003	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.00	0.00
1210	0.186	0.002	0.259	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.00	0.00
1220	0.179	0.002	0.250	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.00	0.00
1230	0.172	0.002	0.241	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.02	0.00	0.00
1240	0.166	0.002	0.231	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.03	0.02	0.00	0.00
1250	0.159	0.002	0.222	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.00	0.00
1260	0.152	0.002	0.212	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.00	0.00
1270	0.145	0.001	0.203	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.00	0.00
1280	0.139	0.001	0.194	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.00	0.00
1290	0.132	0.001	0.184	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.02	0.00	0.00
1300	0.125	0.001	0.175	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00
1310	0.119	0.001	0.165	0.002	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00
1320	0.112	0.001	0.156	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00
1330	0.105	0.001	0.147	0.001	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00
1340	0.098	0.001	0.137	0.001	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1350	0.092	0.001	0.128	0.001	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1360	0.085	0.001	0.118	0.001	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1370	0.078	0.001	0.109	0.001	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1380	0.072	0.001	0.100	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1390	0.065	0.001	0.090	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1400	0.058	0.001	0.081	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1410	0.052	0.001	0.071	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00
1420	0.045	0.000	0.062	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00
1430	0.038	0.000	0.053	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1440	0.031	0.000	0.043	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.025	0.000	0.034	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.018	0.000	0.024	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.011	0.000	0.015	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0695	Leucadia	0	0	Avg. Net Sl	-0.02	-0.21	0.00	0.25	0.45	0.00						
SD-695	104.044	0	143.745	1500	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.016	0.000	0.010	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	2.509	0.024	2.507	0.017	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.09	0.13	0.00	0.00
20	2.681	0.026	2.717	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.08	0.10	0.14	0.00	0.00
30	2.668	0.026	2.824	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.08	0.11	0.14	0.00	0.00
40	2.439	0.023	2.938	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.07	0.11	0.13	0.00	0.00
50	2.207	0.021	2.988	0.021	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.11	0.11	0.00	0.00
60	2.055	0.020	2.674	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.10	0.11	0.00	0.00
70	1.866	0.018	2.328	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.09	0.10	0.00	0.00
80	1.713	0.016	2.094	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.08	0.09	0.00	0.00
90	1.522	0.015	1.949	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.07	0.08	0.00	0.00
100	1.513	0.015	1.827	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.07	0.08	0.00	0.00
110	1.532	0.015	1.763	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.07	0.08	0.00	0.00
120	1.452	0.014	1.677	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.06	0.08	0.00	0.00
130	1.229	0.012	1.417	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06	0.00	0.00
140	1.070	0.010	1.197	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.06	0.00	0.00
150	0.966	0.009	1.035	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.00	0.00
160	0.923	0.009	0.905	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05	0.00	0.00
170	0.885	0.009	0.784	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.05	0.00	0.00
180	0.945	0.009	0.758	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05	0.00	0.00
190	1.260	0.012	0.932	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.04	0.07	0.00	0.00
200	1.625	0.016	1.148	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.04	0.08	0.00	0.00
210	1.868	0.018	1.369	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.10	0.00	0.00
220	1.913	0.018	1.450	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.10	0.00	0.00
230	1.927	0.019	1.503	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.06	0.10	0.00	0.00
240	1.611	0.015	1.310	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.08	0.00	0.00
250	1.633	0.016	1.324	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.09	0.00	0.00
260	1.846	0.018	1.496	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.06	0.10	0.00	0.00
270	1.844	0.018	1.455	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.05	0.10	0.00	0.00
280	1.853	0.018	1.483	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.06	0.10	0.00	0.00
290	1.354	0.013	1.137	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.04	0.07	0.00	0.00
300	1.174	0.011	1.112	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.06	0.00	0.00
310	0.990	0.010	1.109	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.00	0.00
320	0.857	0.008	1.094	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.00	0.00
330	0.706	0.007	1.084	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.00	0.00
340	0.524	0.005	1.070	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.04	0.03	0.00	0.00
350	0.563	0.005	1.286	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.03	0.00	0.00
360	0.571	0.005	1.499	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.03	0.00	0.00
370	0.538	0.005	1.697	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.03	0.00	0.00
380	0.505	0.005	1.896	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.07	0.03	0.00	0.00
390	0.575	0.006	2.087	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.08	0.03	0.00	0.00
400	0.684	0.007	2.260	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.09	0.04	0.00	0.00
410	0.602	0.006	2.079	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.08	0.03	0.00	0.00
420	0.622	0.006	1.991	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.08	0.03	0.00	0.00
430	0.619	0.006	1.803	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.07	0.03	0.00	0.00
440	0.558	0.005	1.574	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.03	0.00	0.00
450	0.483	0.005	1.358	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.05	0.03	0.00	0.00
460	0.440	0.004	1.199	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.05	0.02	0.00	0.00
470	0.360	0.003	1.021	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.04	0.02	0.00	0.00
480	0.321	0.003	0.854	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.00	0.00
490	0.346	0.003	0.696	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.00	0.00
500	0.290	0.003	0.602	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
510	0.319	0.003	0.525	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
520	0.367	0.004	0.566	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
530	0.349	0.003	0.713	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.00	0.00
540	0.556	0.005	0.824	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.00	0.00
550	0.711	0.007	0.891	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04	0.00	0.00
560	0.529	0.005	0.765	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.00	0.00
570	0.701	0.007	0.718	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.00	0.00
580	0.810	0.008	0.716	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.00	0.00
590	0.862	0.008	0.718	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.00	0.00
600	0.746	0.007	0.768	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.04	0.00	0.00
610	0.576	0.006	0.757	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.00	0.00
620	0.563	0.005	0.758	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.00	0.00
630	0.969	0.009	0.928	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.05	0.00	0.00
640	0.986	0.009	1.089	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.00	0.00
650	0.929	0.009	1.068	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.05	0.00	0.00
660	0.706	0.007	1.057	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.00	0.00
670	0.596	0.006	1.289	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.03	0.00	0.00
680	0.937	0.009	1.462	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.00	0.00
690	1.018	0.010	1.606	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.00	0.00
700	0.827	0.008	1.421	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.04	0.00	0.00
710	0.549	0.005	1.272	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.05	0.03	0.00	0.00
720	0.486	0.005	1.152	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.04	0.03	0.00	0.00
730	1.183	0.011	1.628	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.06	0.00	0.00
740	1.304	0.013	1.661	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.06	0.07	0.00	0.00
750	1.103	0.011	1.437	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.06	0.00	0.00
760	0.670	0.006	1.157	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.00	0.00
770	0.590	0.006	0.961	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.00	0.00
780	0.556	0.005	1.140	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.03	0.00	0.00
790	0.521	0.005	1.514	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.06	0.03	0.00	0.00
800	0.478	0.005	1.364	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.05	0.02	0.00	0.00
810	0.596	0.006	1.598	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.03	0.00	0.00
820	0.908	0.009	1.831	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.07	0.05	0.00	0.00
830	0.935	0.009	1.669	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.06	0.05	0.00	0.00
840	0.804	0.008	1.490	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04	0.00	0.00
850	0.540	0.005	0.810	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.00	0.00
860	0.532	0.005	0.798	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.00	0.00
870	0.524	0.005	0.785	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.00	0.00
880	0.515	0.005	0.773	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.00	0.00
890	0.507	0.005	0.760	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.00	0.00
900	0.499	0.005	0.748	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.00	0.00
910	0.491	0.005	0.736	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.03	0.00	0.00
920	0.483	0.005	0.723	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.00	0.00
930	0.474	0.005	0.711	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.00	0.00
940	0.466	0.004	0.698	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.00	0.00
950	0.458	0.004	0.686	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.00	0.00
960	0.450	0.004	0.674	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.00	0.00
970	0.442	0.004	0.661	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
980	0.433	0.004	0.649	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
990	0.425	0.004	0.636	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1000	0.417	0.004	0.624	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1010	0.409	0.004	0.612	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1020	0.401	0.004	0.599	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1030	0.392	0.004	0.587	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1040	0.384	0.004	0.574	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1050	0.376	0.004	0.562	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1060	0.368	0.004	0.550	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1070	0.360	0.003	0.537	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1080	0.351	0.003	0.525	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1090	0.343	0.003	0.512	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1100	0.335	0.003	0.500	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1110	0.327	0.003	0.488	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1120	0.319	0.003	0.475	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1130	0.310	0.003	0.463	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1140	0.302	0.003	0.450	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1150	0.294	0.003	0.438	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00
1160	0.286	0.003	0.426	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.00	0.00
1170	0.278	0.003	0.413	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.00	0.00
1180	0.269	0.003	0.401	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.00	0.00
1190	0.261	0.003	0.388	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1200	0.253	0.002	0.376	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1210	0.245	0.002	0.364	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1220	0.237	0.002	0.351	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1230	0.228	0.002	0.339	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1240	0.220	0.002	0.326	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1250	0.212	0.002	0.314	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1260	0.204	0.002	0.302	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1270	0.196	0.002	0.289	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1280	0.187	0.002	0.277	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1290	0.179	0.002	0.264	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
1300	0.171	0.002	0.252	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00
1310	0.163	0.002	0.240	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1320	0.155	0.001	0.227	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1330	0.146	0.001	0.215	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1340	0.138	0.001	0.202	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1350	0.130	0.001	0.190	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1360	0.122	0.001	0.178	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1370	0.114	0.001	0.165	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1380	0.105	0.001	0.153	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1390	0.097	0.001	0.140	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1400	0.089	0.001	0.128	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.081	0.001	0.116	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.073	0.001	0.103	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.064	0.001	0.091	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.056	0.001	0.078	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.048	0.000	0.066	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.040	0.000	0.054	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.032	0.000	0.041	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.023	0.000	0.029	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.015	0.000	0.016	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.007	0.000	0.004	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0700	Grandview	0	0	Avg. Net SL	0.01	-0.14	-0.12	-0.01	0.12	0.00						
SD-700	156.8425	0	206.84	1515			**Sand Depth (ft)**									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	2.478	0.016	2.920	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
10	2.613	0.017	3.000	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
20	2.204	0.014	2.591	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
30	1.833	0.012	2.230	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
40	1.499	0.010	1.894	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
50	1.307	0.008	1.646	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
60	1.315	0.008	1.557	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
70	1.372	0.009	1.557	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
80	1.250	0.008	1.405	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
90	1.102	0.007	1.222	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
100	1.008	0.006	1.082	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
110	0.976	0.006	0.998	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
120	0.919	0.006	0.901	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
130	0.834	0.005	0.780	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
140	0.759	0.005	0.678	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
150	0.712	0.005	0.606	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
160	0.684	0.004	0.556	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
170	0.652	0.004	0.506	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
180	0.616	0.004	0.458	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
190	0.583	0.004	0.428	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
200	0.553	0.004	0.411	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
210	0.526	0.003	0.399	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	0.507	0.003	0.399	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	0.526	0.003	0.436	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	0.599	0.004	0.523	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
250	0.656	0.004	0.604	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
260	0.653	0.004	0.626	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
270	0.624	0.004	0.598	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
280	0.644	0.004	0.611	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
290	0.667	0.004	0.621	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
300	0.694	0.004	0.646	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
310	0.837	0.005	0.790	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
320	1.112	0.007	1.049	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
330	1.384	0.009	1.285	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
340	1.650	0.011	1.515	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
350	1.878	0.012	1.727	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
360	2.057	0.013	1.940	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
370	2.219	0.014	2.163	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
380	2.306	0.015	2.317	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
390	2.267	0.014	2.367	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
400	2.203	0.014	2.384	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
410	2.140	0.014	2.356	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
420	2.098	0.013	2.351	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
430	2.075	0.013	2.395	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
440	2.038	0.013	2.461	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
450	2.002	0.013	2.525	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
460	1.919	0.012	2.538	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
470	1.740	0.011	2.466	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
480	1.596	0.010	2.462	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
490	1.423	0.009	2.417	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
500	1.288	0.008	2.409	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
510	1.277	0.008	2.561	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
520	1.232	0.008	2.697	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
530	1.231	0.008	2.880	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
540	1.317	0.008	3.123	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
550	1.377	0.009	3.391	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
560	1.483	0.009	3.603	0.017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.00
570	1.631	0.010	3.723	0.018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
580	2.108	0.013	4.069	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
590	2.369	0.015	4.236	0.020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
600	1.986	0.013	3.934	0.019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
610	1.396	0.009	3.554	0.017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.00
620	1.340	0.009	3.142	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
630	2.060	0.013	2.846	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
640	2.148	0.014	2.654	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
650	1.677	0.011	2.353	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
660	1.172	0.007	2.117	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
670	0.943	0.006	1.837	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
680	1.056	0.007	1.693	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
690	1.222	0.008	1.734	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
700	1.287	0.008	1.855	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
710	1.261	0.008	1.859	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
720	1.203	0.008	1.810	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
730	1.006	0.006	1.794	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
740	0.772	0.005	1.738	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
750	0.627	0.004	1.699	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
760	0.602	0.004	1.690	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
770	0.650	0.004	1.684	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
780	0.966	0.006	1.778	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
790	1.295	0.008	1.703	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
800	1.369	0.009	1.662	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
810	1.823	0.012	2.187	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
820	2.228	0.014	2.451	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
830	1.772	0.011	2.048	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
840	1.256	0.008	1.601	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
850	0.967	0.006	1.267	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
860	0.924	0.006	1.212	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
870	1.283	0.008	1.308	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
880	1.676	0.011	1.565	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
890	1.763	0.011	1.665	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
900	1.402	0.009	1.520	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
910	1.136	0.007	1.506	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
920	1.251	0.008	1.691	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
930	1.459	0.009	1.861	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
940	1.597	0.010	1.958	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
950	2.235	0.014	2.312	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
960	2.509	0.016	2.194	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
970	2.307	0.015	1.952	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
980	1.897	0.012	1.834	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
990	1.676	0.011	1.567	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
1000	1.697	0.011	1.435	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00
1010	1.356	0.009	1.310	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1020	0.874	0.006	1.109	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1030	0.657	0.004	0.927	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1040	0.701	0.004	0.735	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
1050	0.775	0.005	0.668	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
1060	0.496	0.003	0.655	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	0.486	0.003	0.642	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	0.475	0.003	0.629	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	0.465	0.003	0.616	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	0.454	0.003	0.603	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	0.444	0.003	0.590	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.433	0.003	0.577	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.423	0.003	0.564	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	0.412	0.003	0.551	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	0.402	0.003	0.538	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	0.391	0.002	0.525	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	0.381	0.002	0.512	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	0.370	0.002	0.499	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.360	0.002	0.486	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	0.349	0.002	0.473	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	0.339	0.002	0.460	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	0.328	0.002	0.447	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	0.318	0.002	0.434	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.307	0.002	0.421	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.297	0.002	0.408	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.286	0.002	0.395	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.276	0.002	0.382	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.265	0.002	0.369	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	0.255	0.002	0.356	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.244	0.002	0.343	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.234	0.001	0.330	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.223	0.001	0.317	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.213	0.001	0.304	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.202	0.001	0.291	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.192	0.001	0.278	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.181	0.001	0.265	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.171	0.001	0.252	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.160	0.001	0.239	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.150	0.001	0.226	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.139	0.001	0.213	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.129	0.001	0.200	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.118	0.001	0.187	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.108	0.001	0.174	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.097	0.001	0.161	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.086	0.001	0.148	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.076	0.000	0.135	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.065	0.000	0.122	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.055	0.000	0.109	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.044	0.000	0.096	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.034	0.000	0.083	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	0.023	0.000	0.070	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	0.013	0.000	0.057	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SD-0710	Batiquitos	0	0	Avg. Net Sl	0.00	-0.04	-0.11	-0.12	-0.04	0.00						
SD-710	297.786	0	279.863	1485	**Sand Depth (ft)**											
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.066	0.000	0.069	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.852	0.006	1.568	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	3.731	0.013	3.365	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	3.151	0.011	2.458	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	3.507	0.012	2.344	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	4.162	0.014	2.436	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	4.390	0.015	2.348	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	4.471	0.015	2.391	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	4.241	0.014	2.156	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	4.385	0.015	1.977	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	4.699	0.016	2.085	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	4.978	0.017	2.256	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	5.231	0.018	2.494	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	5.157	0.017	2.452	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	4.652	0.016	1.984	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	4.218	0.014	1.540	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	3.916	0.013	1.254	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	3.645	0.012	1.030	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	3.136	0.011	0.811	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	3.013	0.010	0.970	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	2.921	0.010	1.095	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	2.556	0.009	0.940	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	2.213	0.007	0.791	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	1.930	0.006	0.478	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	1.748	0.006	0.370	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	1.688	0.006	0.378	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	1.723	0.006	0.461	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	1.829	0.006	0.554	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	1.945	0.007	0.622	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	2.070	0.007	0.632	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	2.288	0.008	0.694	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	2.505	0.008	0.760	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	2.813	0.009	0.893	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	3.466	0.012	1.315	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	4.110	0.014	1.773	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	4.755	0.016	2.222	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	5.186	0.017	2.534	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	5.598	0.019	2.790	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	5.597	0.019	2.660	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	5.510	0.019	2.506	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	5.405	0.018	2.402	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	5.344	0.018	2.315	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	5.288	0.018	2.283	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	5.211	0.017	2.402	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	5.130	0.017	2.474	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	5.046	0.017	2.626	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	4.913	0.016	2.809	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	4.761	0.016	2.906	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	4.532	0.015	2.979	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	4.347	0.015	2.872	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	4.062	0.014	2.677	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	3.564	0.012	2.444	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	3.551	0.012	2.645	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	3.317	0.011	2.723	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	2.609	0.009	2.490	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	2.115	0.007	2.290	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	2.337	0.008	2.600	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	1.931	0.006	2.365	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	1.268	0.004	2.085	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	1.087	0.004	2.303	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	1.281	0.004	2.924	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	1.154	0.004	2.681	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	1.659	0.006	2.928	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	0.925	0.003	2.217	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	0.543	0.002	1.864	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	0.907	0.003	1.966	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	0.835	0.003	1.771	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	1.127	0.004	1.639	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	0.849	0.003	1.586	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	0.664	0.002	1.513	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	0.728	0.002	1.900	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	0.862	0.003	2.498	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	1.209	0.004	3.220	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	1.840	0.006	4.136	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	1.115	0.004	3.528	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	1.427	0.005	3.858	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	1.311	0.004	3.607	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	1.093	0.004	3.007	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	0.666	0.002	2.394	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	0.663	0.002	2.504	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	0.768	0.003	2.765	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	1.134	0.004	3.460	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	1.025	0.003	3.616	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	1.275	0.004	4.064	0.015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	1.242	0.004	3.920	0.014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	1.360	0.005	3.308	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	2.019	0.007	3.541	0.013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	1.803	0.006	3.270	0.012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	1.885	0.006	3.138	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	1.786	0.006	2.971	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	1.492	0.005	2.705	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	1.225	0.004	2.400	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	1.020	0.003	2.221	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	0.853	0.003	2.144	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	0.805	0.003	2.171	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	0.758	0.003	2.237	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	0.697	0.002	2.160	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	0.839	0.003	2.323	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	0.793	0.003	2.185	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	1.654	0.006	3.115	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	1.533	0.005	2.919	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	1.646	0.006	2.806	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	1.085	0.004	2.017	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	0.821	0.003	1.715	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	1.039	0.003	1.800	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	1.181	0.004	1.836	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	1.095	0.004	1.774	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	1.064	0.004	1.756	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	1.070	0.004	1.883	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	1.352	0.005	2.151	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	1.178	0.004	1.871	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	1.028	0.003	1.599	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	0.809	0.003	1.561	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	0.852	0.003	1.524	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	1.109	0.004	1.739	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	1.449	0.005	2.105	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	1.006	0.003	1.601	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	1.126	0.004	1.689	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	1.021	0.003	1.564	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	0.904	0.003	1.378	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	1.334	0.004	1.826	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	1.148	0.004	1.572	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	1.184	0.004	1.717	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	1.114	0.004	1.523	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	0.860	0.003	1.163	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	0.806	0.003	1.026	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	0.829	0.003	1.009	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	0.759	0.003	0.913	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	0.756	0.003	0.873	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	1.002	0.003	1.000	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	0.783	0.003	0.855	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	0.582	0.002	0.654	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	0.560	0.002	0.594	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	0.472	0.002	0.593	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	0.383	0.001	0.576	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	0.358	0.001	0.538	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	0.332	0.001	0.500	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	0.307	0.001	0.462	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	0.281	0.001	0.424	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	0.256	0.001	0.386	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	0.230	0.001	0.348	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	0.205	0.001	0.310	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	0.179	0.001	0.272	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	0.154	0.001	0.234	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.128	0.000	0.196	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	0.103	0.000	0.158	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	0.077	0.000	0.120	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	0.051	0.000	0.082	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	0.026	0.000	0.044	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	0.000	0.000	0.006	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CB-0720	Batiquitos	0	0	Avg. Net Sl	0.00	0.01	-0.02	-0.04	-0.01	0.00						
CB-720	493.724	0	508.685	1556			Sand Depth (ft)									
X (ft)	Fall-Hdpn	Fall ratio	Spring-Hdp	Spring ratio	Year 1 Spring	Year 1 Fall	Year 2 Spring	Year 2 Fall	Year 3 Spring	Year 3 Fall	Year 4 Spring	Year 4 Fall	Year 5 Spring	Year 5 Fall	Year 10 Spring	Year 10 Fall
0	0.457	0.001	0.578	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.968	0.002	0.909	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.905	0.002	0.974	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.638	0.001	0.874	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.722	0.001	0.946	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50	0.883	0.002	1.040	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	1.172	0.002	1.342	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70	1.524	0.003	1.704	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	2.633	0.005	2.788	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	3.334	0.007	3.497	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	3.150	0.006	3.334	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	2.526	0.005	2.773	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	1.622	0.003	1.985	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	1.333	0.003	1.751	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1.601	0.003	1.970	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	2.382	0.005	2.623	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	3.343	0.007	3.534	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	3.976	0.008	3.965	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	4.721	0.010	4.356	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190	5.552	0.011	4.765	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	6.023	0.012	4.657	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	6.287	0.013	4.408	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	6.601	0.013	4.307	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
230	6.763	0.014	4.077	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	6.776	0.014	3.771	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250	6.735	0.014	3.549	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
260	6.640	0.013	3.371	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	6.492	0.013	3.196	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
280	6.324	0.013	3.039	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
290	6.108	0.012	2.896	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	5.791	0.012	2.674	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
310	5.408	0.011	2.429	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
320	4.979	0.010	2.208	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	4.556	0.009	2.027	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
340	4.294	0.009	1.975	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350	4.250	0.009	2.103	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360	4.284	0.009	2.305	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
370	4.341	0.009	2.497	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
380	4.546	0.009	2.771	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	4.900	0.010	3.119	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	5.295	0.011	3.477	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
410	5.689	0.012	3.791	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
420	5.983	0.012	3.958	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
430	6.106	0.012	3.937	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
440	6.176	0.013	3.846	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
450	6.267	0.013	3.789	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
460	6.204	0.013	3.626	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
470	5.813	0.012	3.158	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
480	5.606	0.011	2.896	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
490	5.639	0.011	2.898	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	5.667	0.011	2.907	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
510	5.107	0.010	2.536	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
520	4.679	0.009	2.451	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
530	4.560	0.009	2.714	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
540	4.452	0.009	2.862	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550	4.410	0.009	2.907	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
560	4.676	0.009	3.167	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
570	4.873	0.010	3.349	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
580	4.905	0.010	3.402	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
590	4.919	0.010	3.475	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	5.078	0.010	3.709	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
610	5.323	0.011	4.017	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
620	5.558	0.011	4.307	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630	5.781	0.012	4.596	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
640	5.815	0.012	4.725	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
650	5.434	0.011	4.496	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
660	4.840	0.010	4.119	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
670	4.261	0.009	3.800	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
680	3.908	0.008	3.720	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
690	3.733	0.008	3.832	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	3.684	0.007	4.093	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710	3.366	0.007	4.141	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
720	2.993	0.006	4.096	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	2.841	0.006	4.166	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
740	2.745	0.006	4.282	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	2.672	0.005	4.404	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	2.734	0.006	4.626	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
770	2.857	0.006	4.908	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
780	2.974	0.006	5.187	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
790	3.012	0.006	5.366	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800	2.917	0.006	5.394	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
810	2.778	0.006	5.344	0.011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
820	2.632	0.005	5.221	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
830	2.438	0.005	5.019	0.010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
840	2.207	0.004	4.792	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850	1.989	0.004	4.580	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
860	1.897	0.004	4.491	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
870	1.876	0.004	4.468	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
880	1.864	0.004	4.440	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
890	1.885	0.004	4.440	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	1.889	0.004	4.427	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
910	1.893	0.004	4.373	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
920	1.879	0.004	4.385	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
930	1.873	0.004	4.471	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
940	1.846	0.004	4.508	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950	1.824	0.004	4.457	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
960	1.816	0.004	4.377	0.009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
970	1.793	0.004	4.308	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
980	1.802	0.004	4.230	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
990	1.819	0.004	4.186	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000	1.811	0.004	4.066	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1010	1.799	0.004	3.914	0.008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1020	1.763	0.004	3.781	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1030	1.710	0.003	3.647	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1040	1.667	0.003	3.510	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1050	1.654	0.003	3.425	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1060	1.650	0.003	3.381	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1070	1.641	0.003	3.335	0.007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1080	1.631	0.003	3.218	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1090	1.570	0.003	3.089	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	1.486	0.003	2.971	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1110	1.421	0.003	2.878	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1120	1.369	0.003	2.785	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1130	1.340	0.003	2.716	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1140	1.341	0.003	2.719	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1150	1.350	0.003	2.692	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1160	1.359	0.003	2.651	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1170	1.465	0.003	2.755	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1180	1.633	0.003	2.935	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1190	1.788	0.004	3.061	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1200	1.894	0.004	3.134	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1210	1.991	0.004	3.166	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1220	2.073	0.004	3.182	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1230	2.171	0.004	3.185	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1240	2.235	0.005	3.188	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1250	2.307	0.005	3.138	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1260	2.362	0.005	3.092	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1270	2.414	0.005	3.031	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1280	2.448	0.005	2.936	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1290	2.465	0.005	2.896	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300	2.489	0.005	2.910	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1310	2.493	0.005	2.901	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1320	2.495	0.005	2.878	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1330	2.481	0.005	2.858	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1340	2.479	0.005	2.850	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1350	2.499	0.005	2.876	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1360	2.527	0.005	2.960	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1370	2.570	0.005	3.010	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1380	2.612	0.005	3.016	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1390	2.655	0.005	3.027	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400	2.683	0.005	3.046	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1410	2.701	0.005	3.104	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1420	2.718	0.006	3.088	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1430	2.707	0.005	3.005	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	2.666	0.005	2.923	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1450	2.609	0.005	2.825	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1460	2.560	0.005	2.737	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1470	2.548	0.005	2.651	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1480	2.268	0.005	2.361	0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1490	1.988	0.004	2.071	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	1.708	0.003	1.781	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1510	1.428	0.003	1.491	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1520	1.148	0.002	1.201	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1530	0.868	0.002	0.911	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1540	0.588	0.001	0.621	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1550	0.308	0.001	0.331	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1560	0.028	0.000	0.041	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX I

CULTURAL RESOURCES TECHNICAL REPORT

ARCHAEOLOGICAL SURVEY FOR THE SAN ELIJO LAGOON RESTORATION PROJECT SAN DIEGO COUNTY, CALIFORNIA

Prepared for:

U.S. Army Corps of Engineers
6010 Hidden Valley Rd., Suite 105
Carlsbad, California 92011
and
County of San Diego Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, California 92123

Prepared by:

AECOM
1420 Kettner Blvd., Suite 500
San Diego, California 92101
(619) 233-1454

Authors:

Tanya Wahoff, M.A., R.P.A.
Theodore Cooley, M.A., R.P.A.

Contributions by:

Lauren Downs, B.A.
Trina Meiser, M.A.
Andrew L. York, M.A., R.P.A.

Survey Area: Approximately 960 acres

USGS Quadrangles: Del Mar, Encinitas, and Rancho Santa Fe, Calif.

July 2014

TABLE OF CONTENTS

Section **Page**

MANAGEMENT SUMMARY iii

INTRODUCTION 1
- Project Description 1
- Area of Potential Effects 3
- Federal and State Legislation 3
- Project Personnel 4

NATURAL AND CULTURAL SETTING 9
- Natural Setting 9
  - Climate 9
  - Geology and Topography 9
  - Vegetation 9
  - Fauna 10
- Cultural Setting 10
  - Regional Prehistory and History 10
  - Initial Occupation: Paleoindian and Early Coastal Adaptations 10
  - The Archaic 11
  - The Late Prehistoric 12
  - Ethnohistory 12
  - History 12
  - Coast Route/U.S. Highway 101 13

INVESTIGATION METHODS 17
- Research Orientation 17
- Inventory Methods 17
- Archaeological Inventory 18
  - Prefield 18
  - Field Survey 18
  - Site Recording 18

RESULTS AND MANAGEMENT RECOMMENDATIONS 19
- Records and Literature Search 19
  - Previous Investigations 19
  - Archaeological Resources 20
  - Historic Maps 21
  - Native American Consultation 22
  - Summary of Contacts 25
  - Historic Structures 25
- Field Investigations 25
  - Survey Results, West Basin 26

Survey Areas, East Basin 34

SUMMARY, EVALUATION, AND MANAGEMENT RECOMMENDATIONS 35
Summary 35
Coast Highway 101 Evaluation 35
Recommendations 37

REFERENCES CITED 39

APPENDICES
A Resumes of Key Personnel
B Records Search *(Confidential – Bound Separately)*
C Contact Letters
D DPR Forms *(Confidential – Bound Separately)*

LIST OF FIGURES

Figure **Page**

1 Regional Map 2
2 SELRP Study Area and Land Ownership 5
3 Maximum Limits of Disturbance 7
4 Records Search Results *(Confidential map on file with the County of San Diego)* 27
5 Archaeological Survey Areas 29

LIST OF PLATES

Plate **Page**

1 Coast Highway 101 across San Elijo Lagoon in 1915. Source: Courtesy of Ken Harrison in Tucker and Bujkovsky 2009. 14
2 Segment of U.S. Highway 101 at proposed new lagoon inlet in 2013. View to the north. 32

LIST OF TABLES

Table **Page**

1 Archaeological Sites within 300 Feet of the Project Study Area 20
2 Summary of Native American Contacts 22
3 Previously Recorded Sites Visited during Survey 26

MANAGEMENT SUMMARY

This report summarizes the archaeological investigations conducted in support of the San Elijo Lagoon Restoration Project (SELRP or proposed project) in San Diego County, California. This study, conducted by AECOM, consisted of a records and literature search at the South Coastal Information Center (SCIC) and archaeological field survey of eight locations, and preparation of a draft and final report.

The cultural resources inventory in support of the SELRP Environmental Impact Report/Environmental Impact Statement was conducted on November 6, 7, and 11, 2012. Three alternatives are proposed that would each include dredging of open water and tidal channels, increasing the width of the channel openings for a Highway 101 bridge and Santa Fe railroad trestle, and creation of a sediment trap within the lagoon. Under Alternatives 1A and 1B the existing inlet would be retained. Under Alternative 2A – Proposed Project, the inlet would be relocated farther south and a new Highway 101 bridge constructed. Improvement is proposed for one access road from the entrance to the project study area at North Rios Avenue. Sand removed during dredging would be placed at nearshore, offshore, and onshore materials placement areas, at locations previously addressed for cultural resources under the Regional Beach Sand Project (AECOM 2011). The project study area encompasses the entire lagoon boundaries. The proposed project area of potential effects (APE) is the extent of physical disturbance for the undertaking. This does not include areas that would be temporarily flooded.

Numerous prior cultural resources investigations conducted within the project study area have resulted in the identification of several prehistoric and historic archaeological sites. The present study focused on visiting known archaeological sites and potentially sensitive locations in proximity to areas of proposed disturbance.

Eight locations with eight previously recorded archaeological sites and a segment of Highway 101 were surveyed. Of the eight previously recorded archaeological sites visited during the study, none were found within or adjacent to the APE. One new prehistoric archaeological site, a shell scatter (CA-SDI-20,816) was recorded and the site form has been submitted to the SCIC for assignment of permanent numbers. The segment of Highway 101 (P-37-033047) at the proposed location for a new inlet was found to have been widened and improved over the years and unlikely to be eligible for the National Register of Historic Places or the California Register of Historical Resources, although cultural deposits could potentially exist on stable sediments under the bridge location.

Due to the potential for buried cultural deposits, it is recommended that a monitoring program be initiated prior to the start of ground-disturbing construction. The program would include (1) development and implementation of a monitoring and discovery plan, (2) a training session for construction personnel conducted by a qualified archaeologist, and (3) archaeological and Native American cultural monitoring.

INTRODUCTION

This document describes the cultural resources work conducted in support of the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the proposed San Elijo Lagoon Restoration Project (SELRP or proposed project), Encinitas, San Diego County, California (Figure 1).

The cultural resources work was designed to support documentation required under the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and the California Environmental Quality Act (CEQA). The primary federal involvement is the potential issuance of a permit under Section 404 of the Clean Water Act, which regulates the discharge of dredged, excavated, or fill material in wetlands, streams, rivers, and other U.S. waters, as well as the evaluation of potential impacts on the human environment from such activities. Because of both federal and state discretionary actions, the SELRP will be evaluated pursuant to NEPA and CEQA. The lead federal agency for the SELRP NEPA and Section 106 compliance is the U.S. Army Corps of Engineers (Corps), and the County of San Diego Department of Parks and Recreation (County Parks) is the lead for CEQA. Fieldwork for the project was conducted in November 2012.

This report includes a description of the proposed project and area of potential effects (APE) justification, along with a detailed research context, methods and results of the study, and recommendations for further work.

PROJECT DESCRIPTION

The Corps, in conjunction with County Parks, is preparing an EIR/EIS for the SELRP. The Corps is considering the San Elijo Lagoon Conservancy's application for a Department of the Army permit under Section 404 of the Clean Water Act to restore wetland habitat and function within San Elijo Lagoon. The San Elijo Lagoon Ecological Reserve (Reserve) represents a valuable coastal wetland resource within the San Diego region. The SELRP would restore hydrology and habitat within San Elijo Lagoon, which has gradually been constrained by infrastructure and development, compromising its ecological function. Restoration of hydrology and habitat within some or all of the three basins of the lagoon is proposed as part of the SELRP. The proposed project may be constructed in phases, if necessary, to maintain adequate habitat for sensitive lagoon species.

Three alternatives are proposed that would each include dredging of open water and tidal channels, increasing the width of the channel openings for a Highway 101 bridge and Santa Fe railroad trestle, and creation of a sediment trap within the lagoon. Under Alternatives 1A and 1B the existing inlet would be retained. Under Alternative 2A – Proposed Project, the inlet would be relocated farther south and a new Highway 101 bridge constructed. Improvement is proposed for one access road from the entrance to the project study area at North Rios Avenue. Additionally,

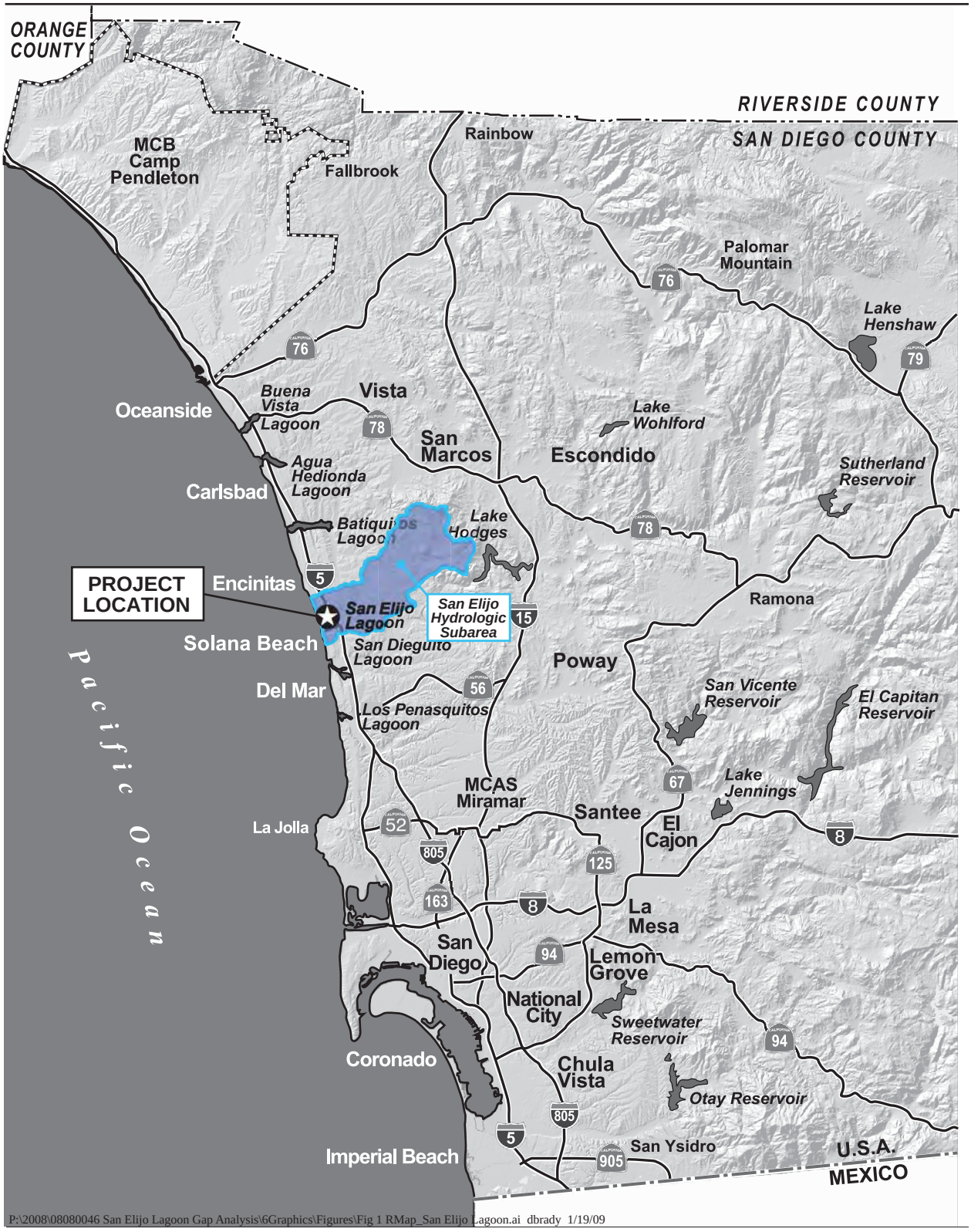


Figure 1
Regional Map

seismic improvements to the existing seismically deficient Highway 101 bridge would occur under Alternatives 1A and 1B. Ground-disturbing activities under Alternative 2A – Proposed Project would also include demolition of a portion of the existing Highway 101 roadway and construction of a new Highway 101 bridge at the location of the proposed new inlet to the lagoon.

For all of the alternatives, dredged sand would be placed at offshore, nearshore, and/or onshore locations (Figure 2). The SELRP proposed materials disposal/placement sites are located within former Regional Beach Sand Project (RBSP) receiver and borrow sites (AECOM 2011) and were addressed for cultural resources under that program. The project study area encompasses approximately 960 acres within and adjacent to the Reserve, but final project size may vary within that depending on the outcome of the alternatives refinement process.

The Reserve is located within the City of Encinitas (Figure 1) and is owned and managed by the State of California (California Department of Fish and Wildlife), County Parks, and the San Elijo Lagoon Conservancy. It is anticipated that construction of the SELRP would begin in fall of 2015.

AREA OF POTENTIAL EFFECTS

The cultural resources APE (for compliance with the NHPA) encompasses all areas that may be subject to effects from the proposed project and alternatives. Impacts to historic properties, cultural resources, or California Register of Historical Resources (CRHR)-eligible resources may be either direct or indirect. Direct impacts to historic properties, cultural resources, or CRHR-eligible resources occur as a result of ground-disturbing activities. Figure 3 presents the overall project study area, which includes the entire boundary of the lagoon as well as the maximum limits of disturbance from ground-disturbing activities associated with the proposed project and alternatives, as described above. Some areas beyond the maximum limits of disturbance may be subject to temporary controlled flooding to provide necessary water depth for dredging operations.

FEDERAL AND STATE LEGISLATION

Section 106 of the NHPA and implementing regulations (36 Code of Federal Regulations 800) require federal agencies to take into account the effects of their undertakings on historic properties. Cultural resources are assessed through the application of the criteria for inclusion in the National Register of Historic Places (NRHP). Eligible properties must also possess integrity of location, design, setting, materials, workmanship, and are those:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or

C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

Under CEQA, a resource may be listed as a historical resource in the California Register Historical Resources (CRHR) if it qualifies under any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(2) Is associated with the lives of persons important in our past;

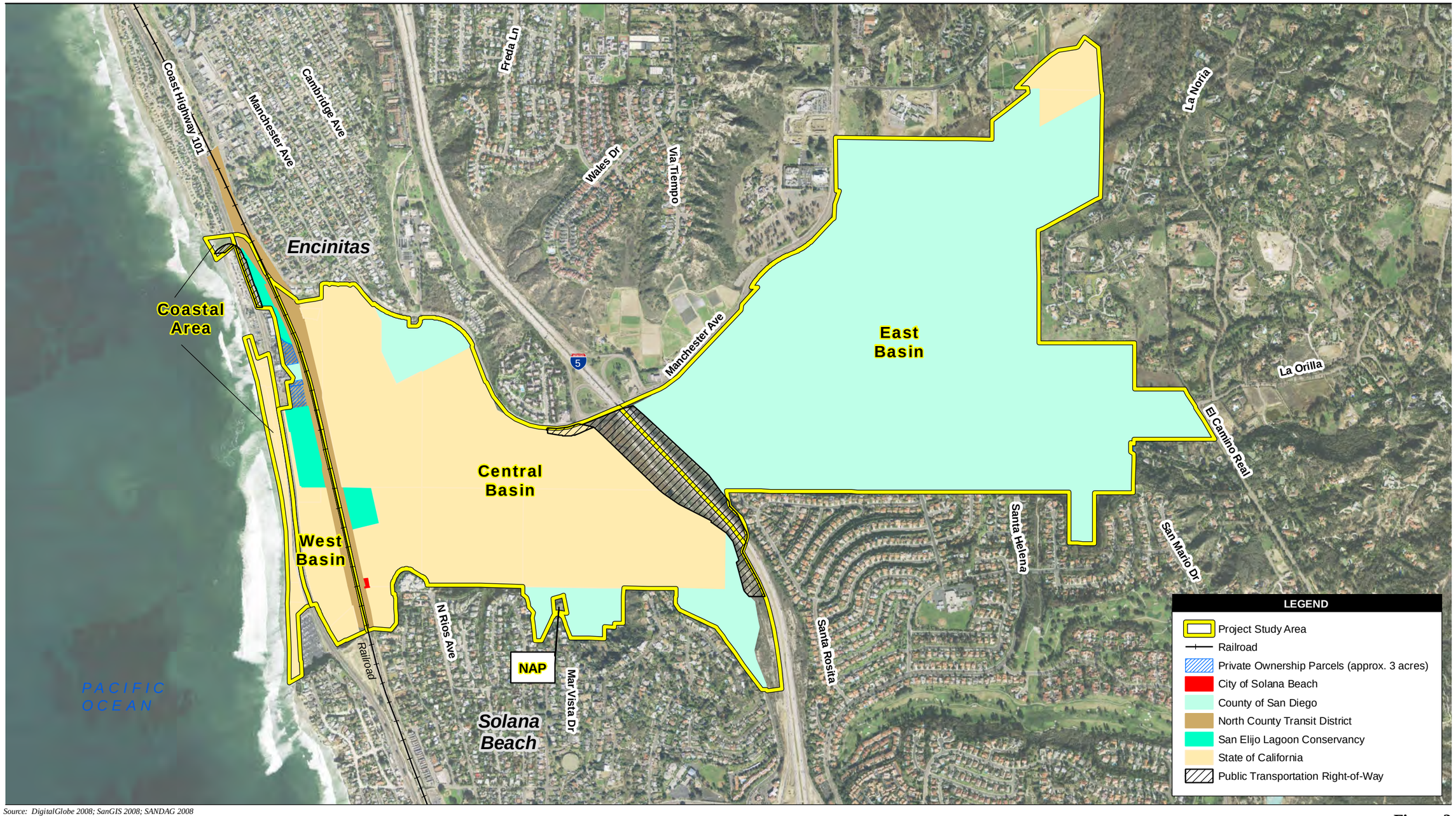
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(4) Has yielded, or may be likely to yield, information important in prehistory or history.

While a resource will be listed as a historical resource in the CRHR, if it meets any of the NRHP criteria, a resource that qualifies under the CEQA criteria for the CRHR, may not necessarily be eligible for the NRHP.

PROJECT PERSONNEL

Senior technical review was provided by Rebecca Apple, M.A., R.P.A. Tanya Wahoff, M.A., R.P.A., served as principal investigator. Ted Cooley, M.A., served as field director and is a coauthor of the technical report. Hillary Warren, M.A., assisted with the field effort. Andrew York, M.A., R.P.A., and Lauren Downs, B.A., contributed to the technical report. Trina Meiser, M.A., performed the historic resource evaluation. Resumes for key project personnel are presented in Appendix A.



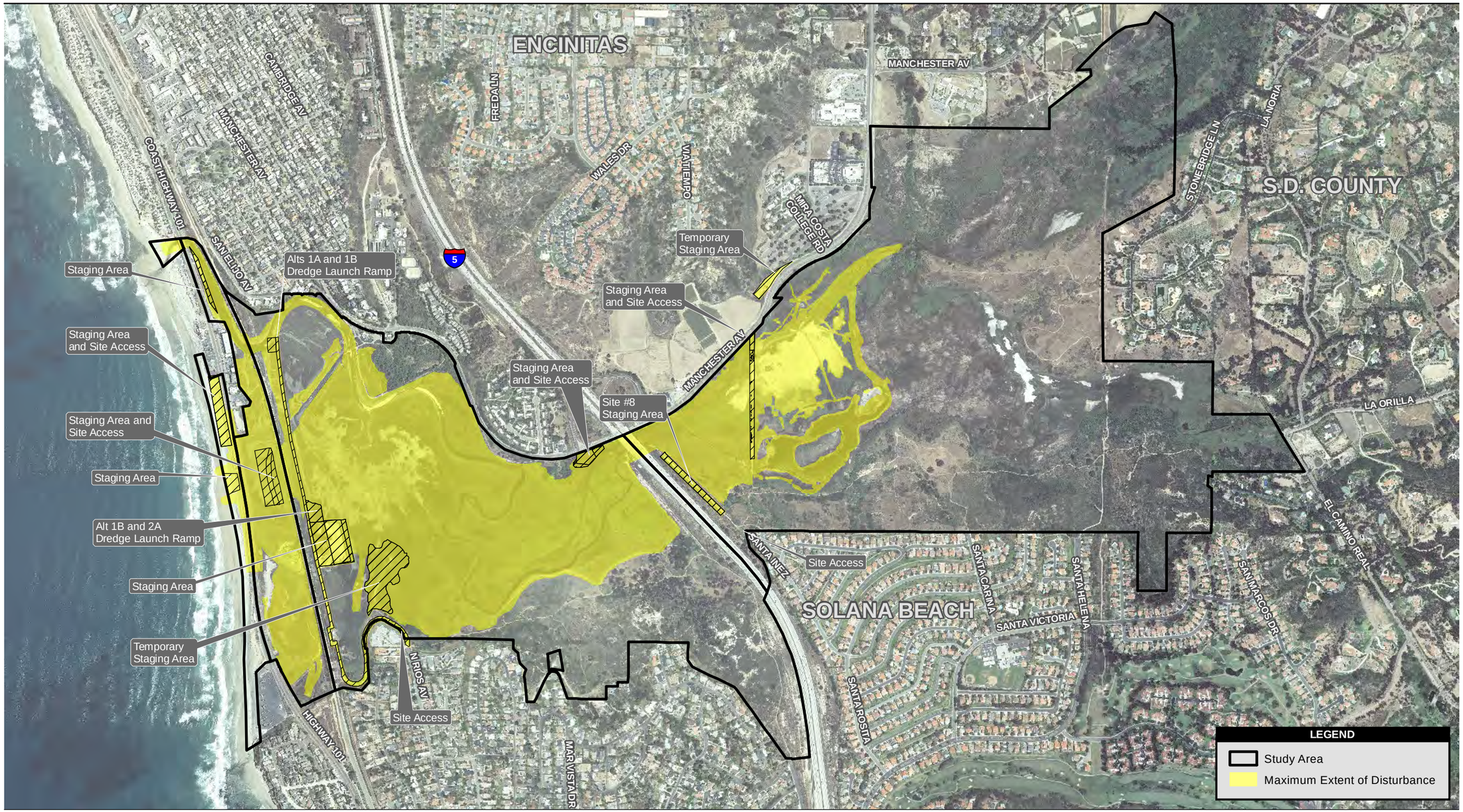
Source: DigitalGlobe 2008; SanGIS 2008; SANDAG 2008

0.25 0.125 0 0.25 mile

Scale: 1:15,000; 1 inch = 0.24 mile

Figure 2
San Elijo Lagoon Restoration Project
Study Area and Land Ownership

Path: P:\2008\08080046 San Elijo Lagoon Gap Analysis\5GIS\MXD\Alternatives_Development_Report\Study_Area_for_SELRP_ownership.mxd, 03/04/09, LeeJ



Source: SANDAG 2012; DPR; City of Encinitas 2010; AECOM; MoffattNichol 2013

1,100 550 0 1,100 Feet

Scale: 1:13,200; 1 inch = 1,100 feet

Figure 3
Maximum Limits of Disturbance

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\Cultural\TechRpt_Limit_of_Disturbance.mxd, 1/6/2014, steinb

NATURAL AND CULTURAL SETTING

The proposed undertaking is located within San Elijo Lagoon, which is situated in northern San Diego County. The discussions below briefly consider aspects of the natural and cultural settings thought to have been important to the area's previous inhabitants, and provide a general background of regional prehistory, ethnohistory, and history.

NATURAL SETTING

Climate

The proposed project area contains a variety of topographic zones and biotic communities in coastal, estuarine, and upland settings. The main geographic feature is San Elijo Lagoon. Fed by the Escondido and La Orilla Creeks, the Reserve is one of the largest coastal wetlands in San Diego County. The climate is described as Mediterranean, with cool moist winters and warm dry summers. Yearly precipitation is highly variable but averages about 32 centimeters (cm) (Bailey 1966).

Geology and Topography

The project study area is located within the coastal plain of the Peninsular Ranges Geomorphic Province. It consists of marine and nonmarine terraces dissected by San Elijo Lagoon. The coastal bluffs, which extend north and south of the lagoon, range in height to a maximum of 100 feet. Along the coast, these bluffs become steeply sloped cliffs, forming a series of wave-cut terrace formations. The sediment present consists of recent alluvium, Eocene marine, and Pleistocene marine and marine terrace deposits (Rogers 1965).

Vegetation

Within the San Elijo Lagoon area are two primary vegetation communities, upland and riparian/other wetland communities. Diegan coastal sage scrub is the most dominant of the upland communities. Diegan coastal sage scrub consists mainly of California sagebrush (*Artemisia californica)* but often occurs with various codominant species. Also present in the upland communities is coyote brush scrub, which is found on the northeastern side of the project study area and is heavily dominated by coyote brush (*Baccharis pilularis*). Nonnative grassland communities are also found within the area, and these are characterized by a dense to sparse cover of annual grasses, often with native and nonnative annual forbs (Holland 1986). Typical grasses within the region include ripgut grass (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), soft chess (*Bromus hordeaceus*), wild oats (*Avena* spp.), and fescue (*Vulpia myuros*). Diegan coastal sage scrub/chaparral is included in the upland communities of the project study area and is a mix of chaparral and sage scrub species. Chamise (*Adenostoma fasciculata*) and coastal sagebrush are dominant and relatively equal in cover. Found along the southern border of the project study area are the eucalyptus woodland communities, dominated

by river red gum (*Eucalyptus camaldulensis*) and blue gum (*Eucalyptus globulus*) (Oberbauer et al. 2008).

Present in the riparian/other wetland communities are coastal salt marsh, freshwater marsh, and southern willow scrub. Within the different littoral zones of the coastal salt marsh, species can be segregated with California cordgrass (*Spartina foliosa*) nearest the open water in the low-littoral zone, Pacific pickleweed (*Salicornia pacifica*) and saltwort (*Batis maritima*) in the mid-littoral zones, and a richer mixture of species in the higher littoral zone (Holland 1986). Freshwater marsh species include California mugwort (*Artemisia douglasiana*), and a variety of sedges (*Carex* sp., *Cyperus* sp.) and rushes (*Juncus* sp.), Present in the southern willow scrub community is arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), and Goodding's black willow (*Salix gooddingii*).

Fauna

A variety of terrestrial mammals are native to the area and some are commonly represented in archaeological components; these species include mule deer (*Odocoilus hemionus*), rabbits (*Sylvilagus* spp.), jackrabbits (*Lepus californicus*), squirrels and chipmunks (Sciuridae), gophers (*Thomomys bottae*), woodrats (*Neotoma* sp.), raccoons (*Procyon lotor*), foxes (*Urocyon cinereoargenteus*), and coyotes (*Canis latrans*). Also present prehistorically, but not commonly represented in archaeological assemblages, were large carnivores such as California grizzly (*Ursus arctus californicus*) and mountain lion (*Puma concolor*). Littoral settings also supported several species of sea mammal, including California sea lion (*Zalophus californicus*), Guadalupe fur seal (*Arctocephalus townsendi*), and sea otter (*Enhydra lutris*).

Sharks and rays would have been available in the estuary, along with a variety of shellfish that were used prehistorically for food. The most important of these are Venus clam (*Chione* spp.), oyster (*Ostrea lurida*), and scallop (*Argopecten* sp.). Shellfish found along the open coast include bean clam (*Donax gouldii*), Pismo clam (*Tivela stultorum*), and mussel (*Mytilus californianus*).

CULTURAL SETTING

Regional Prehistory and History

Although the general outlines of the prehistory of coastal southern California have been in place for many decades, recent investigations have led to some important refinements. Many of these relate less to changes in assemblages and more to shifts in settlement and land use, and are thus especially relevant to models pertaining to archaeological landscapes and investigations on a more regional scale. In the following discussion, current knowledge of major prehistoric developments is reviewed as it may relate to regional land use models.

Initial Occupation: Paleoindian and Early Coastal Adaptations

Current environmental reconstructions indicate a global warming trend starting about 18,000 years ago that eventually signaled the end of the last glacial. Inman (1983) noted that 18,000

years ago sea levels were at least 30 meters (m) below present levels. Rapid sea level rise flooded large portions of the coast, potentially inundating evidence of early human occupation (Carbone 1991).

Despite decades of research, the early prehistory of coastal southern California remains poorly understood. The archaeological record does reveal that humans had appeared by about 12,000 years ago on the Channel Islands, where they lived primarily by fishing and gathering shellfish. These early island components are of interest in that they seem to reflect fully developed maritime economies that were distinct from, but roughly contemporaneous with, the Clovis tradition represented throughout much of interior North America. Identified late Pleistocene components are lacking on the mainland coast of southern California, although several sites have yielded calibrated dates in excess of 9,000 years (Erlandson et al. 2007:58–59). Archaeological complexes represented at these early sites include the San Dieguito complex with its worked scrapers and leaf-shaped and stemmed projectile points (Warren 1968; Warren et al. 1993), and the La Jolla complex represented by flaked cobble tools, relatively abundant groundstone, and flexed burials. Although the temporal and cultural relationship between San Dieguito and La Jolla continues to be debated, it is increasingly clear that human populations were well established along the coast of southern California very early in the Holocene.

The Archaic

During the early Holocene, sea levels continued to rise. By about 8,000 years ago, however, it appears that the rise sea in level began to slow, allowing the formation of productive bay, lagoon, and estuary habitats at many locations along the San Diego County coastline (Carbone 1991; Masters and Gallegos 1997), including at what is known today as San Elijo Lagoon (Byrd et al. 2004). These habitats seem to have supported a significant coastal population during the early Archaic, as numerous coastal components have been found that date to this interval. Archaeological remains in these components typically represent the La Jolla complex and often contain abundant shellfish and fish remains, along with flaked cobble tools, basin metates, manos, discoidals, stone balls, and flexed burials. At the same time, it has been suggested that the contemporaneous Pauma complex of inland San Diego County may represent seasonal movements of early Archaic populations between coastal and inland resource areas (True and Pankey 1985; Warren et al. 1961). If so, a relatively broad seasonal range is implied for the early portion of the Archaic.

Although the basic toolkit represented by the La Jolla complex appears to have remained consistent throughout the Archaic, there are some indications of significant shifts in settlement, which is possibly a response to changing environmental conditions at the lagoons and estuaries. At San Elijo Lagoon, data from cores taken during a paleoenvironmental study by Byrd and others (2004) suggest that the lagoon was closed to tidal circulation between about 3,500 and 1,100 years ago. Open lagoon salinity levels are comparable to seawater; however, when closed, their salinity becomes highly variable, resulting in a decreased abundance of shellfish and other resources that may have a limited range of salinity tolerance (Zedler 1982). Compilations of radiocarbon assays for Batiquitos Lagoon (Gallegos 1985; Warren et al. 1961) provide evidence for disuse of this location between about 3000 and 1500 before present (B.P.). This, and

evidence from some other locations in San Diego County, led Warren (1964, 1968; Warren et al. 1961) and others (Gallegos 1985; Masters and Gallegos 1997) to postulate a population movement inland and southward in response to siltation and declining productivity of coastal lagoons in the northern portion of the county. Warren (1964) suggested that San Diego Bay and Mission Bay would have continued to provide productive wetland resource areas at this time.

The Late Prehistoric

The beginning of the Late Prehistoric is marked by the appearance of small projectile points, ceramics, and cremation burial practices. Data suggest that Late Prehistoric land use and settlement systems increasingly focused on inland settings, with settlements at a variety of interior and upland locations. Coastal settings continued to be used as well. The pattern of large residential camps with satellite short-term campsites that developed during this period (True 1966; Rosenthal et al. 2001; Byrd and Raab 2007) is seen as an indicator of economic intensification (Byrd and Reddy 1999, 2002)—a shift toward exploitation of smaller, more abundant resources—in response to stresses from increased populations and variable climatic conditions. Although more labor intensive to procure, these smaller resources were available in greater numbers and easily accessible for a range of age groups. The small satellite camps are seen as short-term campsites or activity areas focused on specific resources. An example of Late Prehistoric period intensification practices is the numerous Late Prehistoric period shell middens composed of bean clam (*Donax gouldii*) (Gallegos et al. 1998; Byrd 1996, 1998), a species that likely appeared in quantity with the expansion of sandy beaches in the Late Prehistoric period (Masters 1998).

Ethnohistory

By the time the Spanish arrived in California, the project area was within the territory of a loosely integrated cultural group historically known as the Kumeyaay, or Northern Diegueño. The Kumeyaay people spoke a Yuman language of Hokan stock. The Kumeyaay were organized into bands that followed a seasonal round of resource exploitation. Subsistence was plant-based, supplemented by game and also by shellfish on the coast. Acorns from a variety of oaks (*Quercus* spp.) were a staple, and the variety of seeds that also formed an important part of the diet included chia (*Salvia columbarie*), buckwheat (*Eriogonum fasciculatum*), and grasses (*Bromus/Stipa* spp., *Hordeum* sp., *Phalaris* sp., and *Sporobulus* sp.) (Luomala 1978; Byrd and Raab 2007). Major ethnohistoric villages in the vicinity of the proposed project were *Kuiauma* near the mouth of San Elijo lagoon and *Hapai* on the San Dieguito River, approximately 5 miles east of the lagoon (Kroeber 1925). Trading networks moved coastal resources such as salt and shells inland and acorns, agave, and mesquite beans toward the coast (Luomala 1978).

History

Europeans first entered the project region in 1769, when the members of the Spanish Portola expedition crossed through the area en route from Mexico to Monterrey (Brown 2001). Dual military and religious contingents established a series of missions in Alta California between San Diego and Monterrey. After secularization of the mission system in 1834, large tracts of former mission lands were granted by the Mexican government to individuals. One of the many grants

by Mexican Governor Pio Pico was in 1840 to Juan Maria Osuna, the first *alcalde* of San Diego. Lands situated east of San Elijo Lagoon became known as Rancho San Dieguito (Moyer 1969).

For the next nearly 80 years, the area around San Elijo Lagoon remained largely undeveloped and was used mainly for grazing and agriculture. About 1915, a factory was built near the northern edge of the lagoon to process kelp for potash. Potash was used in the manufacture of soap, glass, and fertilizer, among other products. Germany had been a major supplier of potash to the United States until World War I (WWI) (1914–1919) (Cormac 2004). After WWI, the need for potash declined and kelp processing factories shut down (Tucker and Bujkovsky 2009).

Major transportation routes developed along the coast in the early 20th century provided easier access to the area. These included the Coast Route (later known as U.S. Highway 101) and the Atchison, Topeka, and Santa Fe Railroad. Completion in 1917 of the Hodges Dam on the San Dieguito River provided a stable water system to support urban development. During the 1920s, the communities of Solana Beach, Encinitas, and Rancho Santa Fe—the latter established on former Rancho San Dieguito lands—developed around the lagoon (Pryde 1992; Moyer 1969). As communities in San Diego County continued to develop through the 20th century, so did the need for improved transportation routes. Among the many highways constructed to meet this need was Interstate-5 (I-5) along coastal San Diego County.

Coast Route/U.S. Highway 101

From its inception in the early 1900s to the development of modern highways in the 1950s and 1960s, the Coast Route was the main north-south transportation route between San Diego and Los Angeles. The highway had a major role in the development of numerous coastal communities in San Diego County.

Trails and dirt wagon roads were the earliest travel routes in California. In 1896, after observations of existing road conditions, officials of the newly created California Bureau of Highways submitted a report recommending a new system of highways to connect all county seats (Faigin 2006). Six years later, legislation was passed to establish a California state highway system, with funding intended to be provided at the county level. The San Diego County Road Commission was formed in 1908 to develop roads to meet San Diego County's transportation needs and comply with the 1902 legislation. While both an interior and a coastal route were considered by the Commission, a coastal road from San Diego to Los Angeles was considered a priority (Arnold 2002). In 1909, the Coast Route was adopted into the state highway system, although it was several more years before road construction began.

Funded by bonds issued by the County, work on the coast road began in 1912. Existing roads were incorporated where possible, to reduce costs. New sections of road, and levees and bridges over lagoons were constructed where needed. The two-lane coastal road (Plate 1) was completed in November 1915 (Arnold 2002; Hawthorne 2003).

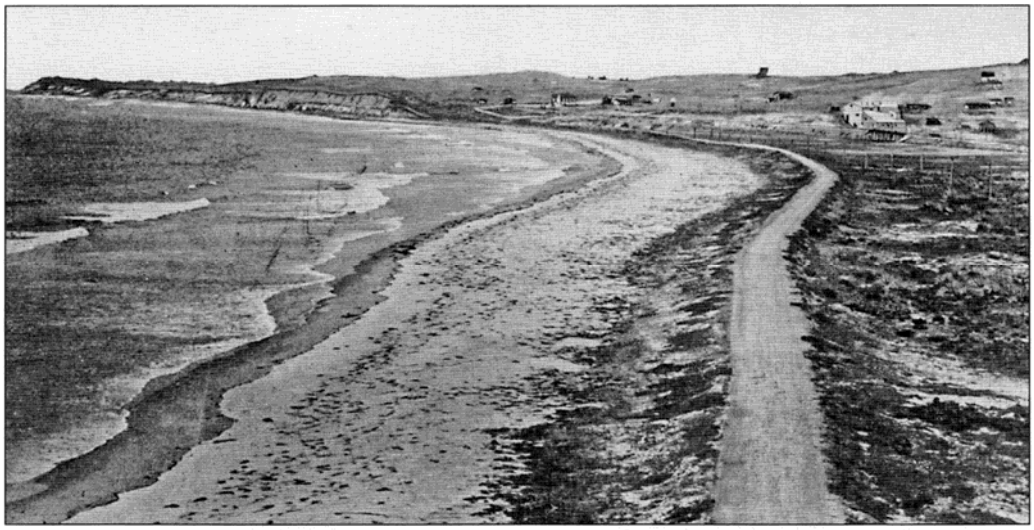


Plate 1. Coast Highway 101 across San Elijo Lagoon in 1915. Source: Courtesy of Ken Harrison in Tucker and Bujkovsky 2009.

Initially surfaced with concrete, paving of the road with oil macadam began in 1917. However, it was determined by the County Highway Commission that the funds raised through a bond were insufficient to complete the process. Reasons for the shortfall included increased labor and materials costs resulting from U.S. involvement in WWI and the decision to increase the thickness and width of the paving. Sections of the road were prioritized based on several criteria (i.e., commercial value, agricultural value, scenic and tourist value, through traffic, relieving congestion, and cost and mileage). The paving proceeded until the money ran out. The work did not resume until 1922, when paving again proceeded in stages (Porter 1929). In 1925, the Coast Route was formally designated U.S. Highway Route 101, in accordance with a system recently devised by the federal government for standardizing highway designations. Under this system, the federal government assigned odd numbers to north-south roads, and even numbers to east-west roads (ACR 92).

The automobile quickly became a popular means of transportation during the early part of the 20th century. The Automobile Association of Southern California was established in 1900, and by 1915 was printing strip maps for motorists (Library of Congress 2010). A new type of tourism -——automobile tourism—quickly developed along with roadside businesses—auto courts, service stations, and repair garages—that catered specifically to the automobile tourists. The 1920s and 1930s were growth years for the several small coastal communities in San Diego County along U.S. Highway 101 (Starr 1986). A third lane to U.S. Highway 101 was completed in 1937 (Coley 1997, 2002).

During World War II (WWII) (1940–1945), automobile travel was restricted because of gas rationing and shortages of rubber, metal, and other materials. After the war, San Diego County experienced a population boom as many former military personnel decided to permanently relocate in the area (Engstrand 1992). The existing road system was not adequate to meet the

needs of the increased population. High traffic loads resulted in frequent traffic-related accidents along some stretches of Highway 101. Built from 1947 to 1953, a 10-mile-long bypass developed from San Luis Rey River to just south of Agua Hedionda Lagoon relieved some of the congestion, and the addition of a fourth lane to U.S. Highway 101 was completed in 1952 (Coley 1997).

The Federal-aid Highway act of 1944 was passed for the development of a national system of interstate highways. The modern freeways constructed during the 1950s and 1960s were more attractive to motorists, particularly for long-distance travel. Construction of I-5 began in 1957. With the completion of the final section in 1966, use of U.S. Highway 101 significantly decreased, and many businesses along the route closed (Arnold 2002). The Department of Transportation shifted maintenance responsibilities of the road to local governments and it was no longer part of the state highway system (Glionna 1990). It became known as the "Pacific Coast Highway" and "Old Highway 101." In smaller communities, sections of the route were renamed, e.g., First Street in Encinitas. Urbanization subsequently destroyed or significantly altered portions of Highway 101. In southern San Diego County, much of Highway 101 no longer exists. Relatively intact alignments of the highway are found from Torrey Pines northward (Arnold 2002).

In August 1998, a bill (ACR 92) was adopted to recognize "the remaining sections of the original [395-mile-long] U.S. Highway 101 for their historical significance." The measure requested that "upon application by a local agency or private group," the Department of Transportation identify sections of the highway within their jurisdiction and to use donations to fund placement of signs or markers along those sections. Starting in 1997, Historic U.S. Highway Route 101 signs and markers were installed in many north county towns, including Oceanside, Encinitas, Carlsbad, and Del Mar (Coley 1997; Daniels 1997).

INVESTIGATION METHODS

The cultural resources inventory of the proposed project area was designed to identify potentially significant cultural resources that could be affected by the proposed undertaking. Major activities directed at identifying and documenting these included archival research, a pedestrian field survey, site recording, mapping, and a draft and final report.

RESEARCH ORIENTATION

Archaeological research in southern coastal California has led to a number of models that address issues of prehistoric cultural change (Byrd and Reddy 2002; Gallegos 1987; Warren 1964, 2012; Warren et al. 1961; Warren et al. 1993). These models explore the influences of such variables as climate, habitat change, resource distribution, and demographic trends on human land use. With respect to southern coastal California, the basic questions arising from these models revolve around prehistoric movement across—and use of—the landscape, trends in subsistence intensification, and refinement of the regional chronological framework. Historic research issues focus on transportation, development, and use of the area during WWII.

To address these questions, it is necessary to (1) identify, on a regional scale, the spatial distributions of archaeological components representing various prehistoric periods; (2) distinguish functional types among these components (i.e., habitation sites, temporary camps, or resource processing locations); (3) use zooarchaeological, archaeobotanical, and artifactual data to identify regional subsistence trends; and (4) apply archaeological data to the identification of regional procurement ranges and trade networks.

Although typically limited to surface observations, cultural resources inventories can help address these issues by contributing to the regional database relating to site locations and distributions. In addition, some attributes identified during site recording can provide useful preliminary data relating to site type and chronology. Common examples of these attributes include site size, presence of hearths or fire-affected rock, bedrock milling features, certain types of faunal remains, and temporal indicators such as ceramics or diagnostic projectile points.

INVENTORY METHODS

As indicated in Figure 3, the majority of the proposed project ground disturbance would occur in lagoon sediments, with access roads and some staging areas on stable sediments. Cultural deposits typically occur on stable sediments along lagoon margins. The San Elijo Lagoon area has been extensively surveyed during numerous prior cultural resources management investigations, which resulted in the recordation of several sites in the project study area. The present study focused on previously recorded sites and stable surfaces that appeared to be within or in proximity to the SELRP APE.

ARCHAEOLOGICAL INVENTORY

Prefield

Prior to the initiation of fieldwork, a records search was conducted at the South Coastal Information Center (SCIC) to obtain digital information on previous investigations and cultural resources recorded in the area. Georeferenced polygons for sites and previous investigations were overlain onto aerial images for each of the three proposed alternatives with areas of disturbance indicated. The maps were carefully examined, and recorded sites mapped near or within proposed areas of disturbance were selected to be revisited. Additionally, planned areas of disturbance (e.g., access roads) on stable surfaces were selected for cultural resources survey.

Field Survey

Field investigations consisted of a team of two archaeologists walking in parallel transects on either side of the existing access road, or in 10 m intervals through the survey area. In areas with dense vegetation (i.e., west side of the railroad near site CA-SDI-215 and east of CA-SDI-20,816), open areas were examined for cultural materials. Locations of the visited sites were recorded with a Global Positioning System and overview photographs were taken to document the conditions at the time of the field effort.

Site Recording

Sites were documented on standard Department of Parks and Recreation (DPR) forms (DPR 523) based on guidelines provided by the Office of Historic Preservation. For sites that were consistent with previous site records, an update was prepared on a DPR Continuation Form. Newly identified sites were recorded on DPR Primary and Archaeological Site forms, as well as previously recorded sites where current observations were significantly different from the existing records.

RESULTS AND MANAGEMENT RECOMMENDATIONS

The cultural resources investigations conducted for the SELRP consisted of a records and literature search and field survey. Survey was conducted at previously recorded sites and areas on stable surfaces with the potential for cultural resources that appeared to be within or in proximity to the SELRP APE. Field investigations found no significant cultural resources within the proposed project APE. The following presents a summary of the records and literature search, followed by the results of the field survey.

RECORDS AND LITERATURE SEARCH

The archives of the SCIC housed at San Diego State University were consulted to identify previous cultural resources surveys and known cultural resources within a 1-mile radius of the project study area. The findings of the records search are provided separately in Appendix B and summarized below. Additionally, supplemental research for U.S. Highway 101 was conducted at the California Room of the Main Branch of the San Diego Public Library and at the Encinitas Historical Society.

Previous Investigations

The literature search identified 108 studies conducted within a 1-mile radius of the project study area. The prior investigations include studies associated with the I-5 North Coast Corridor Project (Dominici 2007, 2010; Tsunoda 2010), the San Elijo Lagoon Nature Center (Zepeda-Herman 2009; County of San Diego 1979), improvements to Manchester Ave – I-5 Interchange (Dolan 2004), the Solana Beach Forcemain Project (Guerro and Gallegos 2004, 2007) and a cultural resources management technical report for San Elijo Lagoon (Byrd et al. 2004).

The study by Byrd and others documents the results of National Science Foundation-funded archaeological and paleontological investigations on prehistoric hunter-gatherers at San Elijo Lagoon. The investigations included a paleoreconstruction based on a coring program and other environmental data, and archaeological excavations and artifact analyses of eight prehistoric sites in the lagoon. The focus of the coring program conducted in the eastern and upper portions of the lagoon was to provide data regarding paleoenvironments also revealed sediment deposits ranging from approximately 35 feet to 105 feet in depth in those areas.

Also consulted were the RBSP II EA/Final EIR (AECOM 2011), addressing locations proposed as part of the materials disposal/reuse component. The RBSP II project provided information on the presence/absence of cultural resources at offshore borrow sites and nearshore and onshore receiver sites. Although it provided no information on cultural resources, a geotechnical sampling study (URS 2012) was consulted regarding depths of sediments in the lagoon.

Archaeological Resources

Previous investigations by cultural resources firms have recorded 30 archaeological sites within 300 feet of the broader project study area (Table 1) (Figure 4) and none within the materials disposal/placement areas. One additional site, CA-SDI-20,816, was identified during survey conducted in support of the current SELRP EIR/EIS. Most of these archaeological resources are unevaluated and, until they are evaluated, are considered potentially eligible for the NRHP. Examination of the digital data provided by the SCIC and field visits by AECOM archaeologists revealed that none of these resources are within the APE for the proposed project and alternatives. The majority of the sites within the project study area are prehistoric. The sites consist of shell middens, or shell and artifact scatters located around the margins of the lagoon and provide evidence of the extensive prehistoric use of lagoon and estuarine resources. One site has been recorded along the open coast and extending into the ocean. The submerged portions of this resource may represent a secondary deposit from cliff erosion, rather than an inundated site. Numerous submerged prehistoric sites have been recorded off the coast of southern California, identified mainly by the presence of stone grinding implements (Masters 1983).

Table 1. Archaeological Sites within 300 Feet of the Project Study Area

Resource Number	Primary Number (P-)	Component	Description	Date Recorded
CA-SDI-214	37-000214	Unidentified	No information	n.d.
CA-SDI-215	37-000215	M	Shell midden, historic trash dump; partially destroyed by railroad construction	6-15-1998
CA-SDI-216	37-000216	P	Large shell scatter, debitage	2-12-1979
CA-SDI-4546	37-004546	P	Artifact scatter	2-14-1974
CA-SDI-4574	37-004574	P	Shell midden	2-27-1979
CA-SDI-4575	37-004575	P	Shell and artifact scatter	2-14-1974, 1979, 1981, 2009, 11-2010
CA-SDI-4576	-	P	Scatter of shell and tools	12-23-1981
CA-SDI-6848	37-006848	P	Shell midden, artifacts	2-13-1979
CA-SDI-6850	37-006850	P	Large shell midden with scattered artifacts	2-26-1979, 12-2008
CA-SDI-6852	37-006852	P	Lithic scatter, shell	2-27-1979
CA-SDI-6853	37-006853	P	Shell midden, flaked stone artifacts	2-27-1979
CA-SDI-6854	37-006854	H	Four concrete foundations associated with a circa 1915 kelp processing factory	3-15-1979
CA-SDI-6856	37-006856	H	Two cement foundations, fish pond	11-7-2012
CA-SDI-6857	37-006856	H	Two historic house foundations and a well site	3-15-1979

Resource Number	Primary Number (P-)	Component	Description	Date Recorded
CA-SDI-6858	37-006858	H	Historic water line and pilings circa 1928	3-15-1979, 11-2010
CA-SDI-10,220	-	P	Temporary camp with three loci	2-26-85
CA-SDI-10,645	-	P	Shell and artifact scatter	11-10-86
CA-SDI-13,754	37-013731	P	Shell midden, sandstone mortars	7-17-1951, 9-19-1994
CA-SDI-13,903	37-013926	P	Shell and artifact scatter	11-12-2012
CA-SDI-14,148	37-014375	P	Shell scatter	11-30-95
CA-SDI-14,149	37-014376	H	Historic foundation and cistern	11-30-95
CA-SDI-14,150	37-014377	P	Sparse shell scatter	11-30-95
CA-SDI-14,796	37-016304	H	Half-basement, cement foundation, privy, cistern, and sparse historic deposit	6-29-1998
CA-SDI-17,376	37-026480	P	Shell and artifact scatter	8-1-1974
CA-SDI-17,396	37-026500	P	Shell midden, metates, manos, and flakes	n.d.
CA-SDI-17,397	37-026501	P	Shell scatter	n.d.
CA-SDI-17,398	37-026502	P	Shell midden, artifacts	n.d.
CA-SDI-17,400	37-026504	P	Midden, cobble hearths, metates, and manos	n.d.
CA-SDI-18,009	37-027113	P	Shell midden	11-3-2006
P-37-029481	37-029481	H	Railroad alignment, abandoned	1-23-2007
SDM-W-80		P	Shell midden	1920s
CA-SDI-20,816		P	Shell scatter	11-7-12

H = Historic
P = Prehistoric
M = Multi-component

Seven of the sites within 300 feet of the SELRP area date to the historic period. Those include remnants of an early 20th century kelp processing factory; foundations, and a well representing former residences; a historic waterline; and an approximately 1,000-foot-long section of an abandoned alignment of the Santa Fe Railroad. The segment is adjacent to the existing North County Transit District (NCTD) Railroad. Planned improvements to the NCTD Railroad by the San Diego Association of Governments in partnership with NCTD include replacement of the bridge over San Elijo Lagoon, and the segment of the Santa Fe Railroad would be addressed as part of that study.

Historic Maps

Historic maps consulted for this project included the 1872 San Diego County 1:100,000 map, the Historic Roads 1769–1885 1:100,000 map, the 1948 edition of the Rancho Santa Fe U.S.

Geological Survey (USGS) 7.5' topographic map, the 1948 edition of the Encinitas USGS 7.5' topographic map, and the 1953 edition of the Del Mar USGS 7.5' topographic map.

The 1872 San Diego County identifies no resources within the current project study area. The map of Historic Roads 1769–1885 has an unidentified coastal road delineated, with a break in approximately the same general location as the current San Elijo Lagoon inlet. U.S. Highway 101 is indicated on the Encinitas 1948 and Del Mar 1953 7.5' topographic maps.

Native American Consultation

The Native American Heritage Commission was contacted for a search of their Sacred Lands files and for a contact list of interested tribes and persons. The search identified no Native American cultural resources within the SELRP APE. A contact program consisting of an information letter, map, and response form was sent to each of the tribes and persons on the contact list. Examples are provided in Appendix C. A summary of the contact program, which is ongoing, is provided in Table 2.

Table 2. Summary of Native American Contacts

Tribe	Person Contacted	Date	Medium	Comment
Barona Group of the Capitan Grande	Edwin Romero (Chairperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	Spoke with the assistant to the Chairperson; the Chairperson is currently Clifford LaChappa. Left a message requesting whether they would prefer a new letter sent via mail or email.
	Clifford LaChappa (Chairperson)	3/18/2013	Telephone call	No response
		3/21/2013	Telephone call	Left a voicemail message requesting address confirmation for a new letter to be sent; no response.
Inaja Band of Mission Indians	Rebecca Osuna (Spokesperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	No answer, no voicemail option.
		3/18/2013	Telephone call	No answer, no voicemail option.
Ipai Nation of Santa Ysabel	Clint Linton (Director of Cultural Resources)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	Left a voicemail message.
		3/18/2013	Telephone call	Mr. Linton requested (1) that a Kumeyaay monitor be present for ground excavations, and (2) information regarding what main organizations are involved.

Tribe	Person Contacted	Date	Medium	Comment
		3/18/2013	Email	Mr. Linton was informed via email that the two main organizations are San Diego County Parks and the U.S. Army Corps of Engineers.
Jamul Indian Village	Chairperson	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	Left a voicemail message.
		3/18/2013	Telephone call	No answer and no call back.
Kumeyaay Cultural Historic Committee	Ron Christman	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone Call	No answer, no option to leave a message.
		3/18/2013	Telephone Call	No response.
Kumeyaay Cultural Repatriation Committee	Steve Banegas (Spokesperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	Left a voicemail message.
		3/18/2013	Telephone call	Mr. Banegas thought that the information letter should not have been sent to him.
Kumeyaay Cultural Repatriation Committee	Bernice Paipa (Vice Spokesperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	Spoke with the receptionist; Ms. Paipa was not in, and requested a call on Monday.
		3/18/2013	Telephone call	Requested that the letter be resent via email.
		3/19/2013	Email	Information letter, map, and response form re-sent via email.
Kwaaymii Laguna Band of Mission Indians	Carmen Lucas	2/15/2013	Letter	Information letter, map, and response form.
		3/15/2013	Telephone call	Left a voicemail message.
		3/18/2013	Telephone call	No response.
La Posta Band of Mission Indians	Javaughn Miller	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	Left a voicemail message; no response.
		3/18/2013	Telephone call	Not available.
Los Coyotes Band of Mission Indians	Shane Chapparosa (Chairman)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	Requested that the letter be re-sent via email.
		3/14/2013	Email	Information letter, map, and response form re-sent via email.

Tribe	Person Contacted	Date	Medium	Comment
Manzanita Band of Kumeyaay Mation	Leroy J. Elliott (Chairperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	No response.
		3/15/2013	Telephone call	No response.
Mesa Grande Band of Mission Indians	Mark Romero (Chairperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	Requested that the letter be re-sent via fax.
		3/15/2013	Fax	Information letter, map, and response form sent via fax.
Pauma Valley Band of Luiseño Indians	Bennae Calac (Tribal Council Member)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	Requested that the letter be re-sent via email.
		3/15/2013	Email	Information letter, map, and response form re-sent via email.
San Luis Rey Band of Mission Indians	Cultural Department (Carmen Mojado)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	Left a voicemail message.
		3/15/2013	Telephone call	Requested (1) a copy of the cultural report be sent, (2) a response with the name corrected. Informed Ms. Mojado that the cultural report has not yet been finalized.
		3/15/2013	Email	Revised response form sent via email.
San Pasqual Band of Indians	Kristie Orosco (Environmental Coordinator)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	Ms. Orosco requested information regarding the exact EIR/EIS activity proposed, and stated that Native American monitors have to be present, preferably recruited from the San Pasqual Band of Indians as the project area is within the area classified as their territory.
San Pasqual Band of Mission Indians	Allen E. Lawson (Chairperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/15/2013	Telephone call	Left a voicemail message.
		3/18/2013	Telephone call	No answer.
Sycuan Band of the Kumeyaay Nation	Danny Tucker (Chairperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	Left a voicemail message.
		3/15/2013	Telephone call	No response.

Tribe	Person Contacted	Date	Medium	Comment
Viejas Band of Kumeyaay Indians	Anthony R. Pico (Chairperson)	2/15/2013	Letter	Information letter, map, and response form; no response.
		3/14/2013	Telephone call	No answer, no voicemail option.
		3/15/2013	Telephone call	No answer, no voicemail option.

Summary of Contacts

Mr. Linton, Director of Cultural Resources for the Ipai Nation of Santa Ysabel, requested that a Kumeyaay monitor be present during excavations for the project. Ms. Mojado of the San Luis Rey Band of Mission Indians requested a copy of the cultural resources technical report. Ms. Orosco, Environmental Coordinator of the San Pasqual Band of Indians, requested additional information regarding the activities proposed for the EIR/EIS, and identified that a Native American cultural monitor from the tribe should be present during activities associated with the project.

Historic Structures

Four historic built resources have been identified within the project area, including a historic road and three bridges. The first resource, U.S. Highway 101 (P-37-033047), is well over 50 years old, but has been widened and improved many times over the years. Although the alignment has not been altered, the roadway itself has a low potential to be eligible for listing in the NRHP or the CRHR due to loss of integrity. The three bridges, Bridge Nos. 57C0210, 570458L and 570458R, have been previously evaluated in the California Department of Transportation Historic Highway Bridge Inventory and listed as Category 5, not eligible for the NRHP. They are also considered not eligible for the CRHR. The records and literature search found no historic buildings are within 0.5 mile of the SELRP area. No potentially eligible historic properties nor historical resources for the purposes of CEQA have been identified, and no impacts to historic resources are anticipated.

FIELD INVESTIGATIONS

The cultural resources field investigations in support of the proposed SELRP were conducted by a team of two AECOM archaeologists on November 6, 7, and 15, 2012. As described previously, the investigations were conducted at previously recorded sites that appeared to be within or adjacent to the SELRP APE and planned areas of disturbance on stable surfaces. Based on analysis of the results of the records search performed for the project, these surveys were focused on examining locations where cultural resources sites had been previously recorded, within, or in proximity to the footprint of proposed project activities that could potentially impact/adversely affect these resources. Eight different locations were examined at which a total of eight cultural resource sites and a structure are recorded (Table 3). Seven of the surveyed locations are located

in the west basin portion of the lagoon with the additional location in the east basin area. The survey areas are indicated in Figure 5.

Table 3. Previously Recorded Sites Visited during Survey

Survey Area*	Site	Description
1	CA-SDI-13,753	Shell midden with two metates, one pestle, and animal bone
1	CA-SDI-14,057	Prehistoric habitation area
2	CA-SDI-215/H	Shell midden, historic trash dump; partially destroyed by railroad construction
2	CA-SDI-15066	Five flakes, one mano, one core, and two discreet shell scatters
2	CA-SDI-17,777	Historic trash deposit
3	SELRP-3	Segment of Coast Highway 101
4	CA-SDI-6854H	Four concrete foundations associated with a circa 1915 kelp processing factory
5	CA-SDI-6850	Large shell midden with scattered artifacts
6	CA-SDI-20,816	Shell scatter
8	CA-SDI-13,903	Shell and artifact scatter

* No archaeological sites were found at survey area 7.

The following discussion describes the conditions at the time of fieldwork and the findings. Sites are discussed in order by their survey area, as indicated in Table 3 and Figure 5.

Survey Results, West Basin

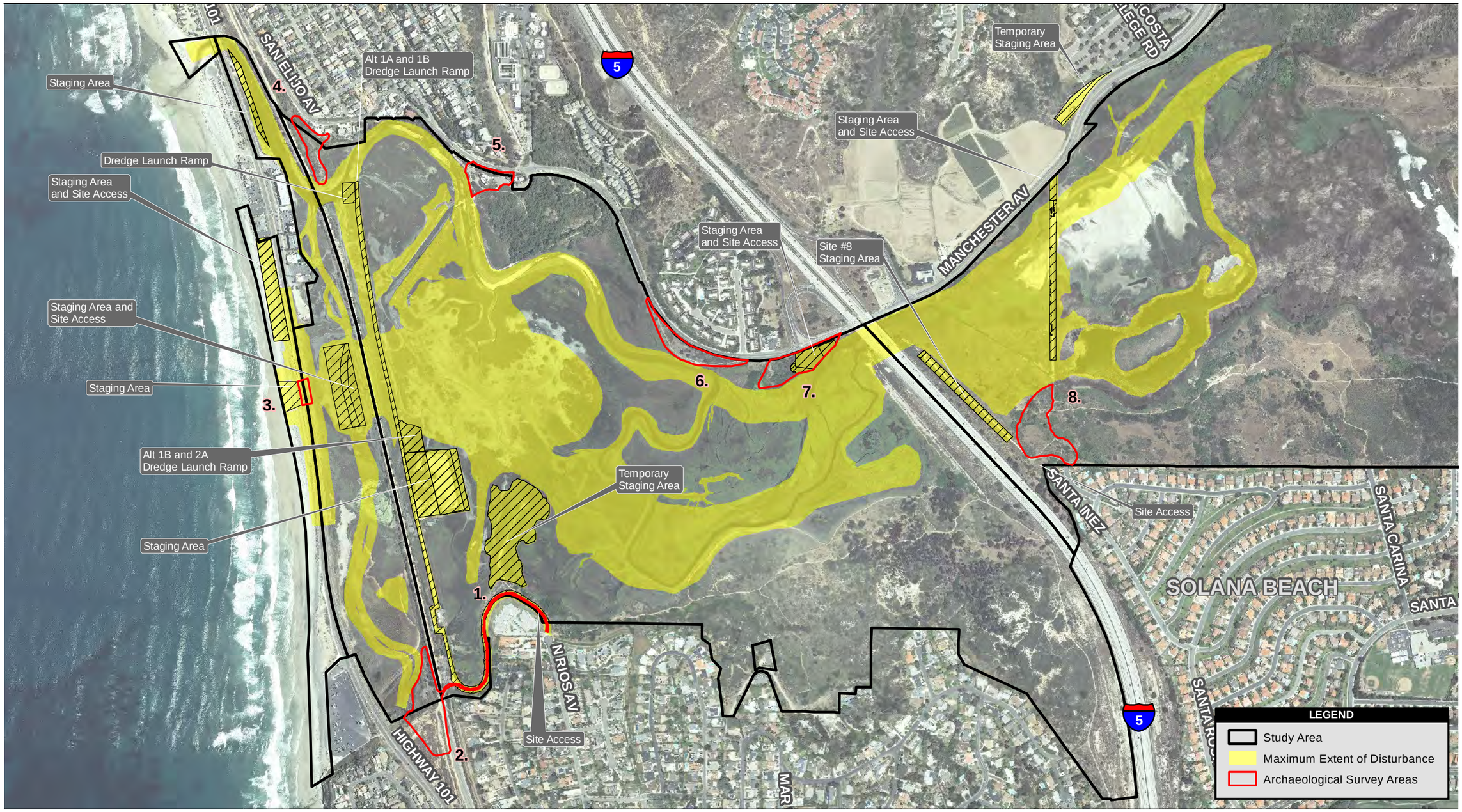
CA-SDI-13,753 – Survey Area 1

This location is along the proposed access road improvement from North Rios Avenue. Prehistoric archaeological site CA-SDI-13,753 was previously recorded on top of the bluff above this road. This bluff-top area is now developed in residences. The site was originally recorded as a shell midden with two metates, a pestle, and mammal bone (Anonymous n.d.).

During the present survey, periodic sewer/storm drain manhole covers were observed along the dirt access road. It appears that the current road was cut into the base of the bluff as part of the construction/installation of the large sewer line. A sparse scatter of marine shell genera consisting almost entirely of C*hione*, *Argopectin*, and *Ostrea*, was observed along the slopes adjacent to the road edges. Also observed in one location were two small pieces of what appeared to be burned mammal bone. No artifacts, however, were observed in the area during the survey. All of the materials observed appeared to be in a disturbed context likely from both natural (erosion) and human-related (construction) activities. The construction of the sewer line and graded dirt road disturbed materials that probably eroded from the bluff above, i.e., site CA-SDI-13,753. On the bluff side of the existing dirt road, it was observed that such erosion is still

Figure 4
Records Search Results

Confidential map on file with the County of San Diego



Source: SANDAG 2012; DPR; City of Encinitas 2010; AECOM; MoffattNichol 2013

750 375 0 750 Feet

Scale: 1:9,000; 1 inch = 750 feet

Figure 5
Archaeological Survey Areas

Path: P:\2009\09080064_SELRP_EIR\6.0 GIS\6.3 Layout\Cultural\Confidential_Cultural_Survey.mxd, 7/1/2014, steinb

currently occurring as these same shell species can be seen in pieces of the bluff that have fairly recently eroded down from the edge of the bluff top.

Although it appears that the items observed were most likely out-of-context materials derived from site CA-SDI-13,753 on the bluff above, the potential remains for the presence of undisturbed prehistoric deposits to be present.

SDI-14,057 (W-51) – Survey Area 1

Originally recorded by Malcom Rogers (n.d.) as SDM-W-51A, site CA-SDI-14,057 was a habitation site along the edge of the bluff east of the current north end of North Rios Avenue. Portions of the site were previously tested by Brian F. Smith and Associates in 1982 and Gallegos & Associates in 1995. Smith identified the site as eligible for the NRHP and recommended data recovery prior to development. In 1995, Gallegos & Associates conducted a surface survey and testing program. The site dimensions were recorded as 50 m by 130 m. Cultural material was found to depths of 70 cm, and included flakes, groundstone, cores, stone tools, fire-affected rock, a discoidal, shell, and mammal bone (Harris et al. 1995). This location is currently occupied by part of a housing track that may have completely destroyed CA-SDI-14,057. No evidence of this site was identified during the current survey.

CA-SDI-215/H, CA-SDI-15,066, and CA-SDI-17,777, – Survey Area 2

Site CA-SDI-215/H was originally recorded as a mapped location with no other information (Treganza n.d.). In 1979, Fink recorded a small shell midden with scattered flakes on a bluff overlooking the lagoon (Fink 1979a). Fink recorded no dimensions for the site, but noted that the depth of the deposit was at least 50–100 cm (Fink 1979a). It was also noted that the site was badly disturbed by off-road vehicle trails and a former road. In 1981, the site was revisited by Noah for the Solana Beach Sierra Trunk Sewerline Replacement project. Noah recorded one mano, one basalt flake, and marine shell in an area measuring 60 m by 60 m. Also noted on the site record (Noah 1981) was the discovery in 1935 of a prehistoric human burial during excavations in the site area for a sewer line.

In August 1998, the area was revisited by Dietler and McGinnis. Dietler recorded a 15 m by 3 m historic trash dump composed of glass bottles, jars, cans, butchered bone, ceramics, and a 1935 penny, with the temporary designation of “North Dump” (Dietler et al. 1998a). Dietler noted that the deposit was partially destroyed. The deposit was given the trinomial of CA-SDI-215 but was subsequently redesignated CA-SDI-17,777 (Dietler et al. 1998b).

Approximately 25 m south of CA-SDI-17,777, McGinnis recorded a mano, five flakes, two cores and two discrete shell scatters in an area measuring 75 m by 25 m. The site was assigned the designation of CA-SDI-15,066 (McGinnis 1998). McGinnis also noted heavy disturbance from erosion and human activity.

During the current survey, the portion of CA-SDI-215/H, in proximity to the potential project impacts associated with dredging activity, was examined. No surface evidence of the prehistoric component of the site was observed within 250 feet of the APE. One small area of historic trash (approximately 12 m by 12 m), located within approximately 75 feet of the edge of the APE, was observed along the west side along the base of the berm created for the railroad tracks.

This deposit is sufficiently distant from the proposed earth-disturbing activities to avoid being impacted.

SELRP-3/Coast Highway 101 – Survey Area 3

Under Alternative 2A – Proposed Project, an approximately 200-foot-long section of the Highway 101 roadway would be demolished for the proposed new inlet to the lagoon, and a new bridge constructed. No DPR forms for U.S. Highway 101 were previously on file with the SCIC. As discussed in the historic context, the highway has been widened and improved many times over the years. Because this is a historic road alignment, an evaluation is needed to assess the effects of the project on the resource. The evaluation of this segment of the highway is provided in the Coast Highway 101 evaluation section of this report.

Currently, Highway 101 is a paved, four-lane divided highway with bike lanes on both sides and an approximately 5-foot-wide center divide (Plate 2). This section of the highway measures approximately 65 feet in width. The pavement is asphalt, instead of the original oil macadam. The highway in this location has been constructed on a levee, in what appears to be its original alignment. A DPR Primary record and Linear Feature record were prepared (Appendix D) and submitted to the SCIC, which assigned the permanent designation of P-37-033047 to the resource.

Plate 2. Segment of U.S. Highway 101 at proposed new lagoon inlet in 2013. View to the north.

Site CA-SDI-6854H – Survey Area 4

This location is along the northern lagoon margin just east of the railroad tracks. Site CA-SDI-6854H was originally recorded as a historic resource consisting of four oven-like, concrete structures and associated foundations, dating to 1915. These features were identified as kilns associated with the processing of kelp (Fink et al. 1979).

Survey for the present investigation found the features in site CA-SDI-6854 to be intact. However, while the 1979 mapped location places the structures and foundations in the marsh, the foundations are located well above (in elevation) and approximately 400 feet away from the proposed project APE. Therefore, site CA-SDI-6854H will not be affected by the project.

Site CA-SDI-6850 – Survey Area 5

The recorded location of this site, now containing the Nature Center facility, is situated along the northern lagoon margin, between the lagoon edge and Manchester Avenue. Site CA-SDI-6850 was originally recorded as a prehistoric resource consisting of a large shell midden with scattered artifacts, consisting of mostly debitage (Fink 1979b). When originally recorded, it was observed that the construction of Manchester Avenue had removed a substantial portion of the site. At that time, cultural material was observed in the road cuts along both sides of the street with a depth of 12 feet noted in the cut along the south side of the street. Subsequently, in 2007–2008, during archaeological monitoring of the construction of the Nature Center, a midden layer with a rock hearth feature was encountered at a depth of approximately 8 feet (Zepeda-Herman 2008).

Currently, much of the site area is paved or otherwise developed. No cultural materials were observed. While it seems probable that the construction of the Nature Center destroyed much of what remained of site CA-SDI-6850, the possibility still exists that some buried remnants remain within any intact portions of the original landform.

CA-SDI-20,816– Survey Area 6

This location is situated along the northern lagoon margin, between the lagoon edge and Manchester Avenue. It was selected for survey because of its proximity to the mapped location of site CA-SDI-214, which was originally recorded north of Manchester Avenue, in what is currently a developed area. Site CA-SDI-214 was originally recorded as a prehistoric resource with no other description (Treganza n.d.).

Noted south of the Manchester Avenue, during the current survey, was a sparse scatter of marine shell genera consisting almost entirely of *Chione* (Venus clam), *Argopectin* (scallops), and *Ostrea* (oysters), species commonly associated with prehistoric archaeological sites in lagoon settings. More than 25 pieces of shell were found in an area measuring approximately 125 m east-west by 10 m north-south on a slightly elevated landform along the northern edge of San Elijo Lagoon. A possible piece of volcanic debitage was also noted in dirt from a rodent burrow. The presence of several of these materials in rodent excavations suggests the possibility of a subsurface component. The materials observed were given the temporary designation of CA-SDI-20,816. A dirt track that is partially paved and partially graveled bisects the northern edge of the site.

The existing dirt track that is partially within the boundaries of CA-SDI-20,816 will be used for access during the SELRP; however, no project-related improvements will be made and project-related traffic will stay within current limits of disturbance.

Survey Area 7

This location is situated along the northern margin of the lagoon, west of I-5. The area was surveyed due to its proximity to a planned access and staging area. The field investigation found the area is at the base of an approximately-5-foot artificial slope for Manchester Lane, and was marsh under about 8-to-10-inches of standing water. No cultural resources were observed.

Survey Areas, East Basin

CA-SDI-13,903 – Survey Area 8

This location is situated along the southern lagoon margin, between the lagoon edge and a large residential development to the southeast, and I-5 to the southwest. Site CA-SDI-13,903 was originally recorded by Smith (1995) as a prehistoric shell midden with lithic artifacts in an area measuring 395 feet by 170 feet. Smith excavated 24 shovel test and three test units at the site, and found cultural materials to a depth of up to 170 cm (Smith 1995).

During the current survey, a substantial scatter of marine shell consisting mostly of *Chione*, *Argopectin*, and *Ostrea*, species commonly associated with prehistoric archaeological sites in lagoon settings, was observed. Also noted were dark organic soil and fire-affected rocks (hearth stones). These site materials were seen to extend more than 100 feet to the northwest beyond the site boundary as currently recorded at the SCIC. An update to the site record was prepared and submitted to the SCIC.

In relation to the proposed project activities, these materials were seen to extend within 100 feet of the proposed access road improvements and 150 feet of the maximum extent of the project dredging activity. As currently delineated, the earth-disturbing project activities will avoid site CA-SDI-13,903.

SUMMARY, EVALUATION, AND MANAGEMENT RECOMMENDATIONS

SUMMARY

The project includes dredging, staging areas, demolition of a segment of Highway 101 for Alternative 2A – Proposed Project new lagoon inlet and construction of a new bridge, and improvements to one access road on the south side of the lagoon. Sand removed during dredging would be placed at nearshore, offshore, and/or onshore materials placement areas, at locations previously addressed for cultural resources under the RBSP (AECOM 2011). The project APE is the extent of physical disturbance for the undertaking. The temporary flooding necessary for appropriate water depth for dredging operations is not considered a potential source of impact to nearby cultural resources as the floodwaters would be still with no high velocity or continuous wave action that could result in erosion or scouring. The areas of flooding would be within current and historic levels of lagoon inundation.

Numerous prior cultural resources investigations conducted within the project study area have resulted in the identification of several prehistoric and historic archaeological sites. The present study focused on revisiting archaeological sites and locations in proximity to areas of proposed disturbance.

The cultural resources pedestrian survey in support of the SELRP EIR/EIS was conducted on November 6, 7, and 11, 2012. Eight locations with eight previously recorded archaeological sites and a segment of Highway 101 were surveyed. Of those eight previously recorded archaeological sites visited during the study, none were found to be within or adjacent to the APE. One new prehistoric archaeological site, a shell scatter (CA-SDI-20,816), was recorded and the site form submitted to the SCIC.

COAST HIGHWAY 101 EVALUATION

The San Diego Coast Route/U.S. Highway 101 in San Diego County was an important development for the establishment of several coastal communities in San Diego, for the access it provided during a definitive era of automobile transportation in southern California, and, later, for its inclusion in the state highway system that spanned the entire coast of California. Other segments of U.S. Highway 101 have been evaluated, and the original route of the Old Redwood Highway in Del Norte County is listed in the NRHP. U.S. Highway 101 appears significant under NRHP Criterion A and CRHR Criterion 1, although the entire linear resource has not been fully evaluated, and contributing elements and character-defining features have not been identified. The potential period of significance for U.S. Highway 101 is 1920–1942, when the highway contributed to the development and the character of numerous small coastal communities along its length. This period ended when automobile travel became restricted due to materials shortages from U.S. involvement in WWII.

The highway segment of the Coast Route/U.S. Highway 101 in this study (P-37-033047) is associated with early development in San Diego County and the establishment of the state highway system; it therefore may be a contributing element to a potentially eligible resource, U.S. Highway 101. Individually, the highway segment does not possess a significant association with historical themes or events and is not eligible under NRHP Criterion A or CRHR Criterion 1.

The Coast Route was developed under the California Bureau of Highways and the San Diego County Road Commission. Research has not indicated any associations with specific individuals. The highway segment does not have associations with persons important to local, regional, or national history and is not eligible under NRHP Criterion B or CRHR Criterion 2.

The highway segment, built over several campaigns, currently represents a modern-era design for highways. It is a four-lane road with modern paving, shoulders, and striping. Although potentially built on its original levee foundation, its current appearance does not indicate a historical design or the incorporation of historic materials and workmanship. The highway segment does not convey a distinctive type of road or highway and is not eligible under NRHP Criterion C or CRHR Criterion 3.

Documentation of the Coast Route in San Diego County indicates that it was developed with standard practices and materials. The highway segment in this study does not have the potential to yield additional information important in history or prehistory and is not eligible under NRHP Criterion D or CRHR Criterion 4.

U.S. Highway 101 has been realigned, widened, and improved many times over the years. The original length of the Coast Route in San Diego was significantly altered with the onset of urbanization and modern development in the 20th century. However, relatively intact alignments of the highway are found from Torrey Pines northward, including the segment of U.S. Highway 101 that is included in this study. This highway segment retains its original location within the original alignment of the San Diego Coast Route that was later incorporated into U.S. Highway 101. It retains its association with the development of the coastal highway system and the nearby coastal towns that developed along the highway. Its setting has been altered with the introduction of modern-era developments, but it retains its primary setting facing the Pacific Ocean. Its feeling as a coastal road remains; however, it does not retain feeling as an early 20th century two-lane road or a prewar intrastate highway. As a modern-type highway, it does not retain the design, materials, or workmanship dating to its period of significance from 1920–1942.

Based on these aspects, the highway segment does not appear eligible for the NRHP or CRHR. As a contributing element to the potentially eligible U.S. Highway 101, the project or project alternatives would not affect its remaining feature that contributes to the integrity of the highway, which is its alignment.

RECOMMENDATIONS

The section of Coast Highway 101 (P-37-033047) that would be demolished under Alternative 2A – Proposed Project does not appear eligible for the NRHP. Therefore, no additional cultural resources work is recommended for the segment of the highway. Although no archaeological sites have been identified within the APE for the SELRP, the potential exists for buried cultural deposits to be encountered during ground-disturbing construction activities on stable surfaces under lagoon deposits or beneath Highway 101 during construction or retrofitting activities.

It is therefore recommended that a monitoring program be initiated prior to the start of ground-disturbing construction at Highway 101. The program would include:

- Preparation and implementation of a monitoring and discovery plan.
- A training session for project construction personnel conducted by a qualified archaeologist. The training session would include a review of required monitoring locations and communication protocols, types of cultural resources that might be encountered, cultural resources responsibilities, protection procedures, and avoidance measures.
- Archaeological and Native American cultural monitoring during all mechanical excavations in sediments with the potential for NRHP- or CRHR-eligible resources, including mechanical excavation associated with the Highway 101 bridge and inlet, if, and when such excavation encounters intact, stable sediments.

Accidental disturbance to nearby cultural resources could occur during construction use of the existing access road near sites CA-SDI-13903 and CA-SDI-20,816 and result in a potentially significant impact. Use of exclusionary fencing to avoid inadvertent disturbance of known cultural resources in proximity to the APE, staging areas, and access roads is recommended. The temporary exclusionary fencing should be placed parallel to, but outside of the APE, staging area, or access road existing limits of disturbance in locations where an unevaluated or NRHP- or CRHR-eligible cultural resource is within 15 feet. Specifically, exclusionary fencing should be placed parallel to existing access roads used for construction access near sites CA-SDI-13903 and CA-SDI-20,816.

REFERENCES CITED

AECOM Technologies, Inc. (AECOM)

2011 *San Diego Regional Beach Sand Project II EA/Final EIR*. May. Prepared for SANDAG and USACE.

Anonymous

n.d. Site form for site CA-SDI-13,753. On file at the South Coastal Information Center, San Diego California.

Arnold. T. K.

2002 Highway 101 Revisited. *San Diego Magazine*, January, pp. 67–71, 118–122.

Bailey, H. P.

1966 *Weather of Southern California*. University of California Press, Berkeley.

Brown, A. K. (editor and translator)

2001 *A Description of Distant Roads; Original Journals of the First Expedition into California, 1769-1770 by Juan Crespi*. San Diego State University Press.

Byrd, B. F.

1996 C*oastal Archaeology of Las Flores Creek and Horno Canyon, Camp Pendleton, California.* On file at the South Coastal Information Center, San Diego State University.

1998 Harvesting the Littoral Landscape during the Late Holocene: New Perspectives from Northern San Diego County. *Journal of California and Great Basin Archaeology* 20(2):195–218.

Byrd, B. F., and L. M. Raab

2007 Prehistory of the Southern Bight: Models for a New Millennium. In *California Prehistory: Colonization, Culture, and Complexity*, edited by T. L. Jones and K. A. Klar, pp. 215–228. AltaMira Press, Lanham, Maryland.

Byrd, B. F., and S. Reddy

1999 Collecting and Residing Near the Shore: The Role of Small and Large Sites in Settlement Reconstruction. *Pacific Coast Archaeological Society Quarterly* 35(1):33–56.

2002 Late Holocene Adaptations along the Northern San Diego Coast: New Perspectives on Old Paradigms. In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, edited by J. M. Erlandson and T. L. Jones, pp. 41–62. Cotsen Institute of Archaeology, University of California, Los Angeles.

Byrd, B. F., K. Pope, and S. Reddy
2004 *Results of NSF-Funded Archaeological and Paleoenvironmental Investigations at San Elijo Lagoon, San Diego, California*. Prepared by ASM Affiliates, Inc. Carlsbad, California. Prepared under National Science Foundation Archaeology Program Grant BCS-0004392.

Carbone, L. A.
1991 Early Holocene Environmental and Paleoecological Contexts on the Central and Southern California Coast. In *Hunter-Gatherers of Early Holocene Coastal California*, edited by J. M. Erlandson and R. H. Colton, pp. 11–17. Perspectives in California Archaeology, Vol. 1, Institute of Archaeology, University of California, Los Angeles.

Coley, I. L.
1997 The Case for Preserving "U.S. Highway 101." *The Beach News*, April 17, pages 1, 2, and 16.

2002 The Real Impetus behind Widening 101. *The Coast News*, June 6, page A-18.

Cormac, P.
2004 Kelp Industry Exploded During WWI, SignOnSanDiego.com, July 24, 2004. Available at http://www.utsandiego.com/uniontrib/20040725/news_m1m25history.html. Accessed November 12, 2012.

County of San Diego
1979 Environmental Assessment San Elijo Lagoon Regional Park and Ecological Reserve Nature Center County of San Diego – Department of Parks and Recreation. Unpublished report on file at the South Coastal Information Center, San Diego, California.

Daniels, D.
1997 Coast 101 Returns to Encinitas. *The San Diego Union-Tribune*, August 22, page B-5.

Dietler, J., P. McGinnis, and S. Frazier
1998a Site form for site CA-SDI-215H. On file at the South Coastal Information Center, San Diego, California.

1998b Site form for site CA-SDI-17,777. On file at the South Coastal Information Center, San Diego, California.

Dolan, C. V.
2004 Historic Properties Survey Report for the Manchester/Interstate 5 Interchange Project, San Diego County, California. Prepared by EDAW, Inc. Unpublished report on file at the South Coastal Information Center, San Diego, California.

Dominici, D.
2007 Historic Property Survey Report, I-5 Coast Widening Project. Caltrans District 11. Unpublished report on file at the South Coastal Information Center, San Diego, California.

2010 Historic Property Survey Report, I-5 Coast Widening Project. Caltrans District 11. Unpublished report on file at the South Coastal Information Center, San Diego, California.

Engstrand I. H. W.
1992 *San Diego Gateway to the Pacific*. Pioneer Publications, Inc.

Erlandson, J. M., T. C. Rick, T. L. Jones, and J. F. Porcasi
2007 One if by Land, Two if by Sea: Who were the First Californians? In *California Prehistory: Colonization, Culture, and Complexity*, edited by T. L. Jones and K. A. Klar, pp. 53–62. Altamira Press, New York.

Faigin, D.
2006 California Highways. Available at http://www.cahighways.org/chrphas1.html. Accessed March 16, 2013.

Fink, G. R.
1979a Site form for site CA-SDI-215H. On file at the South Coastal Information Center, San Diego California.

1979b Site form for site CA-SDI-6850. On file at the South Coastal Information Center, San Diego California.

Fink, G., J. Hightower, and A. Fergoda
1979 Site form for site CA-SDI-6854H. On file at the South Coastal Information Center, San Diego California.

Gallegos, D. R.
1985 *Batiquitos Lagoon Revisited*. Casual Papers of the Cultural Resource Management Center 2(1). San Diego State University, San Diego, California.

1987 *A Review and Synthesis of Environmental and Cultural Material for the Batiquitos Lagoon Region. In San Dieguito-La Jolla: Chronology and Controversy,* edited by D. Gallegos, pp. 23–34. San Diego County Archaeological Society Research Paper No. 1.

Gallegos, D. R., C. Kyle, A. Schroth, and P. Mitchell
1998 *Management Plan for Otay Mesa Prehistoric Resources, San Diego, California*. Produced for the City of San Diego and Caltrans District 11, San Diego.

Glionna, J. M.
1990 On Road to Change. *Los Angeles Times*, December 2, page B5.

Guerro, M., and D. R. Gallegos
2004 Cultural Resource Survey for the Solana Beach Forcemain Project, City of Solana Beach, California, California. Prepared by Gallegos & Associates. Unpublished report on file at South Coastal Information Center, San Diego State University.

2007 Cultural Resources Monitoring for the Solana Beach Forcemain Project, City of Solana Beach, California, California. Prepared by Gallegos & Associates. Unpublished report on file at South Coastal Information Center, San Diego State University.

Hawthorne, K. S.
2003 *Highway 101 Location of the Coast Route between Oceanside and La Jolla*. Prepared for the Highway 101 Association.

Harris, N., L. Tift, and D. Gallegos
1995 Site Record for Site CA-SDI-14,057. Record on file at South Coastal Information Center, San Diego State University.

Holland, R.
1986 *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Nongame Heritage Program. State of California Department of Fish and Game.

Inman, D. L.
1983 *Application of Coastal Dynamics to the Reconstruction of Paleocoastlines in the Vicinity of La Jolla, California, in Quaternary Coastlines and Marine Archaeology*, pp. 1–49, edited by P.M. Masters and N.C. Flemming. Academic Press, New York.

Kroeber, A. L.
1925 *Handbook of the Indians of California.* Bureau of American Ethnology Bulletin 78. Washington, D.C. Reprinted 1976.

Library of Congress
2010 Los Angeles Mapped Online Exhibition. Available at http://www.loc.gov/exhibits/lamapped/lamapped-exhibit.html. Accessed March 15, 2013.

Luomala, K.
1978 Tipai-Ipai. In *California*, edited by R. F. Heizer, pp. 592–609. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Masters, P. M.
1983 Detection and Assessment of Prehistoric Artifact Sites off the Coast of Southern California. In *Quaternary Coastlines and Marine Archaeology*, edited by P. M. Masters and N. C. Flemming, pp. 189–214. Academic Press, New York.

1998 Paleo-Environmental Reconstruction of San Diego Bay, 10,000 B.P. to Present, in *Five Thousand Years of Maritime Subsistence at CA-SDI-48, on Ballast Point, San Diego County, California*, by D. Gallegos and C. Kyle, pp. 16-30. Coyote Press.

Masters, P. M., and D. Gallegos
1997 Environmental Change and Coastal Adaptations in San Diego County during the Middle Holocene. In *Archaeology of the California Coast during the Middle Holocene*, edited by J. M. Erlandson and M. A. Glassow, pp. 11–22. Perspectives in California Archaeology 4. University of California, Los Angeles.

McGinnis, P.
1998 Site form for site CA-SDI-15,066. On file at the South Coastal Information Center, San Diego California.

Moyer, C. C.
1969 *Historic Ranchos of San Diego*. Union-Tribune Publishing Co., San Diego, California.

Noah, A.
1981 Site form for site CA-SDI-215H. On file at the South Coastal Information Center, San Diego California.

Oberbauer, T., M. Kelly, and J. Buegge
2008 *Draft Vegetation Communities of San Diego County*. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," Robert F. Holland, Ph.D., October 1986.

Porter, S. S.
1929 The Mathematics of San Diego County's Fifty-Mile Highway Building Program. *San Diego Magazine*, March, pp. 8–10.

Pryde, P. R.
1992 *San Diego: An Introduction to the Region*, Third Edition. Kendall/Hunt Publishing Company, Dubuque, Iowa.

Rogers, Malcolm J.
n.d. Site form for W-51. San Diego Museum of Man, San Diego.

Rogers, Thomas H.
1965 Geologic Map of California, Olaf P. Jenkins Edition. *Santa Ana Sheet*.

Rosenthal, J. S., W. Hildebrandt, and J. King
2001 Donax Don't Tell: Reassessing Late Holocene Land Use in Northern San Diego County. *Journal of California and Great Basin Anthropology* 23(1):179–214.

Smith, B. F.
1995 Site form for site CA-SDI-13,903. On file at the South Coastal Information Center, San Diego, California.

Starr, R.
1986 *San Diego A Pictorial History*. The Donning Company, Norfolk, Virginia.

Treganza, A. E.
n.d. Site form for site CA-SDI-214. On file at the South Coastal Information Center, San Diego, California.

True, D. L.
1966 Archaeological Differentiation of Shoshonean and Yuman Speaking Groups in Southern California. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

True, D. L., and R. Pankey
1985 Radiocarbon Dates for the Pauma Complex Component at the Pankey Site, Northern San Diego County, California. *Journal of California and Great Basin Anthropology* 7(2):240–244.

Tsunoda, K.
2010 Fourth Supplemental Historic Property Survey Report (HPSR) for the Interstate 5 North Coast Corridor Project: Laser-Kramer Biological Mitigation Site. Caltrans District 11. Unpublished report on file at South Coastal Information Center, San Diego State University.

Tucker, W., and G. Bujkovsky
2009 *Images of America Cardiff-by-the-Sea*. Arcadia Publishing San Francisco, California.

URS Corporation (URS)
2012 *Geotechnical Data Report San Elijo Lagoon Restoration Project*. Prepared by URS for Moffatt & Nichol, Long Beach, California.

Warren, C. N.
1964 Cultural Change and Continuity on the San Diego Coast. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast. In *Archaic Prehistory in the Western United States*, edited by Cynthia Irwin-Williams,

pp. 1–14. Eastern New Mexico University Contributions in Anthropology No. 1. Portales.

2012 Environmental Stress and Subsistence Intensification: Late La Jolla on the San Diego Coast (3000 B.C. to A.D. 500). *California Archaeology* 4(1):39–54.

Warren, C. N., G. Siegler, and F. Dittmer

1993 Paleoindian and Early Archaic Periods. In *Draft Historical Properties Background Study, City of San Diego Clean Water Program*. On file at AECOM, San Diego, California.

Warren, C. N., D. L. True, and A. A. Eudy

1961 Early Gathering Complexes of Western San Diego County: Results and Interpretations of an Archaeological Survey. *University of California, Los Angeles*: *Archaeological Survey Annual Report* 1960–1961:1–106.

Zedler, J. B.

1982 *The Ecology of Southern California Coastal Salt Marshes: A Community Profile*. U.S. Fish and Wildlife Service, Washington, D.C.

Zepeda-Herman, C.

2008 Site form for site CA-SDI-6850. On file at the South Coastal Information Center, San Diego, California.

2009 Final Archaeological Monitoring and Feature Excavations for the San Elijo Lagoon Nature Center Project. RECON. Unpublished report on file at South Coastal Information Center, San Diego State University.

APPENDIX A

RESUMES OF KEY PERSONNEL

Tanya Wahoff
Staff Archaeologist/
Lithic Technology Specialist

Education
MA , Archaeology and Heritage, Leicester University, United Kingdom, 2008
BA, Anthropology, University of California, Santa Barbara, 1980

Professional Registrations
Register of Professional Archaeologists

Professional Affiliations
Member, Society for California Archaeology
Member, Society for American Archaeology
Member, Society for Historic Archaeology

Publications + Technical Papers
Archaeological Landscapes on San Clemente Island: A View from the North End Shelter. M.A. thesis, School of Archaeology and Ancient History, University of Leicester (2008).

Flaked and Battered Stone, in Piecing Together the Prehistory of Landing Hill: A Place Remembered, with J. Cleland, A. York, and L. Willey, Chapter 13, EDAW Cultural Publications No. 3 (2007).

Evidence for Post-Mission Period Native American Ceremonial Activity on San Clemente Island, California (with A.L. York). Proceedings of the Fifth Channel Islands Symposium, Santa Barbara (1999).

Flaked Lithic Tools From Recent Investigations on the Salton Sea Test Base. Proceedings of the Society for California Archaeology, Vol. 12. Society for California Archeology, Fresno (1999).

Recent Data on Subsistence and Environmental Change from Southern Santa Rosa Island. Proceedings of the Society for California Archaeology, Vol. 10. Society for California Archaeology, Fresno (1997).

With more than 25 years of cultural resources management experience, Tanya Wahoff possesses expertise in prehistoric archaeology, historical archaeology, and laboratory analyses. During her professional career, Ms. Wahoff has directed inventories, evaluations, data recovery efforts, monitoring programs, and laboratory analyses for projects throughout the western United States. Ms. Wahoff is knowledgeable in the procedures and guidelines associated with implementation of the NHPA, NEPA, CEQA And other regulations pertaining to cultural resources. As part of interdisciplinary teams, she has managed cultural resources investigations and authored cultural resource sections for EAs, EIRs, and EISs, and prepared management plans. Ms. Wahoff currently serves as Cultural Resources Laboratory Director for the San Diego office.

Ms. Wahoff's extensive experience in laboratory analysis includes historic artifacts, groundstone, and shell beads, with a special emphasis on flaked lithics. She has conducted lithic analysis for projects involving numerous large prehistoric quarries and lithic reduction sites, including projects situated on or adjacent to Sugarloaf Mountain, a massive obsidian quarry located near Owens Valley in eastern California. Ms. Wahoff has also participated in lithic workshops directed by Steven Shackley (Lowie Museum) and John Fagan (Oregon State University).

Representative Project Experience

Naval Facilities Engineering Command Southwest, EIS/LEIS for a Naval Air Weapons Station China Lake (NAWSCL)
Cultural resources specialist on a multidisciplinary team for preparation of an environmental impact statement (EIS)/legislative environmental impact statement (LEIS) in support of an application to evaluate the potential environmental effects associated with the continued withdrawal of approximately 1.1 million acres of public land within NAWSCL. [2011 – Ongoing]

Naval Facilities Engineering Command Southwest and Marine Corps Base Camp Pendleton, Bachelor Enlisted Quarters Package 7 Project, Marine Corps Base Camp Pendleton, San Diego County, CA
Principal investigator and monitoring supervisor during upgrades to Sewage Treatment Plant 12 on the San Mateo floodplain on Marine Corps Base Camp Pendleton. Previously unrecorded portions of prehistoric site CA-SDI-1313/14,791 discovered during monitoring were tested and evaluated for the National Register of Historic Places. [2010 – Ongoing]

Naval Facilities Engineering Command Southwest and Marine Corps Base (MCB) Camp Pendleton, Tertiary Treatment Plant Project, MCB Camp Pendleton, San Diego County, CA
Field director for evaluation of prehistoric site CA-SDI-14,170 and testing of four additional previously identified prehistoric sites and two discovery sites for a reclaimed water pipeline. Responsible for coordination with MCB Camp Pendleton Base Archaeologist, Prevost Marshall Office, traffic control, Native American monitors, project biologist, and subconsultants. Coauthor of the work plan and technical report. Laboratory director for the cataloging and conducted artifact analyses. [2006 – 2011]

California State Parks, Jolly Boy, Old Town San Diego State Historic Park, San Diego, CA
Project manager and field director for testing, data recovery, and construction monitoring for renovations to an existing building on the site of the former Aguilar Serrano adobe in Old Town San Diego. Coauthor of the technical report. [2007 – 2011]

Sempra Energy and Utilities, Coronado 69-kilovolt Utilities Relocation Area Monitoring, San Diego, CA
Project archaeologist who supervised archaeological monitoring of trenching for a 69-kilovolt cable and directed evaluation of two buried historic features discovered during monitoring. Coordinated with Sempra. Primary author of the monitoring and evaluation report. [2004]

Foster Wheeler Environmental Corporation, North Baja Gas Pipeline Project, Riverside and Imperial Counties, CA
Field supervisor for cultural resources monitoring of an approximately 80-mile-long gas pipeline between Blythe, California, and the US/Mexican border. Supervised up to 20 archaeological and Native American monitors during the 6-month monitoring effort. Supervised survey and wrote 12 addendum reports for supplemental surveys. Supervised data recovery at five discovery sites found during construction of the pipeline. Supervised lab and conducted lithic analysis. [2000 – 2003]

Naval Facilities Engineering Command Southwest and Marine Corps Base (MCB) Camp Pendleton, Archaeological Evaluation and Testing of Site CA-SDI-17,912, PPV Phase VI, MCB Camp Pendleton, San Diego County, CA
Project manager and Principal Investigator for testing and National Register of Historic Places evaluation of a prehistoric site. The project is in support of the Military Family Housing Public/Private Housing Venture. [2008 – 2010]

Naval Facilities Engineering Command Southwest and Joint POW/MIA Accounting Command (JPAC), Naval Airplane Crash Site Project, San Diego County, CA
Field director for geophysical investigations of 3.5 acres in Ramona, the location of a 1961 crash of a Grumman F4/F9 Cougar naval aircraft. Recordation of prehistoric bedrock milling site CA-SDI-19,731. [2009 – 2010]

Rebecca Apple, RPA
Principal/Practice Leader, Cultural Resources Group/ Senior Archaeologist

Education
MA, Anthropology, San Diego State University
BA, Anthropology, San Diego State University

Professional Registrations
Register of Professional Archaeologists

Accreditation
Certified Archaeology Consultant, County of San Diego

Professional Affiliations
Member, Society for American Archaeology
Member, Society for California Archaeology

Awards + Honors
Phi Kappa Phi
Phi Beta Kappa
University Scholar

Publications + Technical Papers
Introduction to Recent Archeological Investigations at the Salton Sea Test Base, Imperial County California. Proceedings of the Society for California Archaeology, Volume 12. Fresno, California (1999).

Recent Archaeological Investigations in the North Las Vegas Valley (with J.H. Cleland and M.S. Kelly). In Crossing the Borders: Quaternary Studies in Eastern California and Southwestern Nevada. San Bernardino County Museum Association Special Publication (1991).

Presentations
Ancient Trails and Rock Features. Paper presented at the 46th Annual Meeting of the Society for California Archaeology, San Diego, California (2012)

Setting the Scene: Interpretive Planning and Implementation in Old Town Historic State Park. Paper presented at the 42nd Annual Meeting of the Society for California Archaeology, Burbank, California (2008).

Mapping and Managing Pathways to the Past. Paper presented at the 22nd Annual ESRI International User Conference, San Diego, California (2002).

Introduction to Recent Archaeological Investigations at Salton Sea Test Base, Imperial County, California. Paper presented at the 32nd Annual Meeting of the Society for California Archaeology, San Diego (1998).

A Lake Mojave Period Site Near Silver Lake, California (with A. York). Presented at the 26th Annual Meeting of the Society for California Archaeology, Pasadena (1992).

Preliminary Project Results of the San Diego County Studies for the Southwest Powerlink Transmission Project. Presented at the 17th Annual Meeting of the Society for California Archaeology, San Diego (1983).

Rebecca Apple has more than 25 years of experience in cultural resource management and serves as senior archaeologist for AECOM. Her experience includes managing cultural resources compliance efforts for large complex projects. She is knowledgeable in the procedures and guidelines associated with implementation of NHPA and CEQA. She has managed numerous cultural resource projects, including prehistoric, historic, and ethnographic studies. She has directed inventories, evaluations, data recovery efforts, and monitoring programs. She has also prepared management plans and conducted feasibility studies. Her work frequently includes consultation with municipal, state, and federal agencies, as well as Native American representatives and the public. As part of interdisciplinary teams, she has managed cultural resources investigations and authored cultural resource sections for ISs, EAs, EIRs, and EISs. Her experience includes cultural resource investigations for power plants, transmission lines, pipelines, highways, landfills, water resource facilities, military installations, and commercial and residential development.

Representative Project Experience

Solar Millennium, Power Projects, Riverside County, CA
Cultural Resources Principal in Charge for three proposed solar projects encompassing over 17,000 acres of survey in eastern California. Responsible for oversight of archaeological and architectural surveys, technical reports, agency coordination (including Bureau of and Management and California Energy Commission), and Section 106 compliance efforts. Six sites have been subject to evaluation for eligibility to the National Register of Historic Places. [2009 – 2011]

Imperial Valley Solar Project, Imperial County, CA
Principal Investigator responsible for oversight of cultural resources compliance efforts, including participating in preparation of a Programmatic Agreement and testifying at a CEC Evidentiary hearing. [2009 – 2011]

California High Speed Train, Merced, Madera, and Fresno Counties, CA
Co-Principal Investigator for 60-mile segment of a proposed high speed train route between Merced and Fresno. Project involved surveys and preparing documents: Archaeological Survey Report, Historic Architectural Survey Report, and Historic Properties Survey Report under a Programmatic Agreement between the Federal Railroad Administration, California High Speed Rail Authority, State Historic Preservation Officer and the Advisory Council on Historic Preservation. [2011]

NAVFAC Southwest and Navy Region Southwest, Archaeological Evaluation of Sites on San Clemente Island, Los Angeles County, CA
Principal in charge responsible for National Register of Historic Places Evaluation of nine archaeological sites on the northern portion of San Clemente Island in SWAT 1/TAR 4. [2006 – 2010]

NAVFAC Southwest Indefinite Quantity Contract for Cultural Resource Services, CA and AZ
Contract manager for multiple task orders on a variety of projects involving archaeological surveys and archaeological evaluations throughout California and Arizona. Tasks include managing budget, overseeing staff, acting as point of contact, and preparation of final reports. Contract Manager/Principal Investigator [1998 – 2010]

NAVFAC Southwest and MCAS Yuma, Chocolate Mountains Aerial Gunnery Range: Cultural Resources Survey of 12 Targets and Monitoring of 14 Archaeological Sites, Riverside and Imperial Counties, CA
Project manager who directed cultural resource survey of 1,523 acres and site monitoring program on CMAGR. Inventoried site types were lithic scatters, trail segments, pot drops, rock features, and a mining area. Monitoring program included lithic scatters, rock art, cleared circles, mining complexes, and a segment of historic road. [2004 – 2005]

NAVFAC Southwest and MCAS Yuma, Archaeological Survey for the Chocolate Mountains Aerial Gunnery Range Central Training Area, Marine Corps Air Station Yuma, Imperial, CA
Responsible for cultural resource survey of proposed central training area on CMAGR. The 1,580-acre survey identified fours sites on R-2507S and four on R-2507 N. One of the sites on the South Range (the remains of a ranch complex) and three of the sites on the North Range (rock art, ceramics scatter, and a rock ring) were identified as potentially eligible for the National Register of Historic Places. Project Archaeologist [2002 – 2003]

State of California Department of Parks and Recreation Data Recovery for Goat Canyon Retention Basin Border Field State Park, San Diego County, CA
As Cultural Resources Project Manager, conducted data recovery under stringent time constraints based on wildlife issues and construction schedule. Excavation of 50 units at CA-SDI-16,047 Locus B indicated that the site was a buried temporary camp whose occupants exploited littoral, near-shore, and terrestrial subsistence resources. Data recovery investigations successfully collected data important in local and regional prehistory. The identification of a single component locus dating to the Archaic-Late transition is an important contribution. [2003 – 2004]

Theodore Cooley, RPA
Archaeologist

Education
MA, Anthropology, California State University, Los Angeles, 1982
BA, Anthropology, California State College, Long Beach, 1970

Professional Registration
Registered Professional Archaeologist (RPA)

Professional Affiliations
Member, Society for American Archaeology
Member, Society for California Archaeology
Member, Register of Professional Archaeologists

Certifications
County of San Diego, CA Certified Consultant List for Archaeological Resources
City of San Diego, CA Certified Principal Investigator for Monitoring Projects
County of Orange, CA Certified Cultural Resources Consultant Principal Investigator
County of Riverside, CA Certified Cultural Resources Consultant Principal Investigator
Approved lists in the Counties of San Luis Obispo, Santa Barbara, Ventura, and Los Angeles, California

Training
40-Hour HAZWOPER Training

Publications
Archaeological Excavation at the Village of Pámu, Ramona Valley, California. (with Laura Barre) *Proceedings of the Society for California Archaeology*, Vol. 17, pp. 43–56 (2004).

Observations on Settlement and Subsistence During the Late La Jolla Complex–Preceramic Interface as Evidenced at Site CA-SDI-11,767, Lower San Diego River Valley San Diego County, California. *Proceedings of the Society for California Archaeology*, Vol. 11, pp. 1–6 (1998).

Early Period Results from Data Recovery Conducted on a Portion of Stratified Prehistoric Site, CA-SDI-9,243, San Diego County, California. *Proceedings of the Society for California Archaeology*, Vol. 8, pp. 227–238 (1995).

Observations on Hydration Measurements of Obsidian Deriving from Buried Deposits from Site CA-SBA-2028, at Gaviota, Santa Barbara County, California. *Coyote Press Archives of California Prehistory*, No. 37, pp. 27–30 (1992).

Archaeological Investigations at CA-SBA-97: A Multicomponent Coastal Site at Gaviota, California (with Jon M. Erlandson, Roy Dugger, and Richard Carrico). *Coyote Press Archives of California Prehistory*, No. 37, pp. 49–80 (1992).

Contributing author. Archaeological Investigations on the Rancho San Clemente, Orange County, California. (Principal Author Constance Cameron). *Coyote Press Archives of California Prehistory*, No. 27 (1989).

A Fluted Projectile Point Fragment from the Southern California Coast: Chronology and Context at CA-SBa-1951 (with Jon M. Erlandson and Richard Carrico). *Journal of California and Great Basin Anthropology* Volume 9, Number 1, pp. 120–128 (1987).

Excavations and Investigations at CA-Ora-183, the Newland House Site, Huntington Beach, California (with Marie Cottrell, Constance Cameron, Vada Drummy-Chapel, and Adella Schroth). *Pacific Coast Archaeological Society Quarterly* Volume 21, Number 1, January, pp. 1–77 (1985).

The Biface Reduction Technique Exhibited at a Southern California Quarry Workshop Site: LAn-844. *Pacific Coast Archaeological Society Quarterly* Volume 20, Number 3, July pp. 5–17 (1984).

Investigations of CA-SCal-137 Bulrush Canyon, Catalina Island, California (with Marie G. Cottrell and Joyce M. Clevenger). *Pacific Coast Archaeological Society Quarterly* Volume 16, Numbers 1 and 2, January and April, pp. 5–25 (1980).

Ted Cooley has 40 years of experience in archaeological resource management. He has directed test and data recovery investigations, monitoring programs, and archaeological site surveys of large and small tracts, and has prepared reports for various cultural resource management projects. He is well-versed in National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), and California Environmental Quality Act (CEQA) regulations and processes. Mr. Cooley's experience also includes Native American consultation for monitoring of archaeological field projects, including some with human remains and reburial-related compliance issues.

Project Experience

California High-Speed Rail Authority, High Speed Train Project, CA
Field director for a Phase I Cultural Resources Survey and Inventory of three alternative high-speed train alignment corridors, extending from the city of Merced to the city of Fresno in the San Joaquin Valley. Duties included direction of the field crew and participation in the analysis of results and report preparation. [01/2011 – Ongoing]

US Department of the Navy, Naval Facilities Engineering Command Southwest, Seal Beach Naval Weapons Station Archaeological Evaluations, Orange County, CA
Field director for archaeological test investigations for the delineation and evaluation of prehistoric site P-30-1503 within the Seal Beach Naval Weapons Station along the margin of the Anaheim Creek drainage wetlands system. This project involved testing for the depth and horizontal extent, as well as a significance evaluation of this Late Holocene site. Duties included direction of the field crew and participation in the analysis and report preparation. [10/2010 – Ongoing]

US Department of the Navy, Naval Facilities Engineering Command Southwest, San Nicolas Island Archaeological Evaluations, Ventura County, CA
Field director for archaeological test investigations for the delineation and evaluation of prehistoric site CA-SNI-41 on San Nicolas Island in the Channel Islands of the California Bight. This project involved testing for depth and horizontal extent, as well as significance evaluation of this Middle and Late Holocene site. Duties included direction of the field crew and participation in the analysis and report preparation. [05/2010 – Ongoing]

US Department of the Navy, Naval Facilities Engineering Command Southwest, Compliance Documentation Support Services for Marine Corps Base Camp Pendleton, Environmental Security Section, San Diego County, CA
Provided support services on base in the preparation of documentation and correspondence for agency submittal for federal NEPA and Section 106 compliance requirements, principally to the State Historic Preservation Office (SHPO) and Advisory Council for Historic Preservation (ACHP), for several large construction projects. [01/2010 – Ongoing]

US Department of the Navy, Naval Facilities Engineering Command Southwest, San Nicolas Island Archaeological Evaluations, Ventura County, CA
Field archaeologist for archaeological evaluation of prehistoric sites CA-SNI-316, CA-SNI-361, and CA-SNI-550 on San Nicolas Island in the Channel Islands of the California Bight. This project involved the significance testing and evaluation of these Middle and Late Holocene sites, and the analysis and synthesis of results with existing island-wide archaeological data. Duties included field crew member and participation in the analysis and report preparation. [10/2009 – Ongoing]

Olivenhain Municipal Water District, Raw Water Pipeline Phase I Cultural Resources Survey and Inventory Project, San Diego County, CA
Project archaeologist and principal investigator for a Phase I Cultural Resources Survey and Inventory of two alternative pipeline alignment corridors, totalling approximately 9 miles in length. Author of the technical report of results from the survey and inventory program. [10/2009 – 10/2010]

County of of San Diego Department of Parks and Recreation, Sage Hill Preserve Cultural Resources Inventory, San Diego County, CA
Supervisory archaeologist for Phase I pedestrian survey and cultural resource inventory of the Sage Hill Open Space Preserve in unincorporated west central San Diego County. Directed the field survey for prehistoric and historic archaeological resources within the proposed 234-acre natural park preserve located in coastal foothills. Co-authored the technical report of results from the survey program. [09/2009 – 02/2010]

RRG Weldon, Solar Project Cultural Resources Inventory Program, Kern County, CA
As supervisory archaeologist, directed the field survey and site documentation for prehistoric and historic archaeological resources within a proposed 425-acre solar facility near Lake Isabella in the southern Sierra Nevada Mountains. Co-author of the technical report of results from the survey program. The program was conducted under CEQA and local guidelines of the County of Kern for the implementation of CEQA. [06/2009 – 10/2010]

Abengoa Mojave Solar, Cultural Resources Inventory and Resource Evaluation Program, San Bernardino County, CA
As supervisory archaeologist, supervised the survey of a proposed 1,765-acre solar facility in the Mojave Desert. Also supervised the archaeological documentation and Phase II testing efforts, and co-authored the technical reports of results from the survey and testing programs. [05/2009 – 11/2010]

Solar Millennium, Ridgecrest Solar Project Cultural Resources Inventory Program, Kern County, CA
Co-field director of field survey for prehistoric and historic archaeological resources within a proposed 1,757-acre solar facility in the Mojave Desert. Participated in the preparation of the Department of Parks and Recreation (DPR) site forms

and was a contributing author to the technical report of results from the survey program. [05/2009 – Ongoing]

County of San Diego Department of Parks and Recreation, Boulder Oaks, Lakeside Linkage, Sycamore/Goodan, and Lusardi Open Space Preserves and Regional Parks Cultural Resources Inventories, San Diego County, CA
Supervisory archaeologist for Phase I pedestrian survey and cultural resource inventories of four open space preserves and regional parks in unincorporated central San Diego County. The projects involved the identification and documentation of prehistoric and historic resources, built environment features, and existing infrastructure to assist the Department of Parks and Recreation in resource management. Inventory reports included extensive archival research and historical narrative, an inventory of identified sites, and management guidelines for potentially significant cultural resources developed in consultation with Native Americans. [Prior to AECOM]

Parsons Brinkerhoff, State Route 94 Operational Improvements Inventory and Evaluation, San Diego County, CA
Supervisory archaeologist of cultural resources field survey efforts, and documentation and evaluation related to proposed operational improvements along an 18-mile-long stretch of State Route 94 in San Diego County. Development of documentation in the California Department of Transportation (Caltrans) format for archaeological and built environment resources. [Prior to AECOM]

Southern California Edison, As-Needed Archaeological Services, Statewide, CA
Supervisory archaeologist for surveys, resource identification, documentation, testing, and evaluation efforts related to infrastructure replacements and development throughout the state on both private and public lands, including of the Bureau of Land Management (BLM), US Army Corps of Engineers (USACE), and US Forest Service (USFS). Project involved completion of State of California DPR forms, assessment of resource significance according to National Register of Historic Places (NRHP) eligibility and CEQA significance criteria, and management recommendations. [Prior to AECOM]

Blackwater USA, West Cultural Resources Phase I and Phase II Studies, Potrero, CA
As supervisory archaeologist, supervised the survey of an approximately 850-acre area in eastern San Diego County and the test excavation of identified prehistoric sites. Supervised the archaeological documentation, extended Phase I testing, and Phase II testing efforts under the County of San Diego Guidelines implemented in September 2006. [Prior to AECOM]

Private Development Client, Circle P Ranch Housing Development Project, San Diego County, CA
Principal investigator for a Phase I cultural resources inventory and survey and extended Phase I site testing program involving a prehistoric and historic site, CA-SDI-17,910/H, located within the approximately 15-acre project property near Valley Center, California. Project duties consisted of supervision of fieldwork personnel, interaction with Native American monitors, and supervision and participation in the analysis and technical report preparation. The program was conducted under CEQA and local guidelines of the County of San Diego for the implementation of CEQA. [Prior to AECOM]

Private Development Client, Blossom Valley Housing Development Project, San Diego County, CA
Principal investigator for a Phase I cultural resources inventory and survey and extended Phase I site testing program involving prehistoric site CA-SDI-17,968 within the approximately 50-acre project property in Blossom Valley, California. Project duties consisted of supervision of fieldwork personnel, interaction with Native American monitors, and supervision and participation in the analysis and technical report preparation. The program was conducted under CEQA and local guidelines of the County of San Diego for the implementation of CEQA. [Prior to AECOM]

County of San Diego Department of Public Works (DPW), Jacumba Community Park Restroom Facility National Register and CEQA Testing Program, San Diego County, CA
Principal investigator for a National Register and CEQA significance testing program conducted at prehistoric archaeological site CA-SDI-17,979 to be impacted by the construction of a restroom facility. Directed all project archaeological activities, including analysis and report preparation. The project required interaction with DPW personnel and with Native American monitors. [Prior to AECOM]

City of Goleta, General Plan EIR Cultural and Paleontological Resources Section, Santa Barbara County, CA
Task manager for and participant in the preparation of the cultural resources section of the environmental impact

report (EIR) for the Goleta General Plan. The project required the gathering and synthesis of background information, existing conditions, paleontological data, and regulatory requirements, and interaction with local individuals, interest groups, and personnel of the city of Goleta. [Prior to AECOM]

Big Sandy Rancheria of Mono Indians, Big Sandy Rancheria Casino, Fresno County, CA
Supervisory archeologist for a field survey and cultural resources site testing program for a proposed gaming facility near Friant, California. Project responsibilities included assisting in the supervision of field survey and site testing, and participation in report preparation. [Prior to AECOM]

Otay Water District, 30-inch Recycled Water Pipeline, Reservoir, and Pump Station, San Diego, CA
Principal investigator for a Historic Properties Inventory and Survey for a 6.1-mile-long 30-inch-diamter recycled water pipeline route, and for a reservoir site pump station. A National Register and CEQA significance testing program was conducted at prehistoric archaeological site CA-SDI-17,668 to be impacted by construction. Directed all project archaeological activities, including analysis and report preparation. The project required interaction with the Otay Water District, private contractor personnel, and Native American monitors. [Prior to AECOM]

Private Development Client, Emerald Oaks Housing Development Project, Ramona, CA
Project supervising archaeologist and co-principal investigator for a cultural resources survey and extended Phase I site boundary testing and Phase II evaluation program involving five prehistoric sites within the 311-acre project property. Project duties consisted of supervision of fieldwork personnel and supervision and participation in the analysis and technical report preparation. The program was conducted under CEQA and local guidelines of the County of San Diego for the implementation of CEQA. [Prior to AECOM]

Starwood Development Company, Crosby Estate Golf Course Development, San Diego County, CA
Project supervising archaeologist for a cultural resources evaluation and site-indexing program involving the C.W. Harris Site Complex and other adjacent historic and prehistoric sites within the project property and adjacent open space areas. Project duties consisted of direction of fieldwork, monitoring of construction activities, and supervision and participation in the analysis and technical report preparation. The program was conducted for US Army Corps of Engineers (USACE) 404 Permit compliance. [Prior to AECOM]

San Diego County Water Authority (SDCWA), As-Needed Surveys for Geotechnical and Water Facility Construction Projects, San Diego, CA
Project manager and principal investigator for six archaeological survey and/or monitoring projects conducted over a 3-year period. The programs, all situated in western San Diego County, California, consisted of evaluations through background research and field surveys of proposed drilling/boring sites, pump stations, and other facility locations, and, when required, monitoring of drilling/boring and facility construction operations situated in areas determined as sensitive. The project included background research, field surveys, preparation of technical reports, interaction with Water Authority engineers for project redesign, and interaction with construction personnel for successful monitoring. [Prior to AECOM]

Mark S. and Colleen J. McArthur, and Donald C. "Skip" White, Oak Country Estates, Ramona, CA
Project supervising archaeologist and co-principal investigator for a cultural resources survey and extended Phase I site boundary testing and Phase II evaluation program involving 30 mostly late-prehistoric sites within the 648-acre project property. Project duties consisted of supervision of fieldwork personnel, and supervision and participation in the analysis and technical report preparation. The program was conducted under CEQA and local guidelines of the County of San Diego for the implementation of CEQA. [Prior to AECOM]

Tetra Tech EM, San Luis Rey Land Outfall Pipeline Alternatives Constraints Study, Oceanside, CA
Principal investigator and overall field supervisor for this archaeological resource inventory and constraints study program, conducted in compliance with CEQA. The purpose of this project was to assess the relative cultural resources impacts within four alternative route corridors for a proposed additional outfall pipeline from an existing inland water treatment plant to the ocean through the city of Oceanside in San Diego County. The project consisted of background research, spot check field survey of the alternative alignment corridors, and completion of the project data analysis and technical report preparation. [Prior to AECOM]

Davis-Eagle Property, Archaeological Survey and Constraints Study, Ramona, CA

Project supervising archaeologist and co-project manager of an archaeological survey of 1,231 acres for a development constraints analysis. The project required the discovery and recordation of all cultural resources on the property to provide data for an analysis of the constraints that cultural resources might represent relative to future development of the property. Served as over-all supervisor of archaeological field and site recordation activities, co-managed the project, and conducted the cultural resources constraints analysis and report preparation. [Prior to AECOM]

City of San Diego Water Department, San Pasqual Reclaimed Water Project Cultural Resources Inventory Study, San Diego, CA
Principal investigator for a cultural resources study of 8.15 miles of reclaimed water pipeline route and 12 acres of water tank facility construction. Project responsibilities included background research, field survey direction, and technical report preparation. The project was conducted under CEQA and local guidelines of the city of San Diego for the implementation of CEQA. [Prior to AECOM]

California State Department of Parks and Recreation, Point Magu State Park Water Pipeline Route Archaeological Survey, Ventura County, CA
Principal investigator for cultural resources survey of an 8-mile-long water pipeline route along Big Sycamore Canyon. Project responsibilities included background research, field survey direction, GPS site location, and technical report preparation. The program was conducted under CEQA. [Prior to AECOM]

California State Department of Parks and Recreation, Malibu Creek State Park Archaeological Survey, Los Angeles County, CA
Principal investigator for cultural resources survey of the 94-acre Tapia Park sub-unit within Malibu Creek State Park. Project responsibilities included background research, field survey direction, GPS site location, and technical report preparation. The program was conducted under CEQA. [Prior to AECOM]

USDA Forest Service, Cleveland National Forest Archaeological Overview, Cleveland National Forest, CA
As researcher/document co-author, participated in the preparation of the Archaeological Overview for the Cleveland National Forest, California. The project consisted of a review and assessment of existing archaeological resources data on file at the Cleveland National Forest. Project responsibilities included participation in background research, data analysis, and technical report preparation. The project was conducted in compliance with Section 110 of the National Historic Preservation Act. [Prior to AECOM]

County of San Diego DPW, Ramona Soils Source Project, Ramona, CA
Principal investigator for Phase I survey of a 30-acre property and Phase II testing/evaluation program of prehistoric site CA-SDI-16,386 and historic site CA-SDI-16,399. Supervised all project archaeological activities, including data analysis and report preparation. The project required interaction with the Native America Heritage Commission and with County of San Diego Department of Public Works personnel. [Prior to AECOM]

US Department of the Navy, Naval Facilities Engineering Command Southwest, Naval Submarine Base Point Loma Data Recovery Project, San Diego, CA
Co-author of the technical document, Archaeological Data Recovery Report for a Portion CA-SDI-48 at Buildings 139 and 158, Naval Submarine Base, San Diego. The project consisted of a data recovery program conducted at National Register prehistoric archaeological site CA-SDI-48, located on the Point Loma Naval Submarine Base. Project responsibilities included participation in background research, data analysis, and report preparation. [Prior to AECOM]

California Public Utilities Commission (CPUC), Metromedia Fiber Optic Line Project, CA
Project archaeologist for cultural resources studies conducted in compliance with CEQA of more than 300 miles of proposed routes for the emplacement of fiber optic cable lines along existing streets and railroad rights-of-way within San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin, Los Angeles, Orange, and San Diego Counties. Project involvement included background research, field surveys, site recordation, and technical report preparation. [Prior to AECOM]

Calvary Lutheran Church, Data Recovery Project, Solana Beach, CA
Co-principal investigator for a data recovery program conducted at prehistoric archaeological site CA-SDI-10,238 (SDM-W-36), important under CEQA. Program responsibilities consisted of completion of background research, overall supervision of field personnel, data analysis, and technical report preparation. The program also

required interaction with Calvary Lutheran Church personnel, Native American consultants, the city of Solana Beach, and the State Historic Preservation Office. [Prior to AECOM]

San Diego County Water Authority, Mexico/United States Colorado River Conveyance Facility, San Diego and Imperial Counties, CA
Principal investigator for archaeological surveys and monitoring of geotechnical drilling/boring sites. The program consisted of evaluations, background research, and field survey of 26 proposed drilling/boring site locations and the subsequent monitoring of five of the drilling/boring operations situated in areas determined as sensitive. The locations were distributed along two proposed pipeline routes between San Vicente Lake and the Yuha Basin. Project involvement included background research, field surveys, preparation of technical reports, and interaction with the San Diego County Water Authority, BLM, and USDA Forest Service. [Prior to AECOM]

Private Development Client, Dry Creek Native American Gaming Facility, Sonoma County, CA
Project archaeologist for cultural resources field survey for a proposed gaming facility in Dry Creek Valley. Project responsibilities included field surveys and report preparation. [Prior to AECOM]

Bennett Consolidated, Otay Travel Center Project, Otay Mesa, CA
Principal investigator for a significance testing program of two prehistoric sites, CA-SDI-10,067 and CA-SDI-12,878. Directed all project archaeological activities, including data analysis and report preparation. The project required interaction with subcontractors and County of San Diego planning personnel. [Prior to AECOM]

City of American Canyon, Wastewater Facility & Sewer Line Extension Routes, Napa County, CA
Project archaeologist for cultural resources field surveys of proposed emplacement of sewer pipelines along future and existing city streets within the city of American Canyon. Project responsibilities included field surveys, site recordation, and report preparation. [Prior to AECOM]

US Department of the Navy, Naval Facilities Engineering Command Southwest, Fallbrook Naval Ordinance Center Historic Properties Inventory, Seal Beach, CA
Project manager, principal investigator, and overall field supervisor for an archaeological resource inventory program that consisted of background research, field surveys of 5,800 acres, and completion of the project data analysis and technical report preparation. The program was conducted in compliance with Section 110 of the National Historic Preservation Act. [Prior to AECOM]

Talega Associates, Focused Data Recovery Project, San Juan Capistrano, CA
Co-principal investigator for a focused data recovery program conducted at prehistoric archaeological site CA-ORA-907, Locus A, important under CEQA, located in Orange County, California. Program responsibilities consisted of completion of background research, direct supervision of field personnel, data analysis, and technical report preparation. The program also required interaction with Native American consultants and County of Orange personnel. [Prior to AECOM]

US Department of the Navy, Naval Facilities Engineering Command Southwest, Naval Air Station Miramar EIS Cultural Resources Studies for the Base Realignment and Closure Project, San Diego, CA
For more than 2 years, served as task manager and overall field supervisor for cultural resources studies with principal investigator responsibilities on this major cultural resource program. The program consisted of background research for, and field surveys of, more than 3,500 acres for numerous proposed facility locations. Project duties consisted of overall direction of fieldwork and supervision and participation in the project data analysis, technical report preparation, and field construction monitoring for US Army Corps of Engineers 404 Permit compliance. [Prior to AECOM]

US Department of the Navy, Naval Facilities Engineering Command Southwest, Marine Corps Camp Pendleton Helicopter Outlying Landing Field Project, San Diego, CA
Directed cultural resources studies as project manager and principal investigator for this 3-year Environmental Assessment program consisting of a Phase I inventory and Phase II evaluation for the construction of a helicopter outlying landing field. Four alternative locations were inventoried and three prehistoric sites, located within the preferred alternative, were tested for National Register eligibility. Project duties included overall direction and supervision of the project fieldwork, data analysis, technical report preparation, and interaction with various base and agency personnel. [Prior to AECOM]

San Diego County Water Authority, Emergency Water Storage Project, San Diego, CA
Principal investigator for archaeological surveys and site evaluations. This large-scale project lasted for more than 2 years and included field surveys of more than 3,500 acres for alternative reservoir sites and appurtenant facilities, and approximately 40 miles of alternative pipeline routes. It included interaction with local Native American groups. [Prior to AECOM]

US Navy, Point Loma Submarine Base Data Recovery, San Diego, CA
Project manager and co-principal investigator for a data recovery program conducted at National Register prehistoric archaeological site CA-SDI-10,945, located on the Point Loma Naval Submarine Base. Program required interaction and coordination with base personnel, and interaction with the State Historic Preservation Office and the Advisory Council on Historic Preservation. [Prior to AECOM]

Metropolitan Transit District Board, Mission Valley West Light Transit Limited Data Recovery, San Diego, CA
Task manager and principal investigator for a Limited Data Recovery Program conducted at National Register prehistoric archaeological site CA-SDI-11,767, located on the Star Dust Golf Course. Program required interaction and coordination with Native American monitors and US Army Corps of Engineers personnel for 404 Permit requirements. [Prior to AECOM]

PCL Civil Contractors, East Mission Gorge Interceptor Pump Station and Force Main Cultural Resources Data Recovery, San Diego, CA
Principal investigator and co-project manager for a data recovery program conducted at National Register eligible prehistoric archaeological site CA-SDI-9,243 to be impacted by construction of a reclaimed water force main pipeline. Directed all project archaeological activities, including analysis and report preparation. The project required interaction with city of San Diego water utilities personnel and Native American monitors. [Prior to AECOM]

City of Chula Vista and County of San Diego, Otay Ranch Planned Development Archaeological Reconnaissance Survey, Chula Vista, CA
Principal investigator and co-project manager of an archaeological survey of 6,000 acres of proposed development on three parcel areas of the 23,088-acre Otay Ranch. The project required evaluation of all cultural resources on the ranch property. Directed archaeological activities, co-managed the project, supervised analysis and report preparation, and interacted with County of San Diego and City of Chula Vista personnel. [Prior to AECOM]

City of San Diego Water Utilities Department, Crown Point and Rose Creek Portion of the Mission Bay Sewage Interceptor System Phase V Archaeological Testing Program-Department No. 90-0540, San Diego, CA
Principal investigator and project manager for a testing program of two large prehistoric sites, CA-SDI-11,571 and CA-SDI-5,017, during Phase V of the project involving the placement of pipelines along city streets in the Crown Point and Rose Creek areas, adjacent to Mission Bay. Directed all project archaeological activities, including analysis and report preparation. Required interaction with construction subcontractors and city of San Diego water utilities personnel. [Prior to AECOM]

All American Celeron Pipeline Company, Pipeline Studies, Santa Barbara County, CA
Project manager for more than 3 years on this major cultural resource program that consisted of surveys of alternative pipeline routes, testing of sites to be impacted, final data recovery on 17 prehistoric sites, monitoring of construction activities, and planning and coordination with local Native American groups and Native American monitors. [Prior to AECOM]

US Army Corps of Engineers, US Air Force Housing Archaeological Study, Los Angeles County, CA
Project supervising archaeologist of a testing program of three sites on the Palos Verdes Peninsula for the United States Air Force. Directed field work and participated in analysis and report preparation. [Prior to AECOM]

Texaco Trading and Transportation Company, Marine Terminal Construction, Santa Barbara County, CA
Co-principal investigator and project supervising archaeologist for more than 1 year for the project, a cultural resources evaluation and data recovery program involving one historic and four prehistoric sites in Gaviota, Santa Barbara County. Project duties consisted of direction of fieldwork and construction monitoring activities, planning and coordination with local Native American groups and Native American monitors, and supervision and participation in analysis and report preparation. [Prior to AECOM]

Chevron USA, Point Arguello Pipeline Studies, Santa Barbara County, CA
Project archaeologist with responsibilities as field director and co-principal investigator for more than 3 years on this major cultural resource program that consisted of surveys of alternative pipeline routes, testing of sites to be impacted for National Register assessment, final data recovery on 34 National Register quality sites, monitoring of construction activities, and planning and coordination with local Native American groups and Native American monitors. [Prior to AECOM]

San Diego Gas & Electric, Southwest Powerlink Transmission Line Corridor, Imperial County, CA
Field director for a major 2-year archaeological Data Recovery Program that included monitoring portions of 35 sites along a 27-mile-long transmission line corridor located in the Picacho Basin and East Mesa areas. Responsibilities included coordination and supervision of three crew chiefs and their field crews, a field laboratory director and laboratory crew, BLM agency personnel, and local Native American groups and Native American monitors. [Prior to AECOM]

US Department of the Navy, Pacific Missle Test Facilities, San Nicolas Island Cultural Resources Survey, Point Mugu, Ventura County, CA
Field archaeologist for the cultural resources survey. This project involved a field survey of the entire island and the recordation of more than 350 previously recorded and/or newly discovered sites on the island. Participated in the preparation of the DPR site forms. [Prior to AECOM]

Mission Viejo Land Development Company, Archaeological Studies, Mission Viejo, CA
Project archaeologist/field director of archaeological surveys of 2,700-acre, 3,000-acre, and 7,000-acre development properties, and of a testing and data recovery program of prehistoric archaeological site CA-ORA-947 to be impacted by planned development. Directed the field work and conducted the analysis and report preparation. [Prior to AECOM]

Cayman Development Company, Archaeological Data Recovery Program, Los Angeles County, CA
Project archaeologist/field director of both the test and salvage excavations of prehistoric archaeological sites CA-LAN-844 and CA-LAN-845, located on Palos Verdes Peninsula. Directed the field work and conducted the analysis and report preparation. [Prior to AECOM]

Signal Landmark Properties, Land Development Archaeological Studies, Huntington Beach, CA
Project archaeologist/field director of test, and co-field director of data recovery excavations of archaeological site CA-ORA-183. Directed field work, conducted analysis and report preparation of the testing phase, and co-directed and participated in analysis and report preparation of the data recovery phase. [Prior to AECOM]

Professional Papers and Presentations

Cooley, T. 2008. Dating at the Spindrift Site Relative to Other La Jolla Sites and the Adjacent San Diego Coastal Area. Paper presented at the Society for California Archaeology Meetings, Burbank, California, March.

Cooley, T. 2006. Continuing Discoveries of the San Dieguito and Other Cultural Patterns In and Around the C.W. Harris Site (SDI-149). Paper presented at the Society for California Archaeology Meetings, Ventura, California, March.

Cooley, T., and L. Barrie. 2003. Archaeological Excavation at the Village of Pámu, Ramona Valley, California. Paper presented by the junior author at the Society for California Archaeology Meetings, Sacramento, California, March.

Cooley, T. 1998. Review of the Biface Reduction Technique Exhibited at a Southern California Quarry Site. Paper presented at the Society for California Archaeology Meetings, San Diego, California, March.

Cooley, T. 1997. Observations on Settlement and Subsistence During the La Jolla Complex-Preceramic Interface as Evidenced at Site CA-SDI-11,767, Lower San Diego River Valley, San Diego County, California. Paper presented at the Society for California Archaeology Meetings, Rohnert Park, California, March.

Cooley, T. 1994. Results of a Data Recovery Program Conducted on a Portion of Stratified Prehistoric Site CA-SDI-9,243, San Diego County, California. Paper presented at the Society for California Archaeology Meetings, Ventura, California, March.

Cooley, T. 1991. Investigations at CA-SBa-2028. Paper presented at the Society for California Archaeology Meetings, Sacramento, California, March.

Cooley, T. 1991. Description and Analysis of Biface Artifacts Recently Excavated from the C. W. Harris Site Complex, San Diego County, California. Paper presented at the Society for California Archaeology Meetings, Sacramento, California, March.

Cooley, T. 1990. Preliminary Analysis and Description of Biface Artifacts Recently Excavated from the C. W. Harris Site Complex, San Diego County, California. Paper Presented at the Society for California Archaeology Southern California Data Sharing Meeting, Riverside, California, October.

Cooley, T. 1984. Diagnostic Artifacts and Temporal Considerations at Rancho San Clemente: A Preliminary Appraisal. Paper Presented at the Society for California Archaeology Southern California Data Sharing Meeting, Fullerton, California, October.

Cooley, T. 1984. Thermal Applications and Lithic Tool Manufacture and Use at LAn-844. Paper presented at the Society for California Archaeology Meetings, Asilomar, California, March.

Cooley, T. 1983. The Biface Reduction Technique Exhibited at a Southern California Quarry Site. Paper presented at the Southwestern Anthropological Society Meetings, San Diego, California, March.

Cooley, T. 1983. Project Results of the Picacho Basin Studies. Paper presented at the Society for California Archaeology Meetings, San Diego, California, March.

Trina Meiser
Architectural Historian

Education
MA, Historic Preservation Planning, Cornell University, 2003
BA, History, Kenyon College, 1998

Affiliations
Member, National Trust for Historic Preservation
Member, Society of Architectural Historians
Member, California Preservation Foundation

Trina Meiser is a historic preservation planner and a Secretary of Interior-qualified architectural historian and historian (36 CFR Part 61) with 8 years of experience in surveying, documenting, evaluating, and planning for historic structures, districts, sites, and cultural resources. Ms. Meiser maintains a solid knowledge of architectural history and building materials conservation and has led seminars on architectural styles, workshops in materials conservation, and preservation design charrettes. She has completed a multitude of cultural resource technical reports and archival documents, including California Department of Transportation Historic Property Survey Report (HPSR)and Historical Resources Evaluation Report (HRER)studies, National Register of Historic Places nominations, Historic Structure Reports, and HABS/HAER. She has consulted on a variety of projects with clients, architects, engineers, and agency representatives for regulatory review, including Section 106 consultation. Her experience in historic preservation planning provides a strong understanding of federal, state, and local historic preservation laws. She has a thorough knowledge of the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and their functions in historic preservation planning.

Selected Project Experience

Solar Millennium Blythe Solar Power Project, Riverside County, CA
Conducted archival research, contact programs, and fieldwork, and prepared technical report for the evaluation of historical resources and mitigation measures. Coordinated process with BLM.

Orangethorpe Avenue Grade Separation Project, Orange County, CA
Conducted cultural resources studies for the project located in an urbanized area in the cities of Placentia and Anaheim in

north-eastern Orange County. Evaluated resources within an Area of Potential Effects (APE) to recommend eligibility to the National Register and the California Register and completed the HRER per Caltrans standards.

Caltrans SR-94 Widening and HOV Lanes Project, San Diego, CA
As Project Manager for cultural resources studies, currently planning for historic and archaeological surveys and evaluations of resources within the APE for a segment of State Route 94 widening in a highly urbanized area of San Diego. Preparing HPSR and HRER to Caltrans standards.

County of San Diego, Department of Public Works (DPW), South Santa Fe Avenue Reconstruction Project - South Segment, San Diego County, CA
Completed the HPSR and HRER per Caltrans standards to analyze resources and recommend eligibility to the National Register and the California Register. Results were recorded on Department of Parks and Recreation 523 forms.

County of San Diego, DPW Rancho Santa Fe Roundabouts Project, Rancho Santa Fe, CA
Assessed significant impacts to the significant resource, the community of Rancho Santa Fe, in an HRER Addendum and HPSR. Established the historic character-defining features to be preserved in compliance with the *Secretary of Interior Standards*.

Caltrans SR-76 Mission to I-15 Historical Resources Evaluation Report, San Diego County, CA
Conducted fieldwork to record and evaluate ranching buildings and residences. Prepared the HRER per Caltrans standards for the evaluation of historical resources for eligibility to the National Register and the California Register.

City of Del Mar North Torrey Pines Bridge "Sorrento Overpass" Restoration, Del Mar, CA
Consulted with engineers for the restoration of the 1933 North Torrey Pines Bridge to resolve significant impacts to the National Register-eligible resource. Assessed the deterioration of the bridge and established the historic character-defining features to be preserved. Evaluated restoration plans to suggest mitigation measures for its treatment in compliance with the *Secretary of Interior Standards*.

City of Temecula Main Street Bridge Replacement Project, Temecula, CA
Conducted a survey and historical research of historic resources in Old Town Temecula adjacent to the Main Street Bridge. Results were recorded on DPR forms and in the HPSR per Caltrans guidelines.

Caltrans Interstate 5/SR-56 Project, San Diego, CA
Conducted supplemental cultural resources studies for the project located in San Diego County. Surveyed resources within the APE to analyze potential impacts to historical resources. Summarized findings in the HRER and HPSR per Caltrans standards.

South Bay Metro Green Line Extension Project, Los Angeles County, CA
Created survey and evaluation strategy for transportation project through metropolitan Los Angeles County in consultation with SHPO to meet Section 106 requirements. Prepared technical report for the evaluation of historical resources and the cultural resources portion of EIS/EIR, including mitigation measures for the treatment of evaluated historical resources.

APPENDIX B

RECORDS SEARCH

(Confidential – Bound Separately)

APPENDIX C
CONTACT LETTERS

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

July 30, 2012

Ms. Tanya Wahoff, Archaeologist/Associate
EDAW, Inc.
1420 Kettner Boulevard, Suite 500
San Diego, CA 92101

Sent by FAX to: 619-233-0952
No. of Pages: 6

Re: Sacred Lands File Search and Native American Contacts list for the proposed **"San Elijo Lagoon EIR/EIS) Project (a Lagoon Restoration Effort);"** located in the Del Mar Encinitas Coastal areas north of Downtown San Diego; San Diego County, California

Dear Ms. Wahoff:

The Native American Heritage Commission (NAHC) conducted a Sacred Lands File searches of the 'area of potential effect,' (APE) based on the USGS coordinates provided and **Native American cultural resources were not identified** within one-half mile of the project area of potential effect (e.g. APE): you specified. However, there are Native American cultural resources in close proximity to the APEs. Also, please note; the NAHC Sacred Lands Inventory is not exhaustive and does not preclude the discovery of cultural resources during any project groundbreaking activity.

California Public Resources Code §§5097.94 (a) and 5097.96 authorize the NAHC to establish a Sacred Land Inventory to record Native American sacred sites and burial sites. These records are exempt from the provisions of the California Public Records Act pursuant to. California Government Code §6254 (r). The purpose of this code is to protect such sites from vandalism, theft and destruction.

In the 1985 Appellate Court decision (170 Cal App 3rd 604), the court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources, impacted by proposed projects including archaeological, places of religious significance to Native Americans and burial sites

The California Environmental Quality Act (CEQA – CA Public Resources Code §§ 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential

effect (APE), and if so, to mitigate that effect. CA Government Code §65040.12(e) defines "environmental justice" provisions and is applicable to the environmental review processes.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Local Native Americans may have knowledge of the religious and cultural significance of the historic properties of the proposed project for the area (e.g. APE). Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). We urge consultation with those tribes and interested Native Americans on the list that the NAHC has provided in order to see if your proposed project might impact Native American cultural resources. Lead agencies should consider avoidance as defined in §15370 of the CEQA Guidelines when significant cultural resources as defined by the CEQA Guidelines §15064.5 (b)(c)(f) may be affected by a proposed project. If so, Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "substantial," and Section 2183.2 which requires documentation, data recovery of cultural resources.

The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.'

Partnering with local tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 4(f), Section 110 and (k) of the federal NHPA (16 U.S.C. 470 *et seq*), Section 4(f) of the Department of Transportation Act of 1966 (23 CFR 774); 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The NAHC remains concerned about the limitations and methods employed for NHPA Section 106 Consultation.

Also, California Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery', another important reason to have Native American Monitors on board with the project.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. An excellent way to reinforce the relationship between a project and local tribes is to employ Native American Monitors in all phases of proposed projects including the planning phases.

Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibility threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton

Attachment: Native American Contact List

Native American Contact
San Diego County
July 30, 2012

Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road Diegueno
Lakeside , CA 92040
sue@barona-nsn.gov
(619) 443-6612
619-443-0681

Viejas Band of Kumeyaay Indians
Anthony R. Pico, Chairperson
PO Box 908 Diegueno/Kumeyaay
Alpine , CA 91903
jrothauff@viejas-nsn.gov
(619) 445-3810
(619) 445-5337 Fax

Manzanita Band of Kumeyaay Nation
Leroy J. Elliott, Chairperson
PO Box 1302 Kumeyaay
Boulevard , CA 91905
ljbirdsinger@aol.com
(619) 766-4930
(619) 766-4957 Fax

Kumeyaay Cultural Historic Committee
Ron Christman
56 Viejas Grade Road Diegueno/Kumeyaay
Alpine , CA 92001
(619) 445-0385

San Pasqual Band of Mission Indians
Allen E. Lawson, Chairperson
PO Box 365 Diegueno
Valley Center, CA 92082
allenl@sanpasqualband.com
(760) 749-3200
(760) 749-3876 Fax

Jamul Indian Village
Chairperson
P.O. Box 612 Diegueno/Kumeyaay
Jamul , CA 91935
jamulrez@sctdv.net
(619) 669-4785
(619) 669-48178 - Fax

Sycuan Band of the Kumeyaay Nation
Danny Tucker, Chairperson
5459 Sycuan Road Diegueno/Kumeyaay
El Cajon , CA 92019
ssilva@sycuan-nsn.gov
619 445-2613
619 445-1927 Fax

Los Coyotes Band of Mission Indians
Shane Chapparosa, Chairman
P.O. Box 189 Cahuilla
Warner , CA 92086
(760) 782-0711
(760) 782-2701 - FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed San Elijo Lagoo (Restoration) EIR/EIS Project; located in the north coastal area north of Downtown San Diego; San Diego County, California for which a Sacred Lands File search and native American Contacts list were requested.

Native American Contact
San Diego County
July 30, 2012

Mesa Grande Band of Mission Indians
Mark Romero, Chairperson
P.O Box 270 Diegueno
Santa Ysabel, CA 92070
mesagrandeband@msn.com
(760) 782-3818
(760) 782-9092 Fax

La Posta Band of Mission Indians
Javaughn Miller
PO Box 1120 Diegueno
Boulevard , CA 91905
jmiller@Lapostatribe.net
(619) 478-2113
(619) 478-2125- Fax

Kwaaymii Laguna Band of Mission Indians
Carmen Lucas
P.O. Box 775 Diegueno -
Pine Valley , CA 91962
(619) 709-4207

Pauma Valley Band of Luiseño Indians
Bennae Calac, Tribal Council Member
P.O. Box 369 Luiseno
Pauma Valley CA 92061
bennaecalac@aol.com
(760) 617-2872
(760) 742-3422 - FAX

Inaja Band of Mission Indians
Rebecca Osuna, Spokesperson
2005 S. Escondido Blvd. Diegueno
Escondido , CA 92025
(760) 737-7628
(760) 747-8568 Fax

San Pasqual Band of Indians
Kristie Orosco, Environmental Coordinator
P.O. Box 365 Luiseno
Valley Center, CA 92082 Diegueno
(760) 749-3200
council@sanpasqualtribe.org
(760) 749-3876 Fax

Kumeyaay Cultural Repatriation Committee
Steve Banegas, Spokesperson
1095 Barona Road Diegueno/Kumeyaay
Lakeside , CA 92040
sbenegas50@gmail.com
(619) 742-5587
(619) 443-0681 FAX

San Luis Rey Band of Mission Indians
Cultural Department
1889 Sunset Drive Luiseno
Vista , CA 92081 Cupeno
760-724-8505

760-724-2172 - fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed San Elijo Lagoo (Restoration) EIR/EIS Project; located in the north coastal area north of Downtown San Diego; San Diego County, California for which a Sacred Lands File search and native American Contacts list were requested.

Native American Contact
San Diego County
July 30, 2012

Ipai Nation of Santa Ysabel
Clint Linton, Director of Cultural Resources
P.O. Box 507 Diegueno/Kumeyaay
Santa Ysabel, CA 92070
cjlinton73@aol.com
(760) 803-5694
cjlinton73@aol.com

Kumeyaay Cultural Repatriation Committee
Bernice Paipa, Vice Spokesperson
1095 Barona Road Diegueno/Kumeyaay
Lakeside , CA 92040
(619) 478-2113
(KCRC is a Colation of 12
Kumeyaay Governments

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed San Elijo Lagoo (Restoration) EIR/EIS Project; located in the north coastal area north of Downtown San Diego; San Diego County, California for which a Sacred Lands File search and native American Contacts list were requested.

AECOM
1420 Kettner Boulevard
Suite 500
San Diego, CA 92101
www.aecom.com

619.233.1454 tel
619.233.0952 fax

February 15, 2013

Dear :

The U.S. Army Corps of Engineers (Corps), in conjunction with the County of San Diego, is preparing an EIS/EIR for the San Elijo Lagoon Restoration Project (SELRP). The Corps is considering the San Elijo Lagoon Conservancy's application for a Department of the Army permit under section 404 of the Clean Water Act to restore wetland habitat and function within San Elijo Lagoon. The San Elijo Lagoon Reserve represents a valuable coastal wetland resource within the San Diego region. The SELRP would restore hydrology and habitat within San Elijo Lagoon, which has gradually been constrained by infrastructure and development, compromising its ecological function. Restoration of hydrology and habitat within some or all of the three basins of the lagoon is proposed as part of the SELRP. The project may be constructed in phases, if necessary, to maintain adequate habitat for sensitive lagoon species. Activities to maintain and adaptively manage the restored lagoon function would also be identified as part of the SELRP. The study area encompasses approximately 960 acres within and adjacent to the San Elijo Lagoon Reserve, but final project size may vary within that depending on the outcome of the alternatives refinement process. It is anticipated that construction of the SELRP would begin in fall of 2014.

The primary federal involvement is the potential issuance of a permit under section 404 of the Clean Water Act, which regulates the discharge of dredged, excavated, or fill material in wetlands, streams, rivers, and other U.S. waters, as well as the evaluation of potential impacts on the human environment from such activities. Therefore, in accordance with the National Environmental Policy Act (NEPA), the Corps is requiring the preparation of an EIS prior to consideration of any permit action. The action must comply with the Section 404(b)(1) Guidelines (40 CFR Part 230) and may not be contrary to the public interest to be granted a Corps permit. The Corps may ultimately make a determination to permit or deny the above project or permit or deny modified versions of the above project.

Because of both federal and state discretionary actions, the SELRP will be evaluated pursuant to the federal National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Given the project complexity and range of potentially significant issues, the appropriate environmental document will be a combined Environmental Impact Statement (EIS)/ Environmental Impact Report (EIR). The Corps will be lead agency under NEPA. The County of San Diego Department of Parks and Recreation will be the lead agency under CEQA. The Corps and the County of San Diego have agreed to jointly prepare the EIS/EIR to optimize efficiency and avoid duplication. The EIS/EIR is intended to be sufficient in scope to address the Federal, State, and local requirements for environmental analysis and permitting.

The SELRP brings together various public and private entities that share responsibility to protect, manage, and regulate the San Elijo Lagoon Ecological Reserve (Reserve). The reserve is located within the City of Encinitas (Figure 1) and is owned and managed by the State of California (California Department of Fish and Game [DFG]), the County of San Diego Department of Parks and Recreation (County Parks), and the San Elijo Lagoon Conservancy (SELC). Cooperating agencies under NEPA will include United Sates Fish and Wildlife Service (USFWS), National Marine Fishery Service (NMFS), and the Environmental Protection Agency (EPA).

A records and literature search conducted at the South Coastal Information Center Identified 23 prehistoric and historic sites within the broader SELRP study area and none within the materials disposal area. None of the archaeological sites are within the proposed areas of disturbance. Four historic structures are within the study area, a road and three bridges. The bridges have been evaluated by Caltrans as not eligible for the National Register of Historic Places, and are therefore also not eligible for the California Register of Historical Resources.

The purpose of this letter is to notify you of this project and to solicit your input. We would like to know if you have any questions, comments, or concerns. A project map, a reply form, and a self-addressed stamped envelope have been included for your convenience. Providing comments now does not limit your ability to comment at a later time. Please write or call by March 12, 2013, so that we may include your views in our report.

Sincerely,

Tanya Wahoff
Staff Archaeologist

Enclosures: Map
Response form
Stamped reply envelope

CONTACT PROGRAM RESPONSE FORM
San Elijo Lagoon Restoration Project (60209588)

Please check all that apply:

- ❑ Please call me to discuss the project further; my day-time phone number is (_____)_____
  or my evening phone number is (_____)_____
- ❑ I have further comments as provided below
- ❑ I do not have any comments

Comments:

_____

_____

_____

_____

_____

_____

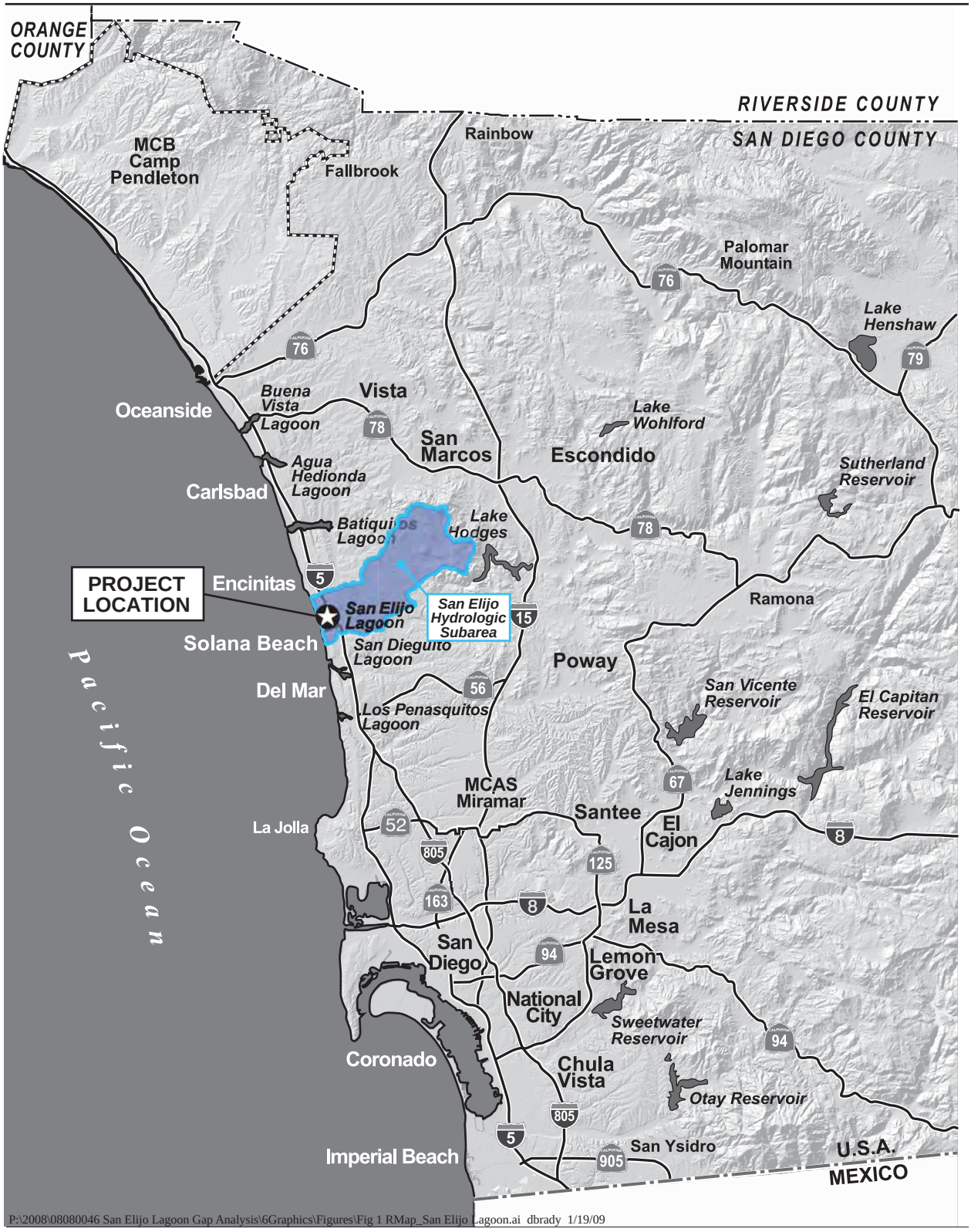
_____

_____

_____

Signature:

_____ _____
Date



P:\2008\08080046 San Elijo Lagoon Gap Analysis\6Graphics\Figures\Fig 1 RMap_San Elijo Lagoon.ai dbrady 1/19/09

0 3.75 7.5 15 Miles

1" = 7.5 Miles

Figure 1
Regional Map

APPENDIX D

DPR FORMS

(Confidential – Bound Separately)

APPENDIX J

TRAFFIC IMPACT ANALYSIS

LINSCOTT
LAW &
GREENSPAN
engineers

CONSTRUCTION IMPACT ANALYSIS

SAN ELIJO LAGOON RESTORATION PROJECT

City of Encinitas, California
January 31, 2014

LLG Ref. 3-12-2139

Linscott, Law & Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

TABLE OF CONTENTS

SECTION		PAGE
1.0	**Introduction**	**1**
2.0	**Project Description**	**3**
2.1	Project Location	3
2.2	Project Description: Alternatives and Phasing	3
2.2.1	Alternatives	3
2.2.2	Phasing	5
3.0	**Existing Conditions**	**7**
3.1	Existing Street Network	7
3.2	Existing Traffic Volumes	8
4.0	**Analysis Approach and Methodology**	**13**
4.1	Approach	13
4.2	Methodology	14
4.2.1	Intersections	15
4.2.2	Street Segments	15
5.0	**Significance Criteria**	**16**
5.1	SANTEC/ITE Guidelines	16
6.0	**Analysis of Existing Conditions**	**17**
6.1	Peak Hour Intersection Levels of Service	17
6.2	Existing Operations—Daily Street Segment Operations	17
7.0	**Cumulative Projects**	**20**
7.1	Description of Projects	20
8.0	**Trip Generation/Distribution/Assignment**	**31**
8.1	Trip Generation	31
8.2	Trip Distribution/Assignment	35
9.0	**Analysis of Construction Scenarios**	**44**
9.1	Pre-construction Conditions	44
9.1.1	Peak Hour Intersection Levels of Service	44
9.1.2	Daily Street Segment Operations	44
9.2	Construction Period	44
9.2.1	Peak Hour Intersection Levels of Service	44
9.2.2	Daily Street Segment Operations	44

TABLE OF CONTENTS *(CONTINUED)*

SECTION	PAGE
10.0 Coast Highway 101 – Bridge Replacement Assessment	**47**
10.1 Traffic Volumes	47
10.2 Capacity	48
10.2.1 Operations	48
10.3 Summer/Special Event Season Evaluation	50
10.3.1 Operations	50
10.4 Conclusion	53
11.0 Significance of Impacts/ Mitigation Measures	**54**
11.1 Significant Impacts	54
11.2 Mitigation Measures	54
11.3 Project Alternatives	54

APPENDICES

APPENDIX	
A.	Intersection and Street Segment Manual Count Sheets
B.	SANTEC & City of Encinitas Roadway Classification Tables
C.	HCM Intersection Analysis Worksheets – All Scenarios
D.	Parking Locations and Vegetation Removal Information
E.	Off-Season and Fair/Race Season Existing Traffic Volume Comparison

LIST OF FIGURES

SECTION—FIGURE #		PAGE
Figure 1–1	Project Area Map	2
Figure 2–1	Project Vicinity Map	6
Figure 3–1	Existing Conditions Diagram	11
Figure 3–2	Existing Traffic Volumes	12
Figure 7–1	Total Cumulative Traffic Volumes	29
Figure 7–2	Pre-Construction Traffic Volumes	30
Figure 8–1a	Project Traffic Distribution (Workers)	36
Figure 8–1b	Project Traffic Distribution (Vegetation Removal)	37
Figure 8–1c	Project Traffic Distribution (Bridge Replacement)	38
Figure 8–2a	Project Traffic Volumes (Workers)	39
Figure 8–2b	Project Traffic Volumes (Vegetation Removal)	40
Figure 8–2c	Project Traffic Volumes (Bridge Replacement)	41
Figure 8–3	Total Project Traffic Volumes	42
Figure 8–4	Construction Period Traffic Volumes	43

LIST OF TABLES

SECTION—TABLE #		PAGE
Table 3–1	Existing Traffic Volumes	10
Table 5–1	SANTEC/ITE Traffic Impact Significance Thresholds	16
Table 6–1	Existing Intersection Operations	18
Table 6–2	Existing Street Segment Operations	19
Table 8–1	Project Trip Generation	34
Table 9–1	Intersection Operations	45
Table 9–2	Street Segment Operations	46
Table 10–1	Bridge Replacement Street Segment Operations	49
Table 10–2	Summer/Special Event Season Street Segment Operations	52

CONSTRUCTION IMPACT ANALYSIS

SAN ELIJO LAGOON RESTORATION PROJECT

City of Encinitas, California
January 31, 2014

1.0 INTRODUCTION

Linscott, Law and Greenspan, Engineers (LLG) has prepared the following construction impact analysis to assess the impacts to the street system due to the construction-related operations associated with the San Elijo Lagoon Restoration Project located between the Cities of Encinitas and Solana Beach. The proposed restoration operations would occur in-and-around the San Elijo Lagoon, generally east and west of Interstate 5, south of Manchester Avenue and north of Lomas Santa Fe Drive.

This construction impact analysis includes the following:

- Project Description
- Existing Conditions Assessment
- Analysis Approach & Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Cumulative Projects Discussion
- Construction Trip Generation/Distribution/Assignment
- Analysis of Pre-Construction and Construction Period Scenarios
- Coast Highway 101 – Bridge Replacement Assessment
- Summary of Impacts/ Mitigation Measures

Figure 1–1 Project Area Map

2.0 PROJECT DESCRIPTION

The following is a discussion of the study area location as well as the project description.

2.1 Project Location

The San Elijo Lagoon is located approximately 20 miles north of the City of San Diego, between the Cities of Encinitas and Solana Beach, as shown in ***Figure 2–1***. The California Department of Fish and Game generally owns lands in the San Elijo Lagoon west of Interstate 5 (I-5) and the County of San Diego generally owns lands east of I-5, with the San Elijo Lagoon Conservancy owning smaller areas west of I-5.

2.2 Project Description: Alternatives and Phasing

San Elijo Lagoon represents a valuable coastal wetland with significant biological and ecological resources within the San Diego region. The lagoon functions have become compromised over time, as development and infrastructure constraints have affected the ecosystem. The San Elijo Lagoon Restoration Project (SELRP) is an effort to restore the lagoon functions and values given historic development and constraints placed on it by surrounding development activities. The project aims to enhance the tidal prism of the lagoon by proposing modifications to existing hydraulic constraints, such as channels underlying Highway 101, the North County Transit District (NCTD) railroad, and Interstate 5 (I-5). The approximate target construction start date of the SELRP is the year 2016.

The overarching goal of the SELRP is to protect, restore, then maintain, via adaptive management, the San Elijo Lagoon ecosystem and the adjacent uplands to perpetuate native flora and fauna characteristics of southern California, as well as to restore, then maintain estuarine and brackish marsh hydrology. This project goal can be further refined into four categories of objectives:

1. Physical restoration of lagoon estuarine hydrologic functions;
2. Biological restoration of habitat and species within the lagoon; and
3. Management and maintenance to ensure long-term viability of the restoration efforts.
4. Maintenance of recreational opportunities within and adjacent to the lagoon.

2.2.1 Alternatives

Four project alternatives have been identified for the SELRP, including:

- Alternative 1A: Intertidal Alternative
- Alternative 1B: Maximum Habitat Diversity Alternative, Existing Inlet
- Alternative 2A: Maximum Habitat Diversity Alternative, New Inlet
- No Project/No Federal Action Alternative

Brief descriptions of the alternatives are provided below.

Alternative 1A: Intertidal Alternative

Alternative 1A provides minimal physical changes to the site, with the exception of enlarging the main feeder channel throughout the site and redirecting its course just west of I-5. The main tidal channel would be extended farther into the East Basin and existing constricted channel connections would be cleared and enlarged. Existing habitat areas would essentially remain intact. The tidal prism of Alternative 1A would be slightly increased compared to existing conditions. A relatively small area of transitional habitat above tidal elevations would be placed in the northwest portion of the Central Basin. The channel under Coast Highway 101 would also be widened slightly, but replacement of the bridge structure would not be necessary. The existing Highway 101 bridge would be retained.

Alternative 1B: Maximum Habitat Diversity Alternative, Existing Inlet

Alternative 1B provides a more substantial change to the existing site to create a greater diversity of habitats than currently exists. The existing tidal inlet would remain the source of seawater, and the main tidal channel would extend throughout the Lagoon. A new subtidal basin off the main channel would be created in the Central Basin. The main feeder channel would be redirected just west of I-5, and extended farther into the East Basin. The channel in the East Basin would be significantly enlarged in cross-sectional area to promote more tidal exchange east of I-5. The tidal prism of Alternative 1B would be significantly increased compared to Alternative 1A. Non-tidal habitat areas would still exist in the East Basin. Several areas of transitional habitat above tidal elevations would be placed in the western portion of the Central Basin. The existing Coast Highway 101 bridge structure would be armored against ongoing scour and seismically retrofitted.

Alternative 2A: Maximum Habitat Diversity Alternative, New Inlet

Alternative 2A would improve tidal influence by constructing a new, permanently open lagoon inlet south of the existing inlet. Alternative 2A also provides changes to the existing site to create a greater diversity of habitats than presently exists. A new subtidal basin would be created just landward of the new inlet in the West and Central Basins. The main tidal channel would extend throughout the lagoon and be redirected just west of I-5, then extend into the East Basin. The channel in the East Basin would be substantially enlarged in cross-sectional area to promote more tidal exchange east of I-5. Non-tidal habitat areas would remain in the East Basin. Transitional habitat areas above tidal elevations would also be created in the western portion of the Central and East Basins. A new bridge along Coast Highway 101 would also be constructed to span the proposed new inlet location, and would incorporate a dedicated pedestrian sidewalk to ensure uninterrupted pedestrian access along the shoreline.

No Project/No Federal Action Alternative

The No Project/No Federal Action Alternative is required to be examined under both NEPA and CEQA. Under this alternative, there would be no dredging or excavation to improve tidal circulation, channel clearing, or other comprehensive actions to improve tidal exchange or upstream flooding. The lagoon inlet would remain in its existing location. Currently, management of the lagoon involves mechanical excavation to maintain an open inlet condition. The present spectrum of environmental constraints would continue to limit the carrying capacity and productivity of the lagoon. The continued transition from open water lagoon to salt marsh and riparian habitat is anticipated due to continued sedimentation in the lagoon. A component of this transition includes the continued loss of mudflats as they convert to saltmarsh habitat, which shows the tremendous increase in pickleweed between 2001 and 2006. This transition is occurring fairly rapidly. Also under this alternative, tidal and fluvial flow muting is expected to continue, and continued maintenance to keep the lagoon inlet open would be necessary. Additionally, urban development around the lagoon and its watershed would continue to affect the current conditions. This alternative would not maximize the opportunity to implement a comprehensive restoration project for the entire lagoon. However, the management agencies may continue to implement a number of restoration, enhancement, and creation projects on a much smaller scale, and incrementally.

2.2.2 Phasing

The project team estimates that there would be four phases of construction. This construction impact study evaluates the potential effects of traffic for the worst-case phase of construction, between 2016 and 2019, as follows:

- Phase 1: Winter 2016 – Winter 2017
- Phase 2: Winter 2017 – Fall 2018
- Phase 3: Fall 2018 – Spring 2019
- Phase 4: Spring 2019 – Fall 2019

Although the work would generally occur in sequenced phases, it is anticipated that construction would occur year-round and these phases would be implemented without pause. Some construction activities would be restricted to daytime hours, but some activities require 24 hours a day of operation to remain efficient (e.g., dredging and materials disposal/placement activities). Additionally, some activities such as materials delivery may be scheduled for nighttime hours to minimize additional effects, such as traffic or circulation (e.g. movement of pedestrians and motorized and/or non-motorized vehicles) during summer hours. Phasing would allow the SELC to incorporate restrictions on specific construction activities to minimize effects to sensitive resources within the lagoon. For example, clearing and grubbing of habitat areas would be restricted to outside of the bird breeding season to limit effects to breeding bird populations.

Figure 2–1 Project Vicinity Map

3.0 EXISTING CONDITIONS

Effective evaluation of traffic impacts associated with the proposed San Elijo Lagoon Restoration Project requires an understanding of the existing transportation system within the project area. ***Figure 3–1*** shows an existing conditions diagram, including signalized intersections and lane configurations.

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Interstate 5 (I-5) is classified as a Freeway and built as an eight-lane divided roadway traversing the lagoon. Carpool lanes are not provided on I-5 in the vicinity. The nearest interchanges to the project area are at Lomas Santa Fe Drive, Manchester Avenue, and Birmingham Drive. On-ramps at these interchanges are all metered with the exception of the northbound on-ramp at the Birmingham Drive Interchange.

Coast Highway 101 (Highway 101) is classified as a Scenic Highway within the City of Solana Beach Circulation Element and as a Four-Lane Major road within the City of Encinitas Circulation Plan in the vicinity of the study area. From Lomas Santa Fe Drive to just north of West Cliff Street, Highway 101 is currently built as a three-lane roadway (two travel lanes northbound and one southbound) with a raised center median. This portion of the roadway is part of the recently implemented Highway 101 Westside Improvement Project which extends from Dahlia Drive to West Cliff Street. This project has facilitated the provision of pedestrian amenities, diagonal parking, a landscaped median, and bicycle "sharrows" among other improvements. The posted speed limit has been reduced to 35 mph in this area. A Class II bike lane is provided on the east side of the roadway and bus stops are provided.

North of West Cliff Street to Ocean Street, Highway 101 is built as a four-lane roadway divided by a landscaped raised median. North of Ocean Street to Chesterfield Drive, Highway 101 is built as a four-lane undivided roadway with posted speed limits between 45 mph and 50 mph. Class II bike lanes and bus stops are provided along both sides of the roadway. Curbside parking is intermittently allowed on the west side of the roadway. There are paved shoulders but no sidewalks are provided along this stretch of Highway 101. Traffic is controlled by signals at some driveways providing access to beach parking or businesses located along the highway; otherwise, spacing between signalized intersections is large.

Chesterfield Drive is an unclassified local road, currently built as a two-lane undivided roadway extending east from Highway 101 near the coast. Curbside parking is generally available but very restricted on some narrower blocks. The posted speed limit is 25 mph and sidewalks are generally available on at least one side of the roadway, west of Montgomery Avenue.

It should be noted that there is an at-grade crossing of Chesterfield Drive by the San Diego Northern Railway (SDNR), upon which the Coaster heavy-rail commuter line runs. The Coaster has 5 trains (3 southbound, 2 northbound) that run during the AM peak period of 7-9 AM. It operates 6 trains (3

northbound/3 southbound) during the PM peak period of 4-6 PM. Thus, during either peak hour, three or less crossings would occur, requiring interruption of standard signal timing for the intersections adjacent the crossing on Chesterfield Drive.

San Elijo Avenue is classified as a Local Collector. San Elijo Avenue is currently built as a two-lane undivided roadway with a speed limit of 25 mph. In the vicinity of the project area, curbside parking is provided near Chesterfield Drive but otherwise generally prohibited. Sidewalks are provided on the east side of the roadway, north of Dublin Drive.

Manchester Avenue from El Camino Real west to Interstate 5 is classified as a Prime Arterial in the City of Encinitas Circulation Plan. West of Interstate 5, Manchester Avenue is classified as a Local Collector in the City of Encinitas Circulation Plan.

The segment of Manchester Avenue between El Camino Real and Interstate 5 is currently constructed as a four-lane undivided roadway. The posted speed limit is 50 mph and a Class II bikeway is provided on either side of the roadway. Parking along the roadway is prohibited.

West of Interstate 5 to San Elijo Avenue, Manchester Avenue is currently constructed as a two-lane undivided roadway with a posted speed limit of 40 mph. Class II bike lanes are proposed along this segment. Curbside parking is generally not provided and there is an intermittent sidewalk along the north side of the roadway. Beyond San Elijo Avenue, Manchester Avenue becomes a local residential road with a 25 mph speed limit and curbside parking. It should be noted that a 7-ton truck weight limit sign is posted just west of the I-5 Southbound Ramps. It is anticipated that the project contractor will obtain a construction permit allowing a temporary weight limit increase along this portion of the roadway. Once construction is completed, the contractor may need to repair/resurface this roadway.

Lomas Santa Fe Drive is classified as a Major Arterial. It extends from Highway 101 near the coast eastward to the Solana Beach City limits. It provides four undivided travel lanes with bike lanes west of I-5. It forms a full-signalized diamond interchange at I-5. The speed limit is posted at 35 mph. It is signalized at most intersections. Lomas Santa Fe Drive contains a bike lane east of Stevens Avenue.

North Rios Avenue is classified as a Local Road in the City of Solana Beach Circulation Plan and runs from the edge of the San Elijo Lagoon in the north to Lomas Santa Fe Drive in the south. North Rios Avenue is currently built as a two-lane undivided roadway generally serving residences, the Solana Beach School District, and some commercial uses near Lomas Santa Fe Drive. The posted speed limit is 25 mph. Curbside parking is provided intermittently along either side of the roadway. Sidewalks are generally not provided except for north of Patty Hill Drive and immediately north of Lomas Santa Fe Drive.

3.2 Existing Traffic Volumes

Weekday AM/PM peak hour intersection turning movement counts were conducted for the following eight (8) study-area intersections in October 2012 while schools were in session. No major events (e.g. Fair or horse racing) were occurring at the Del Mar Fairgrounds at this time.

1. Chesterfield Drive/ Coast Highway 101 (signalized)
2. Chesterfield Drive/ San Elijo Avenue (signalized)
3. Manchester Avenue/ I-5 Southbound Ramps (unsignalized)
4. Manchester Avenue/ I-5 Northbound Ramps (signalized)
5. Lomas Santa Fe Drive/ Coast Highway 101 (signalized)
6. Lomas Santa Fe Drive/ Rios Avenue (signalized)
7. Lomas Santa Fe Drive/ I-5 Southbound Ramps (signalized)
8. Lomas Santa Fe Drive/ I-5 Northbound Ramps (signalized)

Bi-directional 24-hour segments counts were also conducted in October at the following ten (10) street segments in the study area. ***Table 3–1*** is a summary of the average daily traffic volumes (ADTs).

1. Coast Highway 101 just north of Chesterfield Drive
2. Coast Highway 101 just south of Chesterfield Drive (include Thurs-Sun, 5 days total)
3. Coast Highway 101 just north of Lomas Santa Fe Drive
4. Chesterfield Drive just east of Coast Highway 101
5. San Elijo Avenue just south of Chesterfield Drive
6. Manchester Avenue just west of the I-5 Southbound Ramps
7. Manchester Avenue just east of the I-5 Northbound Ramps
8. Rios Avenue just north of Lomas Santa Fe Drive
9. Lomas Santa Fe Drive just east of Coast Highway 101 (east of RR tracks)
10. Lomas Santa Fe Drive, Hilmen Drive to Stevens Avenue/Glencrest Drive
11. Lomas Santa Fe Drive, Solana Hills Drive to the I-5 Southbound Ramps

TABLE 3–1
EXISTING TRAFFIC VOLUMES

Street Segment	Jurisdiction	ADT [a]	Source [b]
Coast Highway 101			
North of Chesterfield Drive	Encinitas	16,550	LLG Engineers
South of Chesterfield Drive	Encinitas	20,130	LLG Engineers
North of Lomas Santa Fe Drive	Solana Beach	17,560	LLG Engineers
Chesterfield Drive			
East of Coast Highway 101	Encinitas	17,950	LLG Engineers
San Elijo Avenue			
South of Chesterfield Drive	Encinitas	670	LLG Engineers
Manchester Avenue			
West of I-5 Southbound Ramps	Encinitas	7,100	LLG Engineers
East of I-5 Northbound Ramps	Encinitas	28,240	LLG Engineers
Rios Avenue			
North of Lomas Santa Fe Drive	Solana Beach	2,080	LLG Engineers
Lomas Santa Fe Drive			
East of Coast Highway 101	Solana Beach	19,550	LLG Engineers
Hilmen Drive to Glencrest Drive/Stevens Avenue	Solana Beach	23,010	LLG Engineers
Solana Hills Drive to I-5 Southbound Ramps	Solana Beach	38,130	LLG Engineers

Footnotes:

a. Average Daily Traffic Volumes.
b. Counts were commissioned by LLG Engineers, and performed by Accurate Video Counts, Inc. (October 2012)

Figure 3–2 shows the existing traffic volumes. ***Appendix A*** contains the manual and machine-count sheets.

Figure 3–1 Existing Conditions Diagram

Figure 3–2 Existing Traffic Volumes

4.0 ANALYSIS APPROACH AND METHODOLOGY

4.1 Approach

This report analyzed the potential impacts associated with the short-term construction activity of the San Elijo Lagoon Restoration Project. Four project alternatives are under consideration, each with a different traffic impact potential.

The following are the traffic generating operational characteristics of the four project alternatives:

Dredging

Dredging of the lagoon would occur over all four phases of the project. This process is not expected to generate any daily truck traffic.

Vegetation Clearing

Vegetation clearing in advance of dredging would occur throughout each of the four phases. As much as 365,000 total cubic yards (cy) of waste material may need to be removed from the site (122,000 cy/phase on average). It is anticipated this would be done by 12-cy capacity rear dump trucks. Therefore, as many as 36,500 roundtrip truck trips may be generated by this activity over the entire construction period.

The haul route identified by the project team is the most proximate route to I-5, then to either Miramar or Oceanside waste sites. Much of the vegetation clearing appears to be on the north side of the lagoon, adjacent to Manchester Avenue. There is the potential for some vegetation removal traffic to affect the neighborhood north of Lomas Santa Fe Drive along North Rios Avenue.

Dike Construction

In addition to vegetation, the project would entail the construction and removal of a up to five (5) dikes. This effort is estimated to require 50,000 cubic yards of material that would most likely be taken from excess material generated by the Caltrans I-5 North Coast Corridor Project bridge replacement. Thus, off-site truck trips would not be associated with this activity.

Workers and Parking

A maximum of 20 to 40 daily employees are anticipated to work onsite five days a week (Monday through Friday) completing various tasks. There are ten planned locations for employee parking, generally onsite or in lots adjacent to Highway 101 and Manchester Avenue. The lots include state beach lots and it is not expected that employee parking would occur in local residential areas. A shuttle may be necessary for some of the more distant lots. Parking locations are expected to remain the same throughout the duration of the project.

Bridge Reconstruction and Detouring

The project would also demolish and replace Highway 101 where it bridges the mouth of the lagoon if Alternative 2A is implemented. This reconstruction would occur during Phases 1 through 3 of the overall project. Bridge reconstruction would occur in two parts, with each part resulting in the closure of one side of the highway, although two-way traffic is proposed to be maintained at all times. Bridge reconstruction is anticipated to take 18 months total, 10 months for the first phase and 8 months for the second. The bridge shall remain in service throughout the demolition and replacement period, with two-way traffic flow maintained at all times. As one side of the current four-lane bridge is closed and rebuilt, two-way traffic would be rerouted to the other side, with lane drops and detours across the median necessary on Highway 101 on either side of the bridge.

There are no plans to provide formal detour routes, since two-way traffic would continue to be maintained. However, it is expected that some through traffic on Highway 101 would divert to I-5, with the final opportunity to do so via Manchester Avenue in the north or Lomas Santa Fe Drive in the south.

Alternative 2A *would result in the most potential effects on area circulation and traffic, due to the fact that it includes both vegetation clearing, and replacement of the existing bridge on Coast Highway 101. The former action generates truck trips to haul-off the cleared material, while the latter results in an approximate 50% reduction in roadway capacity during bridge reconstruction, as well as the redistribution of Coast Highway 101 trips to lateral roadways as they detour from the construction.*

As discussed in *Section 2.2.2*, four sequential phases of construction are planned over a period of 36 months. This analysis evaluates a construction start date of late year 2016 with an overall 3-year construction period which allows for cumulative growth on the street system. For this analysis, Phase I of the project is scheduled to begin in Winter 2016, with Phase 4 project completing in Fall 2019. Phase 2 of the project would be the most intensive with respect to traffic (*see Section 8*), and therefore represents the "project" for the purposes of the analysis.

Thus, the following scenarios are analyzed in this report:

1. Existing
2. Pre-Construction
3. Construction Period (includes Alternative 2A, Phase 2 construction traffic)

It should be noted that because the analysis represents the worst-case phase of construction of the most intensive project alternative, any potential impacts associated with other construction phases/alternatives would not exceed those identified in this analysis.

4.2 Methodology

This traffic study presents capacity analyses of the key study area intersections and street segments. The roadway capacity is discussed quantitatively using the concept of "Level of Service (LOS)". LOS denotes the different operating conditions which occur on a given roadway segment under

various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a segment or intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

4.2.1 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 16 of the *2000 Highway Capacity Manual (HCM),* with the assistance of the *Synchro* (version 7) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS).

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) was determined based upon the procedures found in Chapter 17 of the *2000 Highway Capacity Manual (HCM),* with the assistance of the *Synchro* (version 7) computer software.

4.2.2 Street Segments

Street segments were analyzed based upon the comparison of daily traffic volumes (ADT) to either the published San Diego Traffic Engineers' Council (SANTEC) *Roadway Classifications, Levels of Service (LOS) and Average Daily Traffic (ADT)* table (Solana Beach), or the City of Encinitas' published *Roadway Capacity Standards* table, as appropriate. These tables provide segment capacities for different street classifications, based on traffic volumes and roadway characteristics. These tables are attached in ***Appendix B***.

5.0 SIGNIFICANCE CRITERIA

5.1 SANTEC/ITE Guidelines

The cities of Encinitas and Solana Beach both utilize the published, regional SANTEC criteria for determining the significance of a project's traffic impacts. According to these criteria, a project is considered to have a significant impact if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds for roadway segments and intersections are defined in ***Table 5–1***. If the project exceeds the thresholds in *Table 5–1*, then the project may be considered to have a significant project impact. A feasible mitigation measure will need to be identified to return the impact within the thresholds (pre-project + allowable increase) or the impact will be considered significant and unmitigated. These are also considered applicable to Caltrans facilities.

Ramp meter observations presented in this report reveal a large discrepancy between the calculated operations and actual conditions. Therefore, calculated ramp meter operations may not be an effective tool in determining project impacts or form a solid basis for identifying mitigation.

Table 5–1
SANTEC/ITE TRAFFIC IMPACT SIGNIFICANCE THRESHOLDS

Level of Service with Project [a]	Allowable Increase Due to Project Impacts [b]					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
D [c], E & F (*or ramp meter delays above 15 minutes*)	0.01	1	0.02	1	2	2

1. Footnotes:

a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

b. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

c. The cities of Encinitas accepts LOS D operations, regardless of project increase in V/C, delay, etc., whereas the City of Solana Beach considers LOS D to have the same allowable increases as LOS E/LOS F. The analysis tables define the jurisdiction of each location.

2. General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
4. LOS = Level of Service
5. There are alternative methods of freeway and roadway analyses using "speed" that are not applicable to this study; therefore, the thresholds related to these methods have been shown in half-tone.

6.0 ANALYSIS OF EXISTING CONDITIONS

The following is a summary of the capacity analysis for the existing condition in the study area.

6.1 Peak Hour Intersection Levels of Service

Table 6–1 summarizes the existing peak hour signalized and unsignalized intersection operations. *Table 6–1* shows that all the study area intersections currently operate at LOS D or better.

6.2 Existing Operations—Daily Street Segment Operations

Table 6–2 summarizes the existing roadway segment operations. As seen in *Table 6–2*, all the study area roadway segments are calculated to currently operate at LOS C or better on a daily basis except for the following location which is calculated to operate at LOS E:

- Lomas Santa Fe Drive – Solana Hills to I-5, LOS E

Appendix C contains the HCM intersection analysis worksheets.

TABLE 6–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay [a]	LOS [b]
1. Chesterfield Drive/ Coast Highway 101[c]	Signal	AM PM	20.2 27.2	C C
2. Chesterfield Drive/ San Elijo Avenue [c]	Signal	AM PM	23.3 21.7	C C
3. Manchester Avenue/ I-5 Southbound Ramps	AWSC [d]	AM PM	17.5 12.4	C B
4. Manchester Avenue/ I-5 Northbound Ramps	Signal	AM PM	18.5 23.6	B C
5. Lomas Santa Fe Drive/ Coast Highway 101	Signal	AM PM	28.6 33.4	C C
6. Lomas Santa Fe Drive/ Rios Avenue	Signal	AM PM	10.8 11.8	B B
7. Lomas Santa Fe Drive/ I-5 Southbound Ramps	Signal	AM PM	20.0 19.6	C B
8. Lomas Santa Fe Drive/ I-5 Northbound Ramps	Signal	AM PM	49.2 29.0	D C

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. LOS/Delay represent non-railroad affected signal timing.
d. AWSC – All Way Stop Controlled intersection.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 6–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Jurisdiction	Classification	Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]
Coast Highway 101						
North of Chesterfield Drive	Encinitas	Major Road	35,200	16,550	A	0.470
South of Chesterfield Drive	Encinitas	Major Road	35,200	20,130	A	0.572
North of Lomas Santa Fe Drive	Solana Beach	Modified Major Arterial [e]	30,000	17,560	C	0.585
Chesterfield Drive						
East of Coast Highway 101	Encinitas	Collector Road	32,400	17,950	A	0.554
San Elijo Avenue						
South of Chesterfield Drive	Encinitas	Local Road – Augmented	20,000	670	A	0.034
Manchester Avenue						
West of I-5 Southbound Ramps	Encinitas	Local Road – Augmented	20,000	7,100	A	0.355
East of I-5 Northbound Ramps	Encinitas	Collector Road	32,400	28,240	D	0.872
Rios Avenue						
North of Lomas Santa Fe Drive	Solana Beach	Local Street	8,000	2,080	A	0.260
Lomas Santa Fe Drive						
East of Coast Highway 101	Solana Beach	Major Arterial	40,000	19,550	B	0.489
Hilmen Drive to Stevens Avenue	Solana Beach	Major Arterial	40,000	23,010	C	0.575
Solana Hills Drive to I-5	Solana Beach	Major Arterial	40,000	38,130	E	0.953

Footnotes:

a. Capacities based on the City of Encinitas and City of Solana Beach roadway classification table.

b. Average Daily Traffic Volumes.

c. Level of Service.

d. Volume to Capacity.

e. Coast Highway 101 north of Lomas Santa Fe Drive is constructed with one lane in the southbound direction and two lanes in the northbound direction separated by a landscaped raised median. Therefore, a modified capacity of 30,000 ADT for a 4-Lane Major Arterial was used in the analysis.

7.0 CUMULATIVE PROJECTS

There are other planned projects in the areas adjacent to the study area, which could add traffic to the roadways surrounding the project location. Research was conducted at the City of San Diego, County of San Diego, and Cities of Solana Beach and Del Mar to determine projects within the study area that should be included in the cumulative analysis. All projects located along the Via De La Valle corridor (within the study area) were included in the cumulative analysis. Based on the research conducted, it was determined that 41 specific cumulative development projects should be included in the analysis. It should be noted that the following list has been updated from a previously prepared list of cumulative development projects dating back to 2008. It was then determined from this list of 40 cumulative projects which projects have been built, are no longer proposed, or are new projects. Previously included cumulative traffic volumes from past cumulative projects that have been constructed are represented in the on-the-ground traffic volumes collected in April 2011 and June 2012 and therefore, would not be included in the cumulative project analysis. Cumulative projects, for the purpose of assessing traffic impacts, include projects currently under construction and future proposed projects. Past projects are included in the existing traffic volumes. The following is a brief description of these cumulative projects.

Figure 7–1 depicts the cumulative project traffic volumes and ***Figure 7–2*** shows the "Pre-Construction" (existing + cumulative) traffic volumes in the study area.

7.1 Description of Projects

CITY OF SAN DIEGO

1. **Flower Hill Promenade** is currently under construction to redevelop a portion of the Flower Hill Promenade located on the north side of Via De La Valle just east of I-5 in the City of San Diego. The existing promenade consists of a 14,000 SF theater and 98,116 SF of retail/restaurant space. The promenade is currently adding approximately 8,754 SF of retail space, 2,300 SF of storage space, 28,927 SF of office space, and a 35,000 SF market. The removal of the movie theater has been completed. The project is calculated to generate approximately 3,179 daily trips with 227 trips (175 inbound / 52 outbound trips) during the AM peak hour and 367 trips (137 inbound / 230 outbound trips) during the PM peak hour once completed. LLG prepared the traffic study for this project in November 2010.

   As of the date of this most recent version of the traffic report, this project has been completed and is currently operational. However, at the time of the collection of existing traffic volume data collection, this project was not yet constructed. Therefore, traffic generated by Flower Hill Promenade was included in the cumulative condition.

2. **Rancho Del Mar** is a proposal to construct 225 senior citizen housing dwelling units. The proposed project site is located on the southeast corner of Via De La Valle and El Camino Real (West). The project is calculated to generate 900 ADT with 14 trips

inbound and 58 trips outbound during the AM peak hour, and 63 trips inbound and 27 trips outbound during the PM peak hour.

3. **San Diego Corporate Center Lots** is a proposal to construct 250,000 SF of corporate office and 100,000 SF of retail commercial. The project site is located in the community of Carmel Valley near Del Mar Heights Road and El Camino Real. At full buildout, the project is calculated to generate 26,270 ADT with 1,144 trips inbound and 500 trips outbound during the AM peak hour, and 1,189 trips inbound and 1,678 trips outbound during the PM peak hour.

4. **El Camino Real Widening Project** (City of San Diego Capital Improvement Project 52-479.0) proposes the widening of the existing two-lane El Camino Real roadway to a modified four-lane major street between San Dieguito Road and Via De La Valle, which also includes the reconstruction and widening of the existing two-lane bridge to a four-lane bridge. In addition, the project includes the widening of Via De La Valle between El Camino Real (West) and El Camino Real (East) to four lanes, improvements on El Camino Real (East) and improvements to the Via De La Valle / El Camino Real (West) intersection. The intersection will be improved and potentially shifted eastward.

5. **Via De La Valle Widening Project** (Black Mountain Ranch Facilities Financing Plan Project No. T-32). The widening of Via De La Valle from El Camino Real (West) to San Andres Drive is part of the City of San Diego, Black Mountain Ranch Facilities Financing Program. The project includes adding two travel lanes. The Flower Hill Promenade Redevelopment project was mandated by the City of San Diego to pay the full funding amount toward this widening as direct mitigation for impacts to Via De La Valle.

6. **Via De La Valle Townhomes** is a proposal to construct 22 townhomes on 18.8 acres. The proposed project site is located on the north side of Via De La Valle, easterly of San Andres Drive, and west of the 19-unit PRD known as Santa Fe Downs. The project is calculated to generate approximately 176 ADT with 3 inbound and 11 outbound trips during the AM peak hour, and 13 inbound and 5 outbound trips during the PM peak hour.

COUNTY OF SAN DIEGO

7. **Palma de la Reina** proposes to construct 19,500 SF of office, 9,559 SF of local-serving retail, and 54 apartment units. The project is calculated to generate 1,210 ADT, with 64 inbound/38 outbound trips during the AM peak hour, and 62 inbound/72 outbound trips during the PM peak hour. LLG prepared the traffic study for this project in August 2011.

8. **TPM 20479** is a proposed 2-unit estate housing development on a 5.01-acre lot. The project is located on 6225 San Elijo Rd. This project is calculated to generate 24 ADT with 1 inbound and 1 outbound trip during the AM peak hour and 2 inbound and 1

outbound trips during the PM peak hour. Traffic data for this project was manually derived from the SANDAG *(Not So) Brief Guide of Vehicular Traffic Generation Rates*, April 2002 for estate housing.

9. **TPM 20612** is a proposed 4-unit estate housing development on a 10.0-acre lot. The project is located south of Aliso Canyon Road. This project is calculated to generate 48 ADT with 1 inbound and 3 outbound trips during the AM peak hour and 3 inbound and 1 outbound trips during the PM peak hour. Traffic data for this project was manually derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002 for estate housing.

10. **TM 4821** is a proposed 10-unit estate housing development on a 21.82-acre lot. The project is located on the north side of Avenida Del Duque. This project is calculated to generate 120 ADT with 3 inbound and 7 outbound trips during the AM peak hour and 8 inbound and 4 outbound trips during the PM peak hour. Traffic data for this project was manually derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002 for estate housing.

11. **Rancho Santa Fe Community Services District Water Treatment Facility** is located at the existing RSF CSD Water Reclamation Facility on Via de Santa Fe, east of Via De La Valle, north of Calzada del Bosque, and south of Paseo Delicias in Rancho Santa Fe in the County of San Diego. The proposed project will consist of expanding or modifying a portion of the existing yard piping. The project will also require construction of an additional aeration basin, an additional sedimentation basin, a new internal recycling pump station and new return sludge pumps. All project components would be constructed within the existing treatment facility property. The improvements are anticipated to take approximately six to eight months to construct. Once the site has been improved, traffic volumes and patterns will return to pre-construction levels. It is for this reason that the construction traffic volumes were not included in the analyses. The total construction traffic is calculated to generate 93 ADT with 18 inbound and 5 outbound trips during the AM peak hour, and 5 inbound and 18 outbound trips during the PM peak hour. Traffic data for this project were obtained from the traffic study conducted by LLG Engineers (October 2005).

12. **Del Mar Country Club Estates** is a proposed subdivision of 5.47 acres into two single-family residential lots. The project is located to the east of Heritage Hills between Emerald Lane and Rancho Santa Farms in the County of San Diego. The project is expected to generate 24 daily trips, 1 inbound and 1 outbound AM peak hour trips and 2 inbound and 1 outbound peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

13. **Del Mar Country Estates** is a proposed development of 14 estate homes to be located in the vicinity of Rancho Santa Fe Road and Rancho Diegueno Road. The project is expected to generate 168 daily trips, 4 inbound and 9 outbound AM peak hour trips and 12 inbound and 5 outbound peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

14. **Village Community Presbyterian Church** is located at 6225 Paseo Delicias in the San Dieguito Community Planning Group, within unincorporated San Diego County. The project proposes to convert an existing 2,940 SF single-family residence on an adjacent parcel into a meeting space for youth to be used in connection with the church. Several additional design modifications have been approved over the years. The total existing and proposed build out for the church uses will be 47,992 SF of building space on 8.11 acres. Construction is currently in progress to expand the church to build out specifications. Therefore, a net trip generation was used in the cumulative condition. The proposed project is expected to generate 75 daily trips with 4 trips during the AM peak hour and 6 trips during the PM peak hour. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

15. **Osuna Ranch** proposes the subdivision of one parcel into two separate legal lots to permit an equestrian facility on 22.49 acres located at 16332 Via de Santa Fe in the San Dieguito Community Planning Group, within unincorporated San Diego County. The existing structures will remain on the site, including the historic Osuna Adobe as well as an existing single-family residence on Parcel 1.

16. **TPM 21065** proposes to subdivide 5.88 acres into two lots for single-family home use. The project is currently developed with one single family residence, pool, and existing tennis courts. The project site is located on 17403 Rancho Del Rio in the San Dieguito Community Planning Group, within unincorporated San Diego County. The subject property is zoned RR.5 Rural Residential and S80 Open Space Use Regulations with a minimum lot size of 2 acres. The site also has existing tennis courts which may be replaced for a proposed building pad for parcel 2. The proposed project is expected to generate 20 daily trips with 2 trips during the AM peak hour and 2 trips during the PM peak hour. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

17. **AD2DU 10-049** (Administrative Permit) proposes an approximately 1,200 SF second dwelling unit, which will replace an existing 600 SF accessory structure, and an approximately 537 SF addition to the existing 330 SF detached garage, which provides parking for the second dwelling unit. Zoning for the site is RS1, Residential. The site contains an existing 2,536 SF single family residence with a 675 SF attached garage, a 330 SF detached garage, and a 600 SF accessory structure. All structures will be retained

except for the accessory structure. No additional traffic is expected to be generated by the proposed permit.

18. **TM 5406** is an approved condominium development consisting of 6 multi-family residences located on the southeast corner of the Via de Santa Fe and Paseo Arbolado intersection. This project is calculated to generate 48 ADT with 4 trips during the AM peak hour and 5 trips during the PM peak hour. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

19. **Rancho Santa Fe Roundabouts** is a project proposed by the County of San Diego to construct roundabouts at the intersections of Via De La Valle/Paseo Delicias, Paseo Delicias/El Montevideo/La Valle Plateada, and Paseo Delicias/El Camino del Norte/Del Dios Highway. The objective of the proposed project is to construct roundabouts along Paseo Delicias to ease existing traffic congestion at three intersections primarily caused by through traffic traveling eastbound and westbound during the morning and evening peak commuter periods. Based on a traffic study prepared by LLG in June 2008, it was determined that roundabouts at the three subject intersections would improve Level of Service (LOS) for these intersections during peak hours. Funding is currently unavailable for this project and there is no schedule for construction. Environmental studies are currently being conducted.

20. **TM 5182 (Cielo del Norte)** is an approved 186 single-family development located near the intersection of Elfin Forest Road and Harmony Grove Road. The project is expected to generate 2,232 daily trips, 54 inbound and 125 outbound AM peak hour trips and 162 inbound and 70 outbound peak hour trips. The trip generation for this project was obtained from the traffic study for the Cielo del Norte FEIR, certified by the Board of Supervisors on December 3, 2003.

21. **Bridges at Rancho Santa Fe** is a proposed residential project consisting of 35 estate homes. The project is located north of Avenida del Durque, between Bumann Road and Via de las Flores within and adjacent to the Bridges at Rancho Santa Fe Specific Plan Area. The project is expected to generate 420 daily trips, 10 inbound and 24 outbound AM peak hour trips and 29 inbound and 13 outbound peak hour trips. Urban Systems Associates completed the traffic study for this project in October 2004.

22. **The Helen Woodward Animal Center** provides pet and equine care and hospitalization; pet boarding; animal education; pet adoption; and therapeutic riding for physically and mentally disabled people. The site is located on the south side of El Apajo, west of San Dieguito Road in Rancho Santa Fe, San Diego County. The site is approximately 11.9 acres and includes equine stalls, stables, a small animal hospital, kennels, administration and education buildings, and other related uses. The day-to-day activities occurring on the site are not expected to change with the expansion of the facility. The proposed

project consists of the phased rebuilding of the existing facility from approximately 108,500 SF to approximately 154,000 SF. While the total project expansion equates to 45,500 additional SF of space, the actual traffic-generating space represents an increase of 41,600 SF. The project is calculated to generate 594 ADT with 34 inbound and 12 outbound AM peak hour trips, and 12 inbound and 25 outbound PM peak hour trips. The traffic study for this project was completed by LLG, Engineers (April 2005).

23. **TPM 20593** is a proposal to legalize 2 single-family lots at 4519 South Lane. The proposed project is expected to generate 20 daily trips with 2 trips during the AM peak hour and 2 trips during the PM peak hour.

24. **TPM 20354** is a proposed single-family lot and a parking lot for the existing health care facility located on the northeast corner of the El Camino Real (East) / Via De La Valle intersection. Since the health care facility exists today, there will be no additional traffic generated by the new parking lot. However, the single family home is expected to generate 10 daily trips, with 1 trip during the AM peak hour and 1 trip during the PM peak hour.

25. **TPM 20693** is a proposal to subdivide a 4.12-acre lot on Via de Fortuna in Rancho Santa Fe into two residential parcels. The project is calculated to generate approximately 20 ADT with 2 outbound AM peak hour trips, and 2 inbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

26. **TPM 20721** is a proposal to subdivide a 6.12-acre lot on La Brisa in Rancho Santa Fe into two residential parcels. Two residences currently exist on the site and the lot split will facilitate providing each home with its own lot. The project is thus not expected to generate any additional traffic.

27. **TPM 20326** is a proposal to subdivide a 4.4-acre lot on Paseo Delicias in Rancho Santa Fe into two residential parcels. The project is calculated to generate approximately 20 ADT with 2 outbound AM peak hour trips, and 2 inbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

28. **TPM "San Elijo"** is a proposal to subdivide a 5.01-acre lot on San Elijo in Rancho Santa Fe into two residential parcels. Two dwelling units and a guesthouse currently exist on the site and the lot split will facilitate providing each home with its own lot (and remove the existing guest hours). The project is thus not expected to generate any additional traffic.

29. **TPM 20477** is a proposal to subdivide a 9.92-acre lot on Via de las Flores in Rancho Santa Fe into three residential parcels. The project is calculated to generate approximately 30 ADT with 3 outbound AM peak hour trips, and 3 inbound PM peak

hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

30. **TPM 20612** is a proposal to subdivide a 10.0-acre lot south of Aliso Canyon Road in Rancho Santa Fe into four residential parcels. The project is calculated to generate approximately 40 ADT with 4 outbound AM peak hour trips, and 4 inbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

31. **TPM 20893** is a proposal for a boundary adjustment and the subdivision of a 39.42-acre lot on El Camino del Norte in Rancho Santa Fe into four residential parcels with one parcel remaining. The project is calculated to generate approximately 40 ADT with 4 outbound AM peak hour trips, and 4 inbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

32. **TM 5125** is a proposal to subdivide a 13.01-acre lot on Via Cuatro Caminos in Rancho Santa Fe into six residential parcels. The project is calculated to generate approximately 60 ADT with 6 outbound AM peak hour trips, and 6 inbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

33. **MUP 91 019** is a proposal to subdivide a 34.9-acre lot on Avenida del Duque in Rancho Santa Fe into ten residential parcels. The project is calculated to generate approximately 120 ADT with 3 inbound and 7 outbound AM peak hour trips, and 8 inbound and 4 outbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

34. **TM 5148** is a proposal to subdivide a 28.62-acre lot on Aliso Canyon in Rancho Santa Fe into twelve residential parcels. The project is calculated to generate approximately 144 ADT with 3 inbound and 8 outbound AM peak hour trips, and 10 inbound and 4 outbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

35. **MUP 00 005** is a proposed recreation center to serve the residents of the Rancho Cielo Specific Plan Area. The center will consist of a 4,240 SF building and 4,680 SF of outdoor uses for a total of 8,920 SF. The project is calculated to generate approximately 50 ADT with 1 inbound and 1 outbound AM peak hour trips, and 3 inbound and 3 outbound PM peak hour trips. The trip generation rate for this cumulative project was derived from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates, April 2002.

36. **TM 5073** is a proposal to widen two portions of Del Dios Highway by 10 feet in order to provide for the construction of acceleration and deceleration lanes. This project is not expected to generate traffic.

CITY OF DEL MAR

37. **The 22nd District Agricultural Association Master Plan Update** project is a proposal to expand uses at the existing Del Mar Fairgrounds/Racetrack property. The portions of the Master Plan, which are considered to be traffic generating components, include a 47,000 SF increase of the Flat Floor exhibit, a 30,000 SF health Club, and previously, a conference hotel (300 rooms). A project alternative without the hotel was approved by the 22nd DAA Board of Directors in 2012. Therefore, the trip assignment for this project utilized in this report overstates the volumes, since it includes trips for the hotel. The trip generation for the original project as proposed was 5,030 ADT with 199 inbound and 111 outbound trips during the AM peak hour, and 265 inbound and 165 outbound trips during the PM peak hour. A traffic study for this project was completed by LLG, Engineers (May 2007).

38. **Riverview Project** is a proposal to construct two commercial office buildings totaling 23,120 SF. The proposed project site is located at the southeast corner of Jimmy Durante Boulevard and San Dieguito Drive. It is calculated that the project will generate 560 ADT, with 66 inbound/ 7 outbound trips during the AM peak hour and 16 inbound/ 62 outbound trips during the PM peak hour.

CITY OF SOLANA BEACH

39. **Solana Corporate Center** is an 18,905 SF two-story office building that is currently under construction on the southeast corner of the Stevens Avenue and Academy Drive intersection. The project is calculated to generate approximately 380 ADT with 48 inbound and 5 outbound trips during the AM peak hour, and 10 inbound and 39 outbound trips during the PM peak hour.

40. **The Villages at Lomas Santa Fe Plaza** is a proposal to construct 45,500 SF of commercial on the southern portion of the existing Lomas Santa Fe Plaza shopping center. The site is located on the southern portion of the Lomas Santa Fe Plaza shopping center in Solana Beach, east of I-5, south of Lomas Santa Fe Drive and between Marine View Avenue and Las Banderas Drive. It is important to note that the project is not scheduled to open until after the northbound ramps component of the I-5/Lomas Santa Fe interchange reconstruction has been completed. Phase 1 of the interchange improvements would only improve the northbound ramps of the interchange. It is calculated that the project will generate 1,547 ADT, with 33 inbound/22 outbound trips during the AM peak hour and 82 inbound/82 outbound trips during the PM peak hour.

41. **Highway 101 Westside Improvement Project** is a pedestrian and bicycle circulation improvement project to promote traffic calming, safe pedestrian mobility, and business vitality in the Highway 101 corridor in Solana Beach. Highway 101 will remain a four-lane roadway after completion of these improvements. The project's extents are between Dahlia Drive and Cliff Street in the City of Solana Beach. No new trips would result from the proposed street improvements.

Figure 7–1 shows the total cumulative traffic volumes. ***Figure 7–2*** shows pre-construction volumes.

Figure 7–1 Total Cumulative Traffic Volumes

Figure 7–2 Pre-Construction Traffic Volumes

8.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

8.1 Trip Generation

Phase 2 of the project's four phases would be expected to generate the maximum amount of construction traffic, as it would include the majority of the material hauled off-site during vegetation clearing, the dredging of the lagoon itself, and also the bridge replacement construction and de facto traffic rerouting. LLG worked with the project's civil engineer to understand and estimate the operational effects of these components to determine the daily and peak hour trip generation. The following is a summary of each component's characteristics within Phase 2, and the trip generation assumptions made regarding each.

Project Components

Vegetation Clearing

This activity would occur in advance of dredging for all four (4) phases of the project. As much as 365,000 cubic yards (cy) of vegetation material would be removed from the site, using 12-cy capacity dump trucks. The majority of material (300,000 cy) is assumed to be removed during Phase 2.

Phase 2 has an operational timeline of seven (7) months. The amount of time needed for vegetation removal is approximately 172 working days. It is anticipated that seven (7) dump trucks are available each day to remove vegetation from the site. Assuming 172 working days to remove 300,000 cy of material using 7 dump trucks each with a 12 cy capacity, the average number of one-way trips per day would be calculated as follows:

300,000 cy	÷	12 cy/truck	=	25,000 truckloads
25,000 truckloads	÷	172 days	=	146 truckloads/day
146 truckloads/day	÷	7 trucks	=	21 one-way truck trips

Each truck trip would be multiplied by a factor of two (2) to represent the inbound loading trip and the outbound haul trip (two-way trip). A Passenger Car Equivalence Factor of 3.0 would also be applied to the trip to represent the fact that heavy vehicles have an additional effect on traffic flow as compared to passenger cars and light trucks due to their diminished handling characteristics. The hourly average of overall daily truck trips was utilized to determine the AM and PM peak hour trips. This average was divided in two to represent the inbound and outbound average during the hour. Assuming a 10-hour work day, this would account for about two (2) one-way truck trips per hour per day.

The anticipated daily haul trips would be 126 PCE average daily trips (ADT) with approximately 14 AM[1] peak hour (7 inbound/7 outbound) and 14 PM[1] peak hour (7 inbound/7 outbound) PCE trips. The calculations are shown below:

21 one-way truck trips	x	2.0	=	42 two-way truck trips
42 two-way truck trips	x	3.0 PCE	=	126 two-way PCE truck trips

[1] 126 ÷ 10 = 12.6. Peak hour volume rounded up to the nearest even number for equal in/out trips.

126 PCE truck trips	÷	10 hours	=	14 trips/hour[1]
14 trips/hour	÷	2 (in/out)	=	7 in/7 out trips/hour

Dike Construction and Removal

The construction and removal of temporary dikes would occur during all four (4) phases of the project. Approximately 50,000 cy of material will be needed for this activity. The material is proposed to be generated from the lagoon by either excavation along the utility road and/or proposed dike footprint, or by obtaining the material from Caltrans as surplus from the I-5 North Coast Corridor Project bridge replacement. No off-site hauling of material is anticipated with this activity. Therefore, no trick trips would occur. Since the specific number of workers associated with the dike construction is unknown at this time, the total number of workers expected on any given day was assumed to account for dike-related activities. Worker assumptions are discussed later on in this section.

Dredging

The actual dredging of the lagoon would occur over all four (4) phases of the project, after removal of the vegetation and in combination with the construction of dikes. The dredged material is to be carried away from the site via pipeline, so no truck trips would occur. Since the specific number of workers associated with the dredging is unknown at this time, the total number of workers expected on any given day was assumed to account for dredging-related activities. Worker assumptions are discussed later on in this section.

Bridge Replacement

The project would also demolish and replace Highway 101 where it bridges the mouth of the lagoon. Bridge reconstruction would occur in two parts. One side of the four-lane highway would be closed for construction and traffic would be re-routed and reduced to one lane in either direction on the remaining side. Upon completion of the first side of the bridge, traffic would be routed onto the new side of the highway and construction would begin on the remaining span. Two-way traffic would be maintained at all times.

Bridge reconstruction is anticipated to take 18 months total, 10 months for the first phase and 8 months for the second. The schedule is based on five (5) work days per week (average of 20 workdays per month) and eight (8) work hours per day. This would overlap with Phases 1 through 3, hence the conclusion that Phase 2 is most traffic intensive.

Replacement of the bridge would involve demolition and construction aspects; both of which would be variable in terms of worker and truck traffic generation. Information provided by the applicant indicates an estimated 240 two-way concrete delivery truck trips, 200 two-way other delivery-type truck trips, 600 two-way base and asphalt concrete delivery truck trips, and 3,000 two-way dump truck trips (30,000 cy @ 10 cy/trucks) over the course of 18-month bridge construction period.

It is expected that concrete delivery trucks will occur over 40 days throughout the entire bridge construction period, other delivery truck trips will occur regularly throughout the entire 18 months, base and asphalt concrete delivery truck trips will occur over six (6) months (3 months per stage)

during construction of the new roadway, and dump truck trips will occur over two (2) months (1 month per stage) to excavate for the bridge and remove the existing roadway.

Since bridge construction is expected to begin during the first phase of project construction, any traffic from bridge construction that would overlap with Phase 2 of the project was included in the trip generation calculations. For concrete and other/various truck trips, as well as dump truck trips, the average number of truck trips per day was calculated since these trips are expected to occur throughout the 18-month period. For base and asphalt truck trips, the amount of trips expected during the 3-months of the second stage was included in Phase 2 to provide a conservative analysis.

Consistent with the vegetation removal phase, the hourly average of overall daily truck trips was utilized to determine the AM and PM peak hour trips. This average was divided in two to represent the inbound and outbound average during the hour. The method for calculating these trips is as follows:

Concrete:	240 two-way trips	÷	40 days	=	6 two-way trips/day
	6 two-way trips/day	x	3.0 PCE	=	18 two-way trips/day
Other Deliveries:	200 two-way trips	÷	360 days	=	0.6 two-way trips/day
	0.6 two-way trips/day	x	3.0 PCE	=	2 two-way trips/day
Dump Truck:	1,500 two-way trips	÷	20 days[1]	=	75 two-way trips/day
	75 two-way trips/day	x	3.0 PCE	=	225 two-way trips/day
Base & Asphalt:	300 two-way trips	÷	60 days[1]	=	5 two-way trips/day
	5 two-way trips/day	x	3.0 PCE	=	15 two-way trips/day
Total Truck Trips					**260 two-way trips/day**
	260 two-way trips	÷	8 hours	=	34 trips/hour[2]
	34 trips/hour	÷	2 (in/out)	=	**17 in/17 out trip/hour**

Footnotes:

1. 20 work days assumed for one month.
2. No. of trips per hour rounded up to the nearest even number.

Worker Trips

The total number of workers associated with all construction-related activities expected to be on-site on any given day during the 36-month construction period is, at most, 20 to 40 workers. Typical work shifts are expected to be 8-hour days. It was therefore decided to assume 40 workers per day working 8-hour shifts, to be conservative. The total amount of daily trips generated by workers would be 80 ADT. The peak hour volumes (AM and PM peaks) were estimated assuming that all workers arrive on-site prior to the start of the AM peak period, which is 7:00 AM. It was assumed that the total worker force would leave during the PM peak period (between 4:00 and 6:00 PM). Therefore, zero (0) worker trips would be generated during the AM peak period and 80 worker trips would be generated during the PM peak period (0 inbound/ 40 outbound).

Miscellaneous Trips

It is also expected that assorted, miscellaneous trips would occur, such as visits by inspectors and engineers, deliveries of materials and plans not discussed already, etc. Some truck trips were also accounted for in miscellaneous trips.

Summary of Project Volumes

Table 8–1 shows a summary of the project's daily, AM and PM peak hour trip calculations.

TABLE 8–1
PROJECT TRIP GENERATION

Phase 2 Component	Amount [a]	Rate [b]	PCE [c]	Volume				
				ADT [d]	AM Peak Hour		PM Peak Hour	
					In	Out	In	Out
Vegetation Removal								
Trucks	21	2	3.0	126	7	7	7	7
Bridge Replacement								
Concrete Delivery Trucks [e]	3	2	3.0	18	2	2	2	2
Other Delivery Trucks	0.3	2	3.0	2	0	0	0	0
Dump Trucks	37.5	2	3.0	225	14	14	14	14
Base & Asphalt Trucks	2.5	2	3.0	15	1	1	1	1
Subtotal	–	–	–	*260*	*17*	*17*	*17*	*17*
Worker Trips								
Workers	40	2	1.0	80	0	0	0	40
Miscellaneous Trips								
Visitors/other:	20	2	1.0	40	10	10	10	10
Trucks:	1	2	3	6	1	1	1	1
Subtotal:	–	–	–	*46*	*11*	*11*	*11*	*11*
Total Worker/Other Trips				***120***	***10***	***10***	***10***	***50***
Total Truck Trips				***392***	***25***	***25***	***25***	***25***
Total Maximum Traffic – Phase 2				**512**	**35**	**35**	**35**	**75**

Footnotes:

a. "Amount" represents number of trucks or workers or visitors per day as described in *Section 8.1*.

b. "Rate" represents the number of trips per component. One-half of workers are expected to leave and return at least once during the day, hence 20 miscellaneous worker trips.

c. PCE = Passenger car equivalent factor used to account for heavy vehicles.

d. ADT = Average daily trips.

e. Concrete truck peak hour in/out trips rounded up to nearest even number.

8.2 Trip Distribution/Assignment

The project is a construction project, utilizing workers and equipment from outside of the study area. As such, project-related trips are expected to be oriented to/from I-5. Destinations within the study area, adjacent to the lagoon, were identified by the project team for worker parking, vegetation clearing activities, and bridge replacement activities. It is anticipated that workers may arrive at the various parking lots, then be shuttled to their positions on-site. ***Appendix D*** contains information from the project team illustrating potential parking areas and the general vegetation removal areas and bridge replacement staging areas, where truck trips could be expected to occur. LLG estimated the project distribution for both worker trips and truck trips (vegetation removal and bridge replacement) based on this information. It should also be noted that a nominal amount of traffic is expected to occur on Rios Avenue during vegetation removal activities, related to equipment staging and set-up. As such, vegetation removal trips were distributed on this segment and at the Lomas Santa Fe Drive/ Rios Avenue intersection. Details are provided in the tables in *Section 9.0*.

Figure 8–1a shows the traffic distribution for workers. ***Figure 8–1b*** shows the traffic distribution for vegetation removal truck trips and ***Figure 8–1c*** shows the traffic distribution for bridge replacement truck trips. ***Figure 8–2a*** shows the project traffic assignment for workers, while ***Figure 8–2b*** and ***Figure 8–2c*** show the project traffic assignment for vegetation removal truck trips and bridge replacement truck trips, respectively. ***Figure 8–3*** shows the total project's traffic assignment (peak hour trips and ADTs). ***Figure 8–4*** shows the construction period traffic volumes.

Figure 8–1a Project Traffic Distribution (Workers)

Figure 8–1b Project Traffic Distribution (Vegetation Removal)

Figure 8–1c Project Traffic Distribution (Bridge Replacement)

Figure 8–2a Project Traffic Volumes (Workers)

Figure 8–2b Project Traffic Volumes (Vegetation Removal)

Figure 8–2c Project Traffic Volumes (Bridge Replacement)

Figure 8–3 Total Project Traffic Volumes

Figure 8–4 Construction Period Traffic Volumes

9.0 ANALYSIS OF CONSTRUCTION SCENARIOS

9.1 Pre-construction Conditions

9.1.1 Peak Hour Intersection Levels of Service

Table 9–1 summarizes the pre-construction peak hour intersection operations. *Table 9–1* shows that all the study area signalized and unsignalized intersections are calculated to operate at LOS D or better.

Table 9–1 also shows a summary of the weekday peak hour unsignalized intersection operations. *Appendix C* contains the HCM intersection analysis worksheets.

9.1.2 Daily Street Segment Operations

Table 9–2 summarizes the pre-construction roadway segment operations. As seen in *Table 9–2*, all the study area roadway segments are calculated to operate at LOS D or better on a daily basis except for the following location:

- Lomas Santa Fe Drive – Solana Hills Drive to I-5, LOS E

9.2 Construction Period

9.2.1 Peak Hour Intersection Levels of Service

Table 9–1 summarizes the construction period peak hour signalized intersection operations. *Table 9–1* shows that with the addition of project traffic, all the study area signalized and unsignalized intersections are calculated to continue to operate at LOS D or better.

Appendix C contains the HCM intersection analysis worksheets.

9.2.2 Daily Street Segment Operations

Table 9–2 summarizes the construction period roadway segment operations. As seen in *Table 9–2*, all the study area roadway segments are calculated to currently operate at LOS D or better on a daily basis except for the following location:

- Lomas Santa Fe Drive – Solana Hills Drive to I-5, LOS E

While the LOS remains at LOS E, the V/C increase does not exceed the 0.020 V/C maximum identified in the SANTEC/ITE guidelines. ***No significant impact is calculated at this location.***

TABLE 9–1
INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Pre-Construction		Construction Period		
			Delay [a]	LOS [b]	Delay	LOS	Δ [c]
1. Chesterfield Drive/ Coast Highway 101[d]	Signal	AM	20.3	C	20.3	C	0.0
		PM	27.4	C	27.4	C	0.0
2. Chesterfield Drive/ San Elijo Avenue [d]	Signal	AM	23.3	C	23.5	C	0.2
		PM	21.7	C	21.8	C	0.1
3. Manchester Avenue/ I-5 Southbound Ramps	AWSC [e]	AM	17.5	C	17.5	C	0.0
		PM	12.4	B	12.6	B	0.2
4. Manchester Avenue/ I-5 Northbound Ramps	Signal	AM	18.5	B	18.7	B	0.2
		PM	23.6	C	24.0	C	0.4
5. Lomas Santa Fe Drive/ Coast Highway 101	Signal	AM	29.8	C	31.9	C	2.1
		PM	34.6	C	37.3	C	2.3
6. Lomas Santa Fe Drive/ Rios Avenue [f]	Signal	AM	10.8	B	10.8	B	0.0
		PM	11.9	B	11.9	B	0.0
7. Lomas Santa Fe Drive/ I-5 Southbound Ramps	Signal	AM	20.2	C	20.5	C	0.5
		PM	19.8	B	20.2	C	0.4
8. Lomas Santa Fe Drive/ I-5 Northbound Ramps	Signal	AM	49.2	D	49.8	D	0.6
		PM	29.2	C	29.6	C	0.4

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ = Change in Delay due to construction traffic.
d. LOS/Delay represent non-railroad affected signal timing.
e. AWSC – All Way Stop Controlled intersection.
f. Although vegetation removal traffic was assigned to the Lomas Santa Fe/Rios Avenue intersection due to the location of a project access/staging area at the terminus of this residential street, 0 trips would be expected to occur during the AM/PM peak hours.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 9–2
STREET SEGMENT OPERATIONS

Street Segment	Jurisdiction	Capacity (LOS E) [a]	Pre-Construction			Construction Period			
			ADT [b]	LOS [c]	V/C [d]	ADT	LOS	V/C	Δ [e]
Coast Highway 101									
North of Chesterfield Drive	Encinitas	35,200	16,700	A	0.474	16,700	A	0.474	0.000
South of Chesterfield Drive	Encinitas	35,200	20,180	A	0.573	20,310	A	0.577	0.004
North of Lomas Santa Fe Drive [f]	Solana Beach	30,000	18,040	C	0.601	18,396	C	0.613	0.012
Chesterfield Drive									
East of Coast Highway 101	Encinitas	32,400	17,950	A	0.554	17,990	A	0.555	0.001
San Elijo Avenue									
South of Chesterfield Drive	Encinitas	20,000	670	A	0.034	710	A	0.036	0.002
Manchester Avenue									
West of I-5 Southbound Ramps	Encinitas	20,000	7,100	A	0.355	7,146	A	0.357	0.002
East of I-5 Northbound Ramps	Encinitas	32,400	28,240	D	0.872	28,264	D	0.872	0.001
Rios Avenue									
North of Lomas Santa Fe Drive [g]	Solana Beach	8,000	2,080	A	0.260	2,086	A	0.261	0.001
Lomas Santa Fe Drive									
East of Coast Highway 101	Solana Beach	40,000	19,950	B	0.499	20,312	B	0.508	0.009
Hilmen Drive to Stevens Avenue	Solana Beach	40,000	23,410	C	0.585	23,772	C	0.594	0.009
Solana Hills Drive to I-5	Solana Beach	40,000	38,530	E	0.963	38,892	E	0.972	0.009

Footnotes:

a. Capacities based on the City of Encinitas and City of Solana Beach roadway classification tables.
b. Average Daily Traffic Volumes.
c. Level of Service.
d. Volume to Capacity.
e. Δ = Change in Delay due to construction traffic.
f. Coast Highway 101 north of Lomas Santa Fe Drive is constructed with one lane in the southbound direction and two lanes in the northbound direction separated by a landscaped raised median. Therefore, a modified capacity of 30,000 ADT for a 4-Lane Major Arterial was used in the analysis.
g. A nominal amount of trips generated during the vegetation removal phase of the project would be expected to use Rios Avenue to reach a site access/staging area at the northern terminus of this residential roadway (6 ADT).

10.0 COAST HIGHWAY 101 – BRIDGE REPLACEMENT ASSESSMENT

The bridge on Coast Highway 101 across the mouth of the lagoon would be demolished and replaced in two parts, as discussed in *Section 8.1*. Again, two-way traffic would be maintained throughout the 18-month construction period. To assess the potential impacts to local circulation due to the restriction in available lanes, the volume and capacity of the study segment was considered.

10.1 Traffic Volumes

The forecasted construction period traffic volume on Coast Highway 101 near the bridge is 20,310 ADT (see *Table 9–2*), of which some percentage is comprised of discretionary trips, and some percentage is comprised of necessary trips. "Discretionary" trips are those that are on Coast Highway 101 out of convenience or pleasure. These might include commuters seeking to avoid peak hour traffic congestion on Interstate 5, or tourists and visitors sight-seeing along the coast. Discretionary trips do not need to occur on Coast Highway 101, and could just as well utilize Interstate 5.

"Necessary" trips along Coast Highway 101 would be comprised of local residential or business trips between coastal cities that would use Coast Highway 101 as the fastest route between destinations. They too could use Interstate 5, but to do so would be exceptionally out of direction.

With respect to the bridge replacement, it is assumed that the necessary trips would remain on Coast Highway 101, despite the diminished capacity through the construction zone, while the discretionary trips would either avoid Coast Highway 101 altogether, or would divert to Interstate 5 before the construction zone. The final lateral roadways to divert would be (coming from the south) Lomas Santa Fe Drive, or (coming from the north) Manchester Avenue via Chesterfield Drive.

Peak hour directional counts on Coast Highway 101 show a "complementary trip imbalance" in the northbound/southbound directions, favoring the southbound direction in the PM peak hour. This means that the number of southbound trips during the PM peak hour is greater than the complementary number of northbound trips from the AM peak hour. Were all trips on this segment necessary trips, the northbound AM and southbound PM peak hour volumes could be expected to be complement one another. Since more southbound trips are observed in the PM peak hour (725 PM southbound trips compared to 471 AM northbound trips, based on the road tube counts), it may be deduced that the difference of 254 trips represents discretionary trips, presumably avoiding southbound congestion on Interstate 5.

This example represents trip characteristics during the commuter peak hour. The relative amount of discretionary vs. necessary trips during the non-commuter peak hour is much less determinable given the complex nature of non-commuter trip-making. It does, however, substantiate the idea that discretionary trips are in the system, and are not insubstantial.

10.2 Capacity

While the preceding discussion establishes that discretionary trips occur on Coast Highway 101, these trips are certainly variable depending on time of day, day of week, and season of the year. The available data does not support a precise empirical method for the determination of trip to be displaced from Coast Highway 101 to Interstate 5. An alternative method is to consider the full and reduced capacity of the roadway segment, and the latent demand that is displaced and diverted with the latter.

Table 9–2 (*Section 9*) shows that during the construction period, the volume on the subject segment of Coast Highway 101 (south of Chesterfield Drive) is 20,310 ADT, with a 4-lane roadway capacity of 35,200 ADT. When the bridge construction occurs, roadway capacity would be reduced by two-lanes (fifty percent), to 17,600 ADT. Assuming that all 20,310 ADT wish to be on this segment, the latent, unserved demand of the reduced-capacity roadway is thus 2,580 ADT (20,310 ADT demand – 17,600 ADT served = 2,710 ADT unserved). These would be characterized as discretionary trips, which would utilize Interstate 5 as an alternate route.

Assuming this unserved Coast Highway 101 volume (1,355 northbound and 1,355 southbound) waited until the last opportunity to exit Coast Highway 101 to divert to Interstate 5, it would utilize Lomas Santa Fe Drive and Chesterfield Drive, respectively.

10.2.1 Operations

Table 10–1 shows the daily segment operations in the study area for the construction period with and without the bridge replacement closure. As shown in *Table 10–1*, the segments listed below would be affected by the partial closure of the bridge:

- Coast Highway 101 – South of Chesterfield Drive, LOS E
- Lomas Santa Fe Drive – Solana Hills Drive to I-5, LOS F

These project impacts would exceed the allowable thresholds, and therefore be considered significant direct project impacts.

TABLE 10–1
BRIDGE REPLACEMENT STREET SEGMENT OPERATIONS

Street Segment	Jur.	Construction Period Without Bridge Closure				Construction Period With Bridge Closure					
		Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]	Capacity (LOS E) [a]	Diverted Trips	ADT	LOS	V/C	Δ [e]
Coast Highway 101											
North of Chesterfield Drive	Encinitas	35,200	16,700	A	0.474	35,200	—	16,700	A	0.474	0.000
South of Chesterfield Drive	Encinitas	35,200	20,310	A	0.577	**17,600***	**(2,710)**	**17,600**	**E**	**1.000**	**0.423**
North of Lomas Santa Fe Drive [f]	Encinitas	30,000	18,396	C	0.613	30,000	—	18,396	C	0.613	0.000
Chesterfield Drive											
East of Coast Highway 101	Encinitas	32,400	17,990	A	0.555	32,400	1,355	19,345	A	0.597	0.042
San Elijo Avenue											
South of Chesterfield Drive	Encinitas	20,000	710	A	0.036	20,000	1,355	2,065	A	0.103.	0.068
Manchester Avenue											
West of I-5 Southbound Ramps	Encinitas	20,000	7,146	A	0.357	20,000	1,355	8,501	A	0.425	0.068
East of I-5 Northbound Ramps	Encinitas	32,400	28,264	D	0.872	32,400	—	28,264	D	0.872	0.000
Rios Avenue											
North of Lomas Santa Fe Drive	Solana Beach	8,000	2,086	A	0.261	8,000	—	2,086	A	0.261	0.000
Lomas Santa Fe Drive											
East of Coast Highway 101	Solana Beach	40,000	20,312	B	0.261	40,000	1,355	21,667	C	0.542	0.034
Hilmen Drive to Stevens Avenue	Solana Beach	40,000	23,772	C	0.594	40,000	1,355	25,127	C	0.628	0.034
Solana Hills Drive to I-5	Solana Beach	40,000	38,892	E	0.508	**40,000**	**1,355**	**40,247**	**F**	**1.006**	**0.034**

Footnotes:

a. Capacities based on the City of Encinitas and City of Solana Beach roadway classification tables.
b. Average Daily Traffic Volumes.
c. Level of Service.
d. Volume to Capacity.
e. Δ = Change in Delay due to diverted trips.

General Notes:

1. Jur = Jurisdiction
2. The two-lane capacity of Coast Highway 101 is half of the 4-lane capacity (35,200 ADT ÷ 2 = 17,600 ADT)
3. The demand on Coast Highway 101 exceeds the reduced capacity by 2,710 ADT.
4. The excess demand (2,710 ADT) is expected to divert to Chesterfield Drive/Manchester Avenue and Lomas Santa Fe Drive.
5. The total diverted trips are divided by 2: NB = 1,355 ADT to Lomas Santa Fe Drive; SB = 1,355 ADT to Chesterfield Drive/Manchester Avenue

10.3 Summer/Special Event Season Evaluation

As mentioned earlier in this report, construction is expected to begin in late 2016 and be completed by spring 2019. This schedule would overlap with two (2) summer seasons when special events such as the San Diego County Fair and the Del Mar Races are held. According to the sequenced phasing, Phases 1, 2 and 4 include activities that would overlap with a summer season. The first two phases also include the first 10 months of bridge replacement construction. This time frame includes the partial closure of the Coast Highway 101 bridge which would coincide with the summer 2018 fair and race season.

The analysis provided in this report was conducted using weekday October traffic volumes to represent typical non-summer traffic patterns in the area when fair and race events are not operating. In order to determine how the closure of the bridge would affect summer season weekday traffic volumes, a review of historical average daily traffic count data was conducted.

A comparison between three summer scenarios against the October counts was conducted: off-season typical summer traffic; summer fair traffic; and summer race traffic. Weekday traffic count data taken from the *22nd DAA 2008 Master Plan Traffic Study* prepared by LLG in 2009 was compared on the segment of Coast Highway 101 south of Lomas Santa Fe Drive. Based on a review of these three scenarios, the average increase in weekday traffic during the summer months (off-season and fair and race season) is generally 26%. The majority of this traffic increase occurs along Coast Highway 101 as beachgoers, visitors, and fairgrounds patrons travel this scenic route. For purposes of being conservative, the 26% traffic increase calculated from Master Plan counts was used to evaluate the effect of summer/special event traffic on all study area roadways. ***Appendix E*** contains the traffic volume comparison.

It can therefore be anticipated that during the peak summer/special event season while bridge replacement construction is operating, an increase in traffic volumes of 26% could be expected within the study area in addition to the rerouting of "necessary" trips discussed above in *Section 10.1*.

10.3.1 Operations

Table 10–2 shows the daily segment operations in the study area for the summer/special event season pre-construction period and during the construction period with and without the bridge replacement closure. As shown in *Table 10–2*, the segments listed below would be expected to operate at LOS F during both during the pre-construction and construction period:

- Manchester Avenue – East of I-5 Northbound Ramps, LOS F
- Lomas Santa Fe Drive – Solana Hills Drive to I-5, LOS F

Since the increase in the v/c on these two segments with the addition of project traffic does not exceed the allowable thresholds, no significant project impacts would be expected during the summer/special event season.

Also shown in *Table 10–2* are the operations during the summer/special event season with and without the partial bridge closure. As shown in the table, the segments listed below would be affected by the partial closure of the bridge:

- Coast Highway 101 – South of Chesterfield Drive, LOS E
- Lomas Santa Fe Drive – Solana Hills Drive to I-5, LOS F

These project impacts, the same locations identified in Section 10.2.1, would exceed the allowable thresholds, and therefore be considered significant direct project impacts.

TABLE 10–2
SUMMER/SPECIAL EVENT SEASON STREET SEGMENT OPERATIONS

Street Segment	Jur.	Capacity (LOS E) [a]	Summer/Special Event Pre-Construction			Summer/Special Event Construction Period				Summer/Special Event Construction Period With Bridge Closure					
			ADT [b]	LOS [c]	V/C [d]	ADT	LOS	V/C	Δ [e]	Capacity (LOS E) [a]	Diverted Trips	ADT	LOS	V/C	Δ [e]
Coast Highway 101															
North of Chesterfield Dr	Encinitas	35,200	20,880	A	0.593	20,880	A	0.593	0.000	35,200	—	20,880	A	0.593	0.000
South of Chesterfield Dr	Encinitas	35,200	25,230	C	0.717	25,360	C	0.720	0.003	**17,600***	**(2,710)**	**22,520**	**F**	**1.280**	**0.563**
North of Lomas Santa Fe Dr [f]	Encinitas	30,000	22,550	D	0.752	22,906	D	0.764	0.012	30,000	—	22,550	D	0.752	0.000
Chesterfield Drive															
East of Coast Highway 101	Encinitas	32,400	22,440	B	0.693	22,480	B	0.694	0.001	32,400	1,355	23,795	C	0.734	0.041
San Elijo Avenue															
South of Chesterfield Drive	Encinitas	20,000	840	A	0.042	880	A	0.044	0.002	20,000	1,355	2,195	A	0.110	0.068
Manchester Avenue															
West of I-5 SB Ramps	Encinitas	20,000	8,880	A	0.444	8,926	A	0.446	0.002	20,000	1,355	10,235	A	0.512	0.068
East of I-5 NB Ramps	Encinitas	32,400	35,300	F	1.090	35,324	F	1.090	0.000	32,400	—	35,300	F	1.090	0.000
Rios Avenue															
North of Lomas Santa Fe Dr	Solana Beach	8,000	2,600	B	0.325	2,606	B	0.326	0.001	8,000	—	2,600	B	0.325	0.000
Lomas Santa Fe Drive															
East of Coast Highway 101	Solana Beach	40,000	24,940	C	0.624	25,302	C	0.633	0.009	40,000	1,355	26,295	C	0.657	0.033
Hilmen Dr to Stevens Ave	Solana Beach	40,000	29,260	C	0.732	29,622	C	0.741	0.009	40,000	1,355	30,615	D	0.765	0.033
Solana Hills Dr to I-5	Solana Beach	40,000	48,160	F	1.204	48,522	F	1.213	0.009	**40,000**	**1,355**	**49,515**	**F**	**1.238**	**0.034**

Footnotes:

a. Capacities based on the City of Encinitas and City of Solana Beach roadway classification tables.
b. Average Daily Traffic Volumes.
c. Level of Service.
d. Volume to Capacity.
e. Δ = Change in Delay due to project and project + diverted trips.

General Notes:

1. Jur = Jurisdiction
2. Pre-construction summer/special event volumes grown by 26%.
3. The two-lane capacity of Coast Highway 101 is half of the 4-lane capacity (35,200 ADT ÷ 2 = 17,600 ADT)
4. The demand on Coast Highway 101 exceeds the reduced capacity by 2,710 ADT.
5. The excess demand (2,710 ADT) is expected to divert to Chesterfield Drive/Manchester Avenue and Lomas Santa Fe Drive.
6. The total diverted trips are divided by 2:

10.4 Conclusion

It can be concluded that the only contributing factor to the occurrence of significant project impacts is the partial closure of the bridge. The tables in the sections above show that although traffic increases are anticipated during the summer/special event baseline condition, the diversion of "necessary trips" in addition to the reduction in capacity of the bridge are the key contributors to significant impacts on Coast Highway 101 and Lomas Santa Fe Drive.

These roadway segments would not be significantly impacted by project traffic with the development of any project alternative during both the off-season and summer/special event season that does not include partial closure of the Coast Highway 101 Bridge since the greatest V/C increase on poorly operating street segments does not exceed the allowable thresholds.

11.0 SIGNIFICANCE OF IMPACTS/ MITIGATION MEASURES

The analysis presents the results of the Alternative 2A project during Phase 32 of construction. The analysis also assumes that each phase occurs sequentially for 36 months, beginning in late 2016. The primary traffic generating components of the overall project are the vegetation removal and bridge replacement, which would generate both worker and truck tips. A reduction in roadway capacity would also occur with the demolition and reconstruction of the bridge on Coast Highway 101 across the mouth of the lagoon. This is expected to result in diverted trips from Coast Highway 101 to Interstate 5, via Chesterfield Drive to San Elijo Avenue to Manchester Avenue to the north of the bridge, and Lomas Santa Fe Drive to the south of the bridge. Collectively, these construction operations are calculated to result in the following temporary, direct significant impacts during the construction period:

11.1 Significant Impacts

D1. Coast Highway 101 – South of Chesterfield Drive

D2. Lomas Santa Fe Drive – Solana Hills Drive to Interstate 5

11.2 Mitigation Measures

MM2. Coast Highway 101 – South of Chesterfield Drive

- *The impact is caused by the reduction in capacity associated with the demolition and reconstruction of the bridge. There is no mitigation to reduce this impact to less than significant.* ***This would remain a significant and short-term temporary direct unmitigated impact.***

MM3. Lomas Santa Fe Drive – Solana Hills Drive to Interstate 5

- *The impact is caused by the reduction in capacity associated with the demolition and reconstruction of the bridge, and the subsequent redistribution of northbound traffic to Interstate 5 via Lomas Santa Fe Drive. There is no mitigation to reduce this impact to less than significant.* ***This would remain a significant and short-term temporary direct unmitigated impact.***

11.3 Project Alternatives

As noted in the report, the findings above for Alternative 2A represent the worst-case construction phase within the worst-case project alternative, both of which include effects of demolition and replacement of the bridge across the lagoon mouth on Coast Highway 101. This construction phase will result in the redistribution of traffic to/from Coast Highway 101 to lateral roadways both north and south of the bridge (such as Lomas Santa Fe Drive), while simultaneously reducing capacity in the construction area by two lanes (50%). Impacts D1 and D2 above both occur because of this bridge reconstruction effort.

Based on the Pre-construction volumes, capacities and LOS, Impacts D1 and D2 would only be expected to occur with project alternatives which include temporary partial bridge closures.

It should also be noted that an evaluation of the effects of the summer/special events season was conducted both with and without the bridge replacement/closure activities expected with the proposed project. The significance drawn from this analysis is synonymous with the conclusions above.

End of Report

APPENDIX K

AIR QUALITY AND GHG EMISSIONS CALCULATIONS

Mobilization/Demobilization - All Alternatives

Off-Road Construction Equipment

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	**Equipment Category**	**Number**	**Usage Factor**	**Unit**	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Grader	Graders Composite	1	2	hrs/day	0.17	1.31	0.79	0.07	0.06	0.01	0.05	0.03	0.00	0.00	
Rubber Tired Dozer	Rubber Tired Dozers Composite	2	2	hrs/day	0.73	5.99	2.79	0.25	0.23	0.03	0.22	0.10	0.01	0.01	
Loader	Tractors/Loaders/Backhoes Composite	2	2	hrs/day	0.18	1.21	1.00	0.08	0.07	0.01	0.04	0.04	0.00	0.00	
Crane	Cranes Composite	1	2	hrs/day	0.16	1.37	0.59	0.06	0.05	0.01	0.05	0.02	0.00	0.00	
Backhoe	Tractors/Loaders/Backhoes Composite	2	2	hrs/day	0.18	1.21	1.00	0.08	0.07	0.01	0.04	0.04	0.00	0.00	
Off-Highway Trucks	Off-Highway Trucks Composite	2	2	hrs/day	0.52	4.00	1.60	0.14	0.13	0.02	0.14	0.06	0.00	0.00	
					1.93	15.08	7.77	0.67	0.61	0.07	0.54	0.28	0.02	0.02	67.15

Note: Assumes that construction equipment would operate a few hours per day to mobilize/demobilize in staging areas.

On Road Construction Emissions

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	**Distance**	**Average Daily Mileage**	**Total Mileage**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Heavy-Duty Trucks	38	12	456	32,832	0.30	9.01	1.35	0.23	0.16	0.011	0.324	0.048	0.008	0.006	56
Total			**456**	**32,832**	**0.30**	**9.01**	**1.35**	**0.23**	**0.16**	**0.01**	**0.32**	**0.05**	**0.01**	**0.01**	**55.86**

Note: Assumes 2 heavy-duty trucks trip (one trip each direction) per piece of construction equipment, including dredge and pumps. Truck trips also include delivery of 10,000 feet of pipeline (conservatively assumes 250 pieces of pipe and 2 40-foot sections of pipe per truck for a total of 4 truck trips per day).

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips Per Day	**Distance**	**Average Daily Mileage**	**Total Mileage**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Worker Trips	120	16.8	2,016	145,152	0.23	1.89	4.49	0.29	0.16	0.01	0.07	0.16	0.01	0.01	49.62

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total					**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
					2.46	25.98	13.60	1.19	0.94	0.09	0.94	0.49	0.04	0.03	172.63

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days: 72

Site Preparation - All Alternatives

Off-Road Construction Equipment

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	**Equipment Category**	**Number**	**Usage Factor**	**Unit**	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Grader	Graders Composite	1	10	hrs/day	0.86	6.56	3.97	0.33	0.30	0.01	0.08	0.05	0.00	0.00	
Rubber Tired Dozer	Rubber Tired Dozers Composite	1	10	hrs/day	1.82	14.97	6.98	0.62	0.57	0.02	0.18	0.08	0.01	0.01	
Loader	Tractors/Loaders/Backhoes Composite	1	10	hrs/day	0.45	3.02	2.49	0.20	0.18	0.01	0.04	0.03	0.00	0.00	
Crane	Cranes Composite	1	10	hrs/day	0.81	6.83	2.94	0.29	0.26	0.01	0.08	0.04	0.00	0.00	
Off-Highway Trucks	Off-Highway Trucks Composite	1	10	hrs/day	1.29	10.00	4.00	0.35	0.32	0.02	0.12	0.05	0.00	0.00	
					5.22	41.39	20.39	1.78	1.64	0.06	0.50	0.24	0.02	0.02	60.64

On Road Construction Emissions

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	**Distance**	**Average Daily Mileage**	**Total Mileage**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Heavy-Duty Trucks	2	12	24	576	0.02	0.47	0.07	0.01	0.01	0.000	0.006	0.001	0.000	0.000	1
Total			**24**	**576**	**0.02**	**0.47**	**0.07**	**0.01**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.98**

Notes: Assumes 1 round-trip truck trip per day to haul any material associated with site preparation.

Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 12 miles from the site in San Diego

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	**Distance**	**Average Daily Mileage**	**Total Mileage**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Worker Trips	120	16.8	2,016	48,384	0.23	1.89	4.49	0.29	0.16	0.00	0.02	0.05	0.00	0.00	16.54

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total					**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
					5.46	43.75	24.95	2.08	1.81	0.07	0.52	0.30	0.02	0.02	78.16

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days: 24

Alt 1A - Emissions Summary
Construction

	Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Mobilization/Demobilization/Site Preparation	8	70	39	3	3
Phase 1 - Construction Equipment/On-Road Vehicles	23	280	97	51	10
Phase 2 - Construction Equipment/On-Road Vehicles	18	191	70	29	7
Dredging	19	166	79	6	5
Material Disposal	69	630	286	23	21
Total Maximum Daily Emissions	**112**	**1,076**	**462**	**80**	**37**

Operations

	Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Construction Equipment	4.66	30.25	19.34	1.17	1.04
Total	4.66	30.25	19.34	1.17	1.04

Alt 1A - Mitigated Emissions Summary
Construction

	Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Construction Equipment	14	147	86	49	9
On-Road Vehicles	2	42	11	1	1
Dredging	19	166	79	6	5
Material Disposal	38	347	286	23	21
Total Maximum Daily Emissions	**72**	**702**	**462**	**80**	**37**

Alt 1A - Emissions Summary by Year
Construction

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2016/2017						
Mobilization/Demobilization/Site Preparation	0.15	1.46	0.79	0.07	0.06	251
Construction Equipment/On-Road Vehicles	1.36	16.67	5.58	2.77	0.58	2,563
Dredging	1.29	11.22	5.34	0.39	0.36	809
Material Disposal	0.55	5.04	2.28	0.19	0.17	342
Total Annual Emissions	**3.35**	**34.39**	**13.99**	**3.41**	**1.16**	**3,964**
2018						
Mobilization/Demobilization	0.09	0.94	0.49	0.04	0.03	173
Construction Equipment/On-Road Vehicles	0.53	6.27	2.24	1.03	0.22	994
Dredging	0.64	5.61	2.67	0.19	0.18	404
Material Disposal	0.28	2.52	1.14	0.09	0.09	171
Total Annual Emissions	**1.54**	**15.33**	**6.54**	**1.36**	**0.52**	**1,742**

Notes: Assumes that Phase 1 emissions for Alternative 1A occur equally in 2016 and 2017

Operations

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2020						
Construction Equipment/On-Road Vehicles	0.06	0.39	0.25	0.02	0.01	92.16
Total	**0.06**	**0.39**	**0.25**	**0.02**	**0.01**	**92.16**

Alt 1A - Emissions Summary by Year
Electric Dredge

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2016/2017						
Mobilization/Demobilization/Site Preparation	0.15	1.46	0.79	0.07	0.06	251
Construction Equipment/On-Road Vehicles	1.36	16.67	5.58	2.77	0.58	2,563
Dredging	1.29	11.22	5.34	0.39	0.36	869
Material Disposal	0.55	5.04	2.28	0.19	0.17	342
Total Annual Emissions	**3.35**	**34.39**	**13.99**	**3.41**	**1.16**	**4,025**
2018						
Mobilization/Demobilization	0.09	0.94	0.49	0.04	0.03	173
Construction Equipment/On-Road Vehicles	0.53	6.27	2.24	1.03	0.22	994
Dredging	0.64	5.61	2.67	0.19	0.18	434
Material Disposal	0.28	2.52	1.14	0.09	0.09	171
Total Annual Emissions	**1.54**	**15.33**	**6.54**	**1.36**	**0.52**	**1,772**

Notes: Assumes that Phase 1 emissions for Alternative 1A occur equally in 2016 and 2017

Operations

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2020						
Construction Equipment/On-Road Vehicles	0.06	0.39	0.25	0.02	0.01	92.16
Total	**0.06**	**0.39**	**0.25**	**0.02**	**0.01**	**92.16**

Alternative 1A - Phase 1

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	1	10	300	216	1.48	12.24	4.22	0.51	0.47	0.16	1.32	0.46	0.06	0.05	121.10
Front-end Loaders	Rubber Tired Loaders Composite	1	10	250	216	0.75	6.63	2.31	0.23	0.21	0.08	0.72	0.25	0.02	0.02	98.24
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	4	20	750	270	15.39	185.08	61.40	5.46	5.02	2.08	24.99	8.29	0.74	0.68	3,761.51
Haul Unsuitable Material																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	14	1.45	12.12	4.78	0.39	0.36	0.01	0.08	0.03	0.00	0.00	14.68
Utility Road Surface																
Motor Grader	Graders Composite	1	10	150	20	0.87	6.39	4.90	0.35	0.32	0.01	0.06	0.05	0.00	0.00	7.57
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	216	0.45	3.98	1.38	0.14	0.12	0.05	0.43	0.15	0.01	0.01	58.94
Motor Grader	Graders Composite	1	6	150	216	0.52	3.83	2.94	0.21	0.19	0.06	0.41	0.32	0.02	0.02	49.06
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	216	0.44	3.64	1.43	0.12	0.11	0.05	0.39	0.15	0.01	0.01	67.93
Water Truck	Off-Highway Trucks	1	6	175	216	0.51	3.46	3.04	0.19	0.18	0.05	0.37	0.33	0.02	0.02	49.51
Total						**21.85**	**237.36**	**86.41**	**7.60**	**6.99**	**2.54**	**28.78**	**10.03**	**0.89**	**0.82**	**4228.54**

Notes: Assumes construction equipment operates 10 hours per day and 6 days per week. Indirect support equipment operates 6 hours per day.

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Dump Truck (7)	42	24	1,008	216	217,728	0.66	19.92	2.98	0.51	0.35	0.07	2.15	0.32	0.06	0.04	370.43
Haul Unsuitable Material																
DumpTruck (10)	8	24	187	14	2,621	0.12	3.70	0.55	0.10	0.07	0.01	0.40	0.06	0.01	0.01	68.79
Utility Road Surface (Agg. Base)																
Dump Truck (7)	33	24	794	20	15,888	0.52	15.70	2.35	0.40	0.28	0.06	1.70	0.25	0.04	0.03	291.93
Indirect Support																
Dump Truck (1)	2	24	48	216	10,368	0.03	0.95	0.14	0.02	0.02	0.00	0.10	0.02	0.00	0.00	17.64
Total			**2,038**	**466**	**246,605**	**1.33**	**40.27**	**6.02**	**1.04**	**0.71**	**0.14**	**4.35**	**0.65**	**0.11**	**0.08**	**748.79**

Notes: Clear & Grub activities assume 1,750 cubic yards of material per day. Utility Road Surface (Agg. Base) dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.
Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	435,456		0.23	1.89	4.49	0.29	0.16	0.02	0.20	0.48	0.03	0.02	148.87

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total						ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
						23.41	279.52	96.92	8.92	7.86	2.71	33.33	11.16	1.04	0.92	5,126.20

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

40 CFR 98 - Table A-1 to Subpart A. 2014.

Number of Construction Days (assumes 6 days per week for 9 months)	216
Number of Pump Construction Days (assumes 7 days per week for 9 months)	270

Alternative 1A - Phase 2

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	2	20	750	90	7.70	92.54	30.70	2.73	2.51	0.35	4.16	1.38	0.12	0.11	626.32
Nesting Site/Transitional Areas																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	10	290	12	0.73	6.06	2.39	0.20	0.18	0.00	0.04	0.01	0.00	0.00	6.29
Bulldozer	Rubber Tired Dozers Composite	1	10	300	12	1.48	12.24	4.22	0.51	0.47	0.01	0.07	0.03	0.00	0.00	6.73
Off-road Hauler	Off-Highway Trucks Composite	1	10	725	12	2.14	15.93	6.46	0.56	0.51	0.01	0.10	0.04	0.00	0.00	16.18
Install Internal Revetments/Shore Protection																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	39	1.45	12.12	4.78	0.39	0.36	0.03	0.24	0.09	0.01	0.01	40.88
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	39	1.50	13.25	4.61	0.45	0.42	0.03	0.26	0.09	0.01	0.01	35.47
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	72	0.45	3.98	1.38	0.14	0.12	0.02	0.14	0.05	0.00	0.00	19.65
Motor Grader	Graders Composite	1	6	150	72	0.52	3.83	2.94	0.21	0.19	0.02	0.14	0.11	0.01	0.01	16.35
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	72	0.44	3.64	1.43	0.12	0.11	0.02	0.13	0.05	0.00	0.00	22.64
Water Truck	Off-Highway Trucks	1	6	175	72	0.51	3.46	3.04	0.19	0.18	0.02	0.12	0.11	0.01	0.01	16.50
Total						**16.91**	**167.05**	**61.97**	**5.50**	**5.06**	**0.50**	**5.40**	**1.96**	**0.17**	**0.16**	**807.03**

Notes: Assumes construction equipment operates 10 hours per day and 6 days per week. Indirect support equipment operates 6 hours per day.

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Install Internal Revetments/Shore Protection																
Dump Truck (13)	45	24	1,073	39	41,839	0.70	21.20	3.17	0.55	0.37	0.03	0.76	0.11	0.02	0.01	131.41
Indirect Support																
Dump Truck	2	24	48	72	3,456	0.03	0.95	0.14	0.02	0.02	0.00	0.03	0.01	0.00	0.00	5.88
Total			**1,121**	**111**	**45,295**	**0.73**	**22.15**	**3.31**	**0.57**	**0.39**	**0.03**	**0.80**	**0.12**	**0.02**	**0.01**	**137.29**

Notes: Install Internal Revetments/Shore Protection dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.
Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	145,152		0.23	1.89	4.49	0.29	0.16	0.01	0.07	0.16	0.01	0.01	49.62

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total						ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
						17.86	191.09	69.76	6.36	5.61	0.53	6.27	2.24	0.20	0.18	993.95

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

40 CFR 98 - Table A-1 to Subpart A. 2014.

Number of Construction Days (assumes 6 days per week for 3 months)	72
Number of Pump Construction Days (assumes 7 days per week for 3 months)	90

Alternative 1A - Dredge Emissions

Assumptions

Main Generator Engine	855	bhp
	637.6	kW
Aux Generator Engines	445	bhp
	331.8	kW
Number	1.0	

			Emissions (pounds per day)						Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	CO2e*	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	270	20	19.09	166.19	79.05	5.72	5.26	13,167.86	2.58	22.44	10.67	0.77	0.71	1,617.67

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.70	7.19	2.92	0.29	0.26	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
500 hp	0.81	6.05	3.35	0.21	0.19	652	184.16

Note: CO2 emission factor in g/kWh.

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF₀ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 1A - Electric Dredge Emissions

Assumptions

Main Generator Engine	855	bhp
	637.6	kW
Aux Generator Engines	445	bhp
	331.8	kW
Total kW	969.4	

				Emissions (pounds per day)	Emissions (metric tons per phase)
Activity	**Number of Construction Days**	**Time (hours per day)**	**Daily Energy Consumption (kWh)**	**CO2e***	**CO2e***
Dredge	270	20	19,387.94	14,147.19	1,737.98

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 1A - Material Disposal

Assumptions

Main Generator Engine	5000 bhp
	3728.5 kW
Aux Generator Engines	3000 bhp
	2237.1 kW
Number	1.0

Activity	Number of One-Way Trips	Time (hours per day)	Emissions (pounds per day) ROG	NOx	CO	PM10	PM2.5	Emissions (tons per phase) ROG	NOx	CO	PM10	PM2.5	Emissions (metric tons per phase) CO2e*
Tug/Barge	32	11.583	69.33	630.50	285.58	23.33	21.46	1.11	10.09	4.57	0.37	0.34	683.31

Notes: Assumes 1 tug round trip per day. Each tug would transport 2 barges per trip. Material disposal would only occur during Phase 1 of the proposed project or alternative.
*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
5000 hp	0.70	7.42	2.92	0.31	0.29	652	184.16

4.17 0.39
44% 45%

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.84	6.93	3.42	0.27	0.25	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*
Rev. 10/2006

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF_0 is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 1A - Operations

Off-Road Construction Equipment

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
Equipment Type	Equipment Category	Number	Usage Factor	Unit	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Rubber Tired Dozer	Rubber Tired Dozers Composite	1	10	hrs/day	1.42	10.57	5.36	0.42	0.39	0.02	0.14	0.07	0.01	0.01	
Backhoe	Tractors/Loaders/Backhoes Composite	1	10	hrs/day	0.29	1.84	2.42	0.09	0.08	0.00	0.02	0.03	0.00	0.00	
Off-Highway Trucks	Off-Highway Trucks Composite	3	10	hrs/day	2.90	16.70	11.08	0.56	0.52	0.04	0.22	0.14	0.01	0.01	
					4.61	29.10	18.87	1.08	0.99	0.06	0.38	0.25	0.01	0.01	86.19

On Road Construction Emissions

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
	Trips Per Day	Distance	Average Daily Mileage	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Heavy-Duty Trucks	2	12	24	624	0.01	0.22	0.05	0.01	0.01	0.000	0.003	0.001	0.000	0.000	1
Total			**24**	**624**	**0.01**	**0.22**	**0.05**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.97**

Note: Assumes 1 miscellaneous round truck trip per day.

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Worker Trips	40	16.8	672	17,472	0.04	0.93	0.42	0.08	0.04	0.00	0.01	0.01	0.00	0.00	5.00

Note: Assumes a total of 20 workers per day.

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
Total					ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
					4.66	30.25	19.34	1.17	1.04	0.06	0.39	0.25	0.02	0.01	92.16

Global Warming Potentia

Gas	Atmospheric Lifetime (years	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days 26

Alt 1B - Emissions Summary
Construction

	Total Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Phase 1					
Mobilization/Demobilization/Site Preparation	8	70	39	3	3
Construction Equipment/On-Road Vehicles	26	297	103	50	11
Dredging	48	448	199	16	15
Material Disposal	13	116	52	4	4
Phase 1 - Maximum Daily Emissions	**87**	**861**	**355**	**71**	**29**
Phase 2					
Construction Equipment/On-Road Vehicles	30	305	108	54	11
Dredging	48	448	199	16	15
Phase 2 - Maximum Daily Emissions	**78**	**753**	**307**	**70**	**26**
Phase 3					
Construction Equipment/On-Road Vehicles	30	305	108	54	11
Dredging	48	448	199	16	15
Phase 3 - Maximum Daily Annual Emissions	**78**	**753**	**307**	**70**	**26**
Phase 4					
Mobilization/Demobilization	2	26	14	1	1
Construction Equipment/On-Road Vehicles	26	251	95	40	10
Dredging	48	448	199	16	15
Phase 4 - Maximum Daily Emissions	**76**	**725**	**308**	**58**	**25**

Operations

	Total Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Dry Construction Emissions	4.66	30.25	19.34	1.17	1.04
Total Operational Emissions	**4.66**	**30.25**	**19.34**	**1.17**	**1.04**

Alt 1B - Mitigated Emissions Summary
Construction

	Total Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Phase 1					
Construction Equipment	15	159	93	49	10
On-Road Vehicles	2	41	10	1	1
Dredging	48	448	199	16	15
Material Disposal	7	64	52	4	4
Phase 1 - Maximum Daily Emissions	**72**	**711**	**355**	**71**	**29**

Alt 1B - Annual Emissions Summary
Construction

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2016						
Mobilization/Demobilization/Site Preparation	0.15	1.46	0.79	0.07	0.06	251
Construction Equipment/On-Road Vehicles	1.36	15.87	5.73	3.05	0.58	2,447
Dredging	3.77	35.02	15.57	1.26	1.16	2,386
Material Disposal	0.22	1.98	0.90	0.07	0.07	134
Total Annual Emissions	**5.51**	**54.33**	**22.98**	**4.44**	**1.86**	**5,218**
2017						
Construction Equipment/On-Road Vehicles	2.48	28.68	10.31	5.76	1.07	4,401
Dredging	7.07	65.67	29.19	2.36	2.17	4,474
Material Disposal	0.32	2.95	1.34	0.11	0.10	200
Total Annual Emissions	**9.88**	**97.30**	**40.84**	**8.22**	**3.34**	**9,076**
2018						
Construction Equipment/On-Road Vehicles	2.20	23.99	8.65	6.06	0.99	3,575
Dredging	7.25	67.35	29.94	2.42	2.22	4,589
Total Annual Emissions	**9.45**	**91.35**	**38.60**	**8.48**	**3.22**	**8,164**
2019						
Mobilization/Demobilization/Site Preparation	0.09	0.94	0.49	0.04	0.03	173
Construction Equipment/On-Road Vehicles	1.47	15.41	5.77	3.45	0.63	2,264
Dredging	5.05	46.89	20.85	1.68	1.55	3,195
Total Annual Emissions	**6.60**	**63.23**	**27.11**	**5.17**	**2.21**	**5,632**

Operations

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2020						
Construction Equipment/On-Road Vehicles	0.07	0.45	0.29	0.02	0.02	106.34
Total	**0.07**	**0.45**	**0.29**	**0.02**	**0.02**	**106.34**

Alt 1B - Annual Emissions Summary
Electric Dredge

	Annual GHG Emissions (metric tons)
	CO2e
2016	
Mobilization/Demobilization/Site Preparation	251
Construction Equipment/On-Road Vehicles	2,447
Dredging	2,564
Material Disposal	134
Total Annual Emissions	**5,396**
2017	
Construction Equipment/On-Road Vehicles	4,401
Dredging	4,807
Material Disposal	200
Total Annual Emissions	**9,408**
2018	
Construction Equipment/On-Road Vehicles	3,575
Dredging	4,931
Total Annual Emissions	**8,505**
2019	
Mobilization/Demobilization/Site Preparation	173
Construction Equipment/On-Road Vehicles	2,264
Dredging	3,433
Total Annual Emissions	**5,869**

Operations

	Annual GHG Emissions (metric tons)
	CO2e
2020	
Construction Equipment/On-Road Vehicles	106
Total	**106**

Alternative 1B - Construction - Phase 1

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	2	10	300	14	2.96	24.49	8.45	1.02	0.94	0.02	0.17	0.06	0.01	0.01	15.70
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	14	1.50	13.25	4.61	0.45	0.42	0.01	0.09	0.03	0.00	0.00	12.73
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	4	20	750	390	15.39	185.08	61.40	5.46	5.02	3.00	36.09	11.97	1.06	0.98	5,433.30
Haul Unsuitable Material																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	14	1.45	12.12	4.78	0.39	0.36	0.01	0.08	0.03	0.00	0.00	14.68
Utility Road Surface																
Motor Grader	Graders Composite	1	10	150	20	0.87	6.39	4.90	0.35	0.32	0.01	0.06	0.05	0.00	0.00	7.57
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	312	0.45	3.98	1.38	0.14	0.12	0.07	0.62	0.22	0.02	0.02	85.14
Motor Grader	Graders Composite	1	6	150	312	0.52	3.83	2.94	0.21	0.19	0.08	0.60	0.46	0.03	0.03	70.86
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	312	0.44	3.64	1.43	0.12	0.11	0.07	0.57	0.22	0.02	0.02	98.12
Water Truck	Off-Highway Trucks	1	6	175	312	0.51	3.46	3.04	0.19	0.18	0.08	0.54	0.47	0.03	0.03	71.52
Total						**24.08**	**256.23**	**92.94**	**8.33**	**7.67**	**3.35**	**38.83**	**13.52**	**1.18**	**1.09**	**5,809.62**

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Dump Truck (5)	42	24	1,008	14	14,112	0.66	19.92	2.98	0.51	0.35	0.00	0.14	0.02	0.00	0.00	24.01
Haul Unsuitable Material																
DumpTruck (10)	5	24	130	5	648	0.08	2.56	0.38	0.07	0.05	0.00	0.01	0.00	0.00	0.00	1.10
Utility Road Surface (Agg. Base)																
Dump Truck (7)	33	24	794	20	15,888	0.52	15.70	2.35	0.40	0.28	0.01	0.16	0.02	0.00	0.00	27.03
Indirect Support																
Dump Truck (1)	2	24	48	312	14,976	0.03	0.95	0.14	0.02	0.02	0.00	0.15	0.02	0.00	0.00	25.48
Total			**1,980**		**45,624**	**1.29**	**39.14**	**5.85**	**1.01**	**0.69**	**0.01**	**0.45**	**0.07**	**0.01**	**0.01**	**77.62**

Note: Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Worker Trips	120	16.8	2,016	628,992		0.23	1.89	4.49	0.29	0.16	0.04	0.29	0.70	0.05	0.03	215.04

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total						ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
						25.60	**297.25**	**103.28**	**9.63**	**8.52**	**3.40**	**39.57**	**14.29**	**1.24**	**1.12**	**6,102.27**

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	312
Number of Pump Construction Days	390

Alternative 1B - Construction - Phase 2

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	2	10	300	168	2.96	24.49	8.45	1.02	0.94	0.25	2.06	0.71	0.09	0.08	188.37
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	168	1.50	13.25	4.61	0.45	0.42	0.13	1.11	0.39	0.04	0.03	152.81
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	2	20	750	210	7.70	92.54	30.70	2.73	2.51	0.81	9.72	3.22	0.29	0.26	1,461.48
Nesting Site/Transitional Areas																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	3	10	290	12	2.18	18.18	7.17	0.59	0.54	0.01	0.11	0.04	0.00	0.00	18.87
Bulldozer	Rubber Tired Dozers Composite	2	10	300	12	2.96	24.49	8.45	1.02	0.94	0.02	0.15	0.05	0.01	0.01	13.46
Off-road Hauler	Off-Highway Trucks Composite	3	10	725	12	6.43	47.80	19.39	1.68	1.54	0.04	0.29	0.12	0.01	0.01	48.55
Install Internal Revetments/Shore Protection																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	39	1.45	12.12	4.78	0.39	0.36	0.03	0.24	0.09	0.01	0.01	40.88
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	39	1.50	13.25	4.61	0.45	0.42	0.03	0.26	0.09	0.01	0.01	35.47
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	168	0.45	3.98	1.38	0.14	0.12	0.04	0.33	0.12	0.01	0.01	45.84
Motor Grader	Graders Composite	1	6	150	168	0.52	3.83	2.94	0.21	0.19	0.04	0.32	0.25	0.02	0.02	38.16
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	168	0.44	3.64	1.43	0.12	0.11	0.04	0.31	0.12	0.01	0.01	52.84
Water Truck	Off-Highway Trucks	1	6	175	168	0.51	3.46	3.04	0.19	0.18	0.04	0.29	0.26	0.02	0.01	38.51
Total						**28.58**	**261.02**	**96.95**	**8.99**	**8.27**	**1.47**	**15.18**	**5.45**	**0.50**	**0.46**	**2,135.25**

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Dump Truck (7)	42	24	1,008	168	169,344	0.66	19.92	2.98	0.51	0.35	0.06	1.67	0.25	0.04	0.03	288.11
Install Internal Revetments/Shore Protection																
Dump Truck (13)	45	24	1,073	39	41,839	0.70	21.20	3.17	0.55	0.37	0.01	0.41	0.06	0.01	0.01	71.18
Indirect Support																
Dump Truck	2	24	48	168	8,064	0.03	0.95	0.14	0.02	0.02	0.00	0.08	0.01	0.00	0.00	13.72
Total			**1,008**		**169,344**	**1.39**	**42.08**	**6.29**	**1.08**	**0.74**	**0.07**	**2.17**	**0.32**	**0.06**	**0.04**	**373.01**

Notes: Install Internal Revetments/Shore Protection dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.
Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	338,688		0.23	1.89	4.49	0.29	0.16	0.02	0.16	0.38	0.02	0.01	115.79

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total					ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
					30.19	304.98	107.73	10.37	9.18	1.56	17.50	6.15	0.58	0.51	2,624.05

Global Warming Potentia

Gas	Atmospheric Lifetime (years	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	168
Number of Pump Construction Days	210

Alternative 1B - Construction - Phase 3

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	2	10	300	168	2.96	24.49	8.45	1.02	0.94	0.25	2.06	0.71	0.09	0.08	188.37
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	168	1.50	13.25	4.61	0.45	0.42	0.13	1.11	0.39	0.04	0.03	152.81
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	2	20	750	210	7.70	92.54	30.70	2.73	2.51	0.81	9.72	3.22	0.29	0.26	1,462.81
Nesting Site/Transitional Areas																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	3	10	290	12	2.18	18.18	7.17	0.59	0.54	0.01	0.11	0.04	0.00	0.00	18.87
Bulldozer	Rubber Tired Dozers Composite	2	10	300	12	2.96	24.49	8.45	1.02	0.94	0.02	0.15	0.05	0.01	0.01	13.46
Off-road Hauler	Off-Highway Trucks Composite	3	10	725	12	6.43	47.80	19.39	1.68	1.54	0.04	0.29	0.12	0.01	0.01	48.55
Install Internal Revetments/Shore Protection																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	39	1.45	12.12	4.78	0.39	0.36	0.03	0.24	0.09	0.01	0.01	40.88
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	39	1.50	13.25	4.61	0.45	0.42	0.03	0.26	0.09	0.01	0.01	35.47
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	168	0.45	3.98	1.38	0.14	0.12	0.04	0.33	0.12	0.01	0.01	45.84
Motor Grader	Graders Composite	1	6	150	168	0.52	3.83	2.94	0.21	0.19	0.04	0.32	0.25	0.02	0.02	38.16
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	168	0.44	3.64	1.43	0.12	0.11	0.04	0.31	0.12	0.01	0.01	52.84
Water Truck	Off-Highway Trucks	1	6	175	168	0.51	3.46	3.04	0.19	0.18	0.04	0.29	0.26	0.02	0.01	38.51
Total						**28.58**	**261.02**	**96.95**	**8.99**	**8.27**	**1.47**	**15.18**	**5.45**	**0.50**	**0.46**	**2,136.57**

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Dump Truck (7)	42	24	1,008	17	17,136	0.66	19.92	2.98	0.51	0.35	0.01	0.17	0.03	0.00	0.00	29.15
Install Internal Revetments/Shore Protection																
Dump Truck (13)	45	24	1,073	39	41,839	0.70	21.20	3.17	0.55	0.37	0.01	0.41	0.06	0.01	0.01	71.18
Indirect Support																
Dump Truck	2	24	48	168	8,064	0.03	0.95	0.14	0.02	0.02	0.00	0.08	0.01	0.00	0.00	13.72
Total			**1,008**		**67,039**	**1.39**	**42.08**	**6.29**	**1.08**	**0.74**	**0.02**	**0.66**	**0.10**	**0.02**	**0.01**	**114.06**

Notes: Install Internal Revetments/Shore Protection dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.

Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	338,688		0.23	1.89	4.49	0.29	0.16	0.02	0.16	0.38	0.02	0.01	115.79

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total					ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
					30.19	304.98	107.73	10.37	9.18	1.51	16.00	5.93	0.54	0.49	2,366.42

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	168
Number of Pump Construction Days	210

Alternative 1B - Construction - Phase 4

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	2	10	300	120	2.96	24.49	8.45	1.02	0.94	0.18	1.47	0.51	0.06	0.06	134.25
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	120	1.50	13.25	4.61	0.45	0.42	0.09	0.80	0.28	0.03	0.02	109.00
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	2	20	750	150	7.70	92.54	30.70	2.73	2.51	0.58	6.94	2.30	0.20	0.19	1,043.87
Install Internal Revetments/Shore Protection																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	10	1.45	12.12	4.78	0.39	0.36	0.01	0.06	0.02	0.00	0.00	10.48
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	10	1.50	13.25	4.61	0.45	0.42	0.01	0.07	0.02	0.00	0.00	9.10
Scour Protection																
Crane	Cranes Composite	1	10	250	10	0.62	5.55	1.82	0.19	0.18	0.00	0.03	0.01	0.00	0.00	3.42
Excavation & Disposal (Beach Fill)																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	3	10	290	10	2.18	18.18	7.17	0.59	0.54	0.01	0.09	0.04	0.00	0.00	15.72
Bulldozer	Rubber Tired Dozers Composite	2	10	300	10	2.96	24.49	8.45	1.02	0.94	0.01	0.12	0.04	0.01	0.00	11.21
Motor Grader	Graders Composite	1	10	300	2	0.87	6.39	4.90	0.35	0.32	0.00	0.01	0.00	0.00	0.00	0.76
Cobble Blocking Features																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	10	290	21	0.73	6.06	2.39	0.20	0.18	0.01	0.06	0.03	0.00	0.00	11.01
Front-end Loaders	Rubber Tired Loaders Composite	1	10	250	21	0.75	6.63	2.31	0.23	0.21	0.01	0.07	0.02	0.00	0.00	9.55
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	120	0.45	3.98	1.38	0.14	0.12	0.03	0.24	0.08	0.01	0.01	32.70
Motor Grader	Graders Composite	1	6	150	120	0.52	3.83	2.94	0.21	0.19	0.03	0.23	0.18	0.01	0.01	27.20
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	120	0.44	3.64	1.43	0.12	0.11	0.03	0.22	0.09	0.01	0.01	37.69
Water Truck	Off-Highway Trucks	1	6	175	120	0.51	3.46	3.04	0.19	0.18	0.03	0.21	0.18	0.01	0.01	27.46
Total						**25.12**	**237.85**	**88.99**	**8.28**	**7.62**	**1.02**	**10.61**	**3.80**	**0.35**	**0.32**	**1,483.42**

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Excavation & Disposal (Beach Fill)																
Dump Truck (12)	42	1	42	10	417	0.03	0.82	0.12	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.71
Cobble Blocking Features																
Dump Truck (6)	21	24	494	21	10,382	0.32	9.77	1.46	0.25	0.17	0.00	0.10	0.02	0.00	0.00	17.66
Indirect Support																
Dump Truck	2	24	48	120	5,760	0.03	0.95	0.14	0.02	0.02	0.00	0.06	0.01	0.00	0.00	9.80
Total			**584**		**16,559**	**0.38**	**11.55**	**1.73**	**0.30**	**0.20**	**0.01**	**0.16**	**0.02**	**0.00**	**0.00**	**28.17**

Notes: Install Internal Revetments/Shore Protection dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.
Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	241,920		0.23	1.89	4.49	0.29	0.16	0.01	0.11	0.27	0.02	0.01	82.71

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

					Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total					ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
					25.72	251.28	95.20	8.87	7.99	1.04	10.88	4.10	0.37	0.34	1,594.30

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	120
Number of Pump Construction Days	150

Alternative 1B - Dredge Emissions - Phase 1

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Number	1.0	

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	390	20	48.23	447.76	199.07	16.07	14.78	9.40	87.31	38.82	3.13	2.88	5,949.44

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF₀ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 1B - Electric Dredge Emissions - Phase 1

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

				Emissions (metric tons per phase)
Activity	**Number of Construction Days**	**Time (hours per day)**	**Daily Energy Consumption (kWh)**	**CO2e***
Dredge	390	20	49,364.68	6,391.91

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 1B - Dredge Emissions - Phase 2

Assumptions

Main Generator Engine	2560 bhp
	1909.0 kW
Aux Generator Engines	750 bhp
	559.3 kW
Number	1.0

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	210	20	48.23	447.76	199.07	16.07	14.78	5.06	47.01	20.90	1.69	1.55	3,203.54

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.940	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51 100	1998 2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period: [7]
EF₀ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 1B - Electric Dredge Emissions - Phase 2

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

Activity	Number of Construction Days	Time (hours per day)	Daily Energy Consumption (kWh)	Emissions (metric tons per phase) CO2e*
Dredge	210	20	49,364.68	3,441.80

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 1B - Dredge Emissions - Phase 3

Assumptions

Main Generator Engine	2560 bhp
	1909.0 kW
Aux Generator Engines	750 bhp
	559.3 kW
Number	1.0

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	210	20	48.23	447.76	199.07	16.07	14.78	5.06	47.01	20.90	1.69	1.55	3,203.54

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.940	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51 100	1998 2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period: [7]
EF₀ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 1B - Electric Dredge Emissions - Phase 3

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

				Emissions (metric tons per phase)
Activity	**Number of Construction Days**	**Time (hours per day)**	**Daily Energy Consumption (kWh)**	**CO2e***
Dredge	210	20	49,364.68	3,441.80

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 1B - Dredge Emissions - Phase 4

Assumptions

Main Generator Engine	2560 bhp
	1909.0 kW
Aux Generator Engines	750 bhp
	559.3 kW
Number	1.0

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	150	20	48.23	447.76	199.07	16.07	14.78	3.62	33.58	14.93	1.20	1.11	2,288.25

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.940	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51 100	1998 2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period: [7]
EF₀ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 1B - Electric Dredge Emissions - Phase 4

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

Activity	Number of Construction Days	Time (hours per day)	Daily Energy Consumption (kWh)	Emissions (metric tons per phase) CO2e*
Dredge	150	20	49,364.68	2,458.43

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 1B - Material Disposal

Assumptions

Main Generator Engine	5000 bhp
	3728.5 kW
Aux Generator Engines	3000 bhp
	2237.1 kW
Number	1.0

			Emissions (pounds per day)							Emissions (tons per phase)						Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	CO2e*	ROG	NOx	CO	PM10	PM2.5	CO2e*		
Leucadia/Torrey Pines	72.40	2.12	12.71	115.59	52.36	4.28	3.94	8603.89	0.46	4.18	1.90	0.15	0.14	283.43		
Moonlight Beach	21.00	0.77	4.62	42.03	19.04	1.56	1.43	3128.69	0.05	0.44	0.20	0.02	0.02	29.89		
Solana Beach	29.20	0.39	2.31	21.02	9.52	0.78	0.72	1564.34	0.03	0.31	0.14	0.01	0.01	20.78		
Total	122.60	3.28	12.71	115.59	52.36	4.28	3.94	8603.89	0.54	4.93	2.23	0.18	0.17	334.11		

Notes: Assumes 1 tug round trip per day. Each tug would transport 2 barges per trip. Material disposal would only occur during Phase 1 of the proposed project or alternative.
*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
5000 hp	0.70	7.42	2.92	0.31	0.29	652	184.16

Note: CO2 emission factor in g/kWh
Source: ARB Harborcraft Emission Inventory Database
CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.84	6.93	3.42	0.27	0.25	652	184.16

Note: CO2 emission factor in g/kWh
Source: ARB Harborcraft Emission Inventory Database
CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF$_0$ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 1B - Operations

Off-Road Construction Equipment

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
Equipment Type	Equipment Category	Number	Usage Factor	Unit	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Rubber Tired Dozer	Rubber Tired Dozers Composite	1	10	hrs/day	1.42	10.57	5.36	0.42	0.39	0.02	0.16	0.08	0.01	0.01	
Backhoe	Tractors/Loaders/Backhoes Composite	1	10	hrs/day	0.29	1.84	2.42	0.09	0.08	0.00	0.03	0.04	0.00	0.00	
Off-Highway Trucks	Off-Highway Trucks Composite	3	10	hrs/day	2.90	16.70	11.08	0.56	0.52	0.04	0.25	0.17	0.01	0.01	
					4.61	29.10	18.87	1.08	0.99	0.07	0.44	0.28	0.02	0.01	99.45

On Road Construction Emissions

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
	Trips Per Day	Distance	Average Daily Mileage	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Heavy-Duty Trucks	2	12	24	720	0.01	0.22	0.05	0.01	0.01	0.000	0.003	0.001	0.000	0.000	1
Total			**24**	**720**	**0.01**	**0.22**	**0.05**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.12**

Note: Assumes 1 miscellaneous round truck trip per day.

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Worker Trips	40	16.8	672	20,160	0.04	0.93	0.42	0.08	0.04	0.00	0.01	0.01	0.00	0.00	5.77

Note: Assumes a total of 20 workers per day.

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
Total					ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
					4.66	30.25	19.34	1.17	1.04	0.07	0.45	0.29	0.02	0.02	106.34

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days 30

Alt 2A - Emissions Summary
Construction

	Total Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Phase 1					
Mobilization/Demobilization/Site Preparation	8	70	39	3	3
Construction Equipment/On-Road Vehicles	39	457	155	56	16
Dredging	48	448	199	16	15
Material Disposal	13	116	52	4	4
Phase 1 - Maximum Daily Emissions	**100**	**1,020**	**407**	**77**	**35**
Phase 2					
Construction Equipment/On-Road Vehicles	42	453	154	60	16
Dredging	48	448	199	16	15
Phase 2 - Maximum Daily Emissions	**90**	**900**	**353**	**76**	**31**
Phase 3					
Construction Equipment/On-Road Vehicles	36	386	134	57	14
Dredging	48	448	199	16	15
Phase 3 - Maximum Daily Annual Emissions	**85**	**833**	**333**	**73**	**29**
Phase 4					
Mobilization/Demobilization/Site Preparation	2	26	14	1	1
Construction Equipment/On-Road Vehicles	26	253	98	40	10
Dredging	48	448	199	16	15
Phase 4 - Maximum Daily Emissions	**77**	**727**	**311**	**58**	**25**

Operations

	Total Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Dry Construction Emissions	9.29	76.84	43.49	2.65	2.37
Wet Construction Emissions	38.32	301.20	213.93	10.43	9.60
Total Operational Emissions	**47.61**	**378.04**	**257.42**	**13.09**	**11.97**

Alt 2A - Mitigated Emissions Summary
Construction

	Total Daily Emissions (pounds/day)				
	ROG	**NOX**	**CO**	**PM10**	**PM2.5**
Phase 1					
Construction Equipment	22	214	134	53	14
On-Road Vehicles	4	112	21	3	2
Dredging	48	448	199	16	15
Material Disposal	7	64	52	4	4
Phase 1 - Maximum Daily Emissions	**81**	**837**	**407**	**77**	**35**

Alt 2A - Annual Emissions Summary
Construction

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2016						
Mobilization/Demobilization/Site Preparation	0.15	1.46	0.79	0.07	0.06	251
Construction Equipment/On-Road Vehicles	1.46	17.12	6.11	3.09	0.62	2,632
Dredging	3.77	35.02	15.57	1.26	1.16	2,386
Material Disposal	0.22	1.98	0.90	0.07	0.07	134
Total Annual Emissions	**5.60**	**55.58**	**23.36**	**4.49**	**1.90**	**5,403**
2017						
Construction Equipment/On-Road Vehicles	2.68	31.40	11.13	5.85	1.15	4,806
Dredging	7.07	65.67	29.19	2.36	2.17	4,474
Material Disposal	0.32	2.95	1.34	0.11	0.10	200
Total Annual Emissions	**10.08**	**100.02**	**41.66**	**8.32**	**3.42**	**9,480**
2018						
Construction Equipment/On-Road Vehicles	2.27	26.88	9.22	6.14	1.04	4,127
Dredging	7.25	67.35	29.94	2.42	2.22	4,589
Total Annual Emissions	**9.52**	**94.24**	**39.17**	**8.56**	**3.27**	**8,717**
2019						
Mobilization/Demobilization	0.09	0.94	0.49	0.04	0.03	173
Construction Equipment/On-Road Vehicles	1.19	13.68	5.28	3.38	0.56	2,209
Dredging	5.05	46.89	20.85	1.68	1.55	3,195
Total Annual Emissions	**6.33**	**61.50**	**26.61**	**5.11**	**2.14**	**5,577**

Operations

	Annual Emissions (tons)					Annual GHG Emissions (metric tons)
	ROG	NOX	CO	PM10	PM2.5	CO2e
2020						
Construction Equipment/On-Road Vehicles	0.64	5.38	3.02	0.18	0.16	1,398
Dredge	2.87	22.59	16.04	0.78	0.72	2,288
Total	**3.51**	**27.97**	**19.07**	**0.97**	**0.88**	**3,686**

Alt 2A - Annual Emissions Summary
Electric Dredge

	Annual GHG Emissions (metric tons)
	CO2e
2016	
Mobilization/Demobilization/Site Preparation	251
Construction Equipment/On-Road Vehicles	2,632
Dredging	2,564
Material Disposal	134
Total Annual Emissions	**5,580**
2017	
Construction Equipment/On-Road Vehicles	4,806
Dredging	4,807
Material Disposal	200
Total Annual Emissions	**9,813**
2018	
Construction Equipment/On-Road Vehicles	4,127
Dredging	4,931
Total Annual Emissions	**9,058**
2019	
Mobilization/Demobilization	173
Construction Equipment/On-Road Vehicles	2,209
Dredging	3,433
Total Annual Emissions	**5,815**

Operations

	Annual GHG Emissions (metric tons)
	CO2e
2020	
Construction Equipment/On-Road Vehicles	1,398
Dredge	2,458
Total	**3,856**

Alternative 2A - Construction - Phase 1

Off-Road Construction Equipmen

Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	Emissions Summary (lbs/day) ROG	NOX	CO	PM10	PM2.5	Emissions Summary (tons per phase) ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (Metric Tons)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	2	10	300	14	2.96	24.49	8.45	1.02	0.94	0.02	0.17	0.06	0.01	0.01	15.70
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	14	1.50	13.25	4.61	0.45	0.42	0.01	0.09	0.03	0.00	0.00	12.73
Demolition of Hwy 101																
Bulldozer	Rubber Tired Dozers Composite	1	10	300	13	1.48	12.24	4.22	0.51	0.47	0.01	0.08	0.03	0.00	0.00	7.29
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	13	1.50	13.25	4.61	0.45	0.42	0.01	0.09	0.03	0.00	0.00	11.82
Crusher Operation	Crushing/Proc. Equipment Composite	1	10	100	13	0.78	4.94	3.78	0.42	0.39	0.01	0.03	0.02	0.00	0.00	3.30
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	4	20	750	390	15.39	185.08	61.40	5.46	5.02	3.00	36.09	11.97	1.06	0.98	5,433.30
Haul Unsuitable Material																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	5	1.45	12.12	4.78	0.39	0.36	0.00	0.03	0.01	0.00	0.00	5.24
Utility Road Surface (Agg. Base)																
Motor Grader	Graders Composite	1	10	150	20	0.87	6.39	4.90	0.35	0.32	0.01	0.06	0.05	0.00	0.00	7.57
Highway 101 Bridge and Approaches																
Drive Piles																
Crawler	Crawler Tractors Composite	1	10	300	30	1.06	9.07	3.09	0.34	0.32	0.02	0.14	0.05	0.01	0.00	15.22
Compressor	Air Compressors Composite	1	10	100	30	0.46	2.90	2.13	0.25	0.23	0.01	0.04	0.03	0.00	0.00	4.31
Install Formwork, Rebar & Misc Items																
Crane	Cranes Composite	1	10	250	72	0.62	5.55	1.82	0.19	0.18	0.02	0.20	0.07	0.01	0.01	24.66
Forklift	Forklifts Composite	1	10	120	72	0.23	1.56	1.44	0.12	0.11	0.01	0.06	0.05	0.00	0.00	6.87
Place Concrete																
Concrete Pump	Pumps Composite	1	6	250	30	0.44	5.33	1.61	0.15	0.14	0.01	0.08	0.02	0.00	0.00	11.06
Excavation & Backfill - Bridge																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	2	290	9	0.15	1.21	0.48	0.04	0.04	0.00	0.01	0.00	0.00	0.00	0.94
Front-end Loaders	Rubber Tired Loaders Composite	1	2	250	9	0.15	1.33	0.46	0.05	0.04	0.00	0.01	0.00	0.00	0.00	0.82
Excavation & Backfill - Road																
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	74	1.50	13.25	4.61	0.45	0.42	0.06	0.49	0.17	0.02	0.02	67.31
Aggregate Base																
Motor Grader	Graders Composite	1	10	150	74	0.87	6.39	4.90	0.35	0.32	0.03	0.24	0.18	0.01	0.01	28.01
Asphalt Concrete																
Asphalt Paver	Pavers Composite	1	10	130	17	0.65	3.94	2.61	0.34	0.31	0.01	0.03	0.02	0.00	0.00	2.83
Roller	Rollers Composite	2	10	130	17	1.15	7.37	5.36	0.61	0.56	0.01	0.06	0.05	0.01	0.00	6.13
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	312	0.45	3.98	1.38	0.14	0.12	0.07	0.62	0.22	0.02	0.02	85.14
Motor Grader	Graders Composite	1	6	150	312	0.52	3.83	2.94	0.21	0.19	0.08	0.60	0.46	0.03	0.03	70.86
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	312	0.44	3.64	1.43	0.12	0.11	0.07	0.57	0.22	0.02	0.02	98.12
Water Truck	Off-Highway Trucks	1	6	175	312	0.51	3.46	3.04	0.19	0.18	0.08	0.54	0.47	0.03	0.03	71.52
Total						**35.12**	**344.56**	**134.07**	**12.61**	**11.60**	**3.53**	**40.32**	**14.22**	**1.25**	**1.15**	**5,990.76**

On Road Construction Emission

	Trips Per Day	Distance (roundtrip)	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	Emissions Summary (lbs/day) ROG	NO_x	CO	PM10	PM2.5	Emissions Summary (tons per phase) ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Dump Truck (5)	42	24	1,008	14	14,112	0.66	19.92	2.98	0.51	0.35	0.00	0.14	0.02	0.00	0.00	24.01
Demolition of Hwy 101																
DumpTruck (2)	63	24	1,500	13	19,500	0.98	29.65	4.43	0.76	0.52	0.01	0.19	0.03	0.00	0.00	33.18
Haul Unsuitable Material																
Dump Truck (10)	5	24	130	5	648	0.08	2.56	0.38	0.07	0.05	0.00	0.01	0.00	0.00	0.00	1.10
Utility Road Surface (Agg. Base)																
Dump Truck (7)	33	24	794	20	15,888	0.52	15.70	2.35	0.40	0.28	0.01	0.16	0.02	0.00	0.00	27.03
Concrete Delivery Trucks																
Concrete Truck (3)	6	24	144	30	4,320	0.09	2.85	0.43	0.07	0.05	0.00	0.04	0.01	0.00	0.00	7.35
Other Delivery Trucks																
Delivery Truck	2	24	48	9	432	0.03	0.95	0.14	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.73
Dump Trucks																
Dump Truck (38)	75	24	1,800	74	133,200	1.17	35.58	5.32	0.91	0.63	0.04	1.32	0.20	0.03	0.02	226.62
Base & Asphalt Trucks																
Dump Truck (3)	5	24	120	74	8,880	0.08	2.37	0.35	0.06	0.04	0.00	0.09	0.01	0.00	0.00	15.11
Indirect Support																
Dump Truck (1)	2	24	48	265	12,720	0.03	0.95	0.14	0.02	0.02	0.00	0.13	0.02	0.00	0.00	21.64
Total			**5,592**	**504**	**209,700**	**3.64**	**110.53**	**16.52**	**2.84**	**1.94**	**0.07**	**2.07**	**0.31**	**0.05**	**0.04**	**356.77**

Notes: Utility Road Surfact (Agg. Base) dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.
Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

	Total Trips	Distance	Average Daily Mileage	Total Mileage		Emissions Summary (lbs/day) ROG	NO_x	CO	PM10	PM2.5	Emissions Summary (tons per phase) ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	628,992		0.23	1.89	4.49	0.29	0.16	0.04	0.29	0.70	0.05	0.03	215.04

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

Total						Emissions Summary (lbs/day) ROG	NO_x	CO	PM10	PM2.5	Emissions Summary (tons per phase) ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
						38.99	456.97	155.08	15.74	13.70	3.64	42.69	15.23	1.35	1.21	6,562.57

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	312
Number of Pump Construction Days	390

Alternative 2A - Construction - Phase 2

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	2	10	300	168	2.96	24.49	8.45	1.02	0.94	0.25	2.06	0.71	0.09	0.08	188.37
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	168	1.50	13.25	4.61	0.45	0.42	0.13	1.11	0.39	0.04	0.03	152.81
Demolition of Hwy 101																
Bulldozer	Rubber Tired Dozers Composite	1	10	300	13	1.48	12.24	4.22	0.51	0.47	0.01	0.08	0.03	0.00	0.00	7.29
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	13	1.50	13.25	4.61	0.45	0.42	0.01	0.09	0.03	0.00	0.00	11.82
Crusher Operation	Crushing/Proc. Equipment Composite	1	10	100	13	0.78	4.94	3.78	0.42	0.39	0.01	0.03	0.02	0.00	0.00	3.30
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	2	20	750	210	7.70	92.54	30.70	2.73	2.51	0.81	9.72	3.22	0.29	0.26	1,461.42
Nesting Site/Transitional Areas																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	3	10	290	12	2.18	18.18	7.17	0.59	0.54	0.01	0.11	0.04	0.00	0.00	18.87
Bulldozer	Rubber Tired Dozers Composite	2	10	300	12	2.96	24.49	8.45	1.02	0.94	0.02	0.15	0.05	0.01	0.01	13.46
Off-road Hauler	Off-Highway Trucks Composite	3	10	725	12	6.43	47.80	19.39	1.68	1.54	0.04	0.29	0.12	0.01	0.01	48.55
Install Internal Revetments/Shore Protection																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	39	1.45	12.12	4.78	0.39	0.36	0.03	0.24	0.09	0.01	0.01	40.88
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	39	1.50	13.25	4.61	0.45	0.42	0.03	0.26	0.09	0.01	0.01	35.47
Highway 101 Bridge and Approaches																
Install Formwork, Rebar & Misc Items																
Crane	Cranes Composite	1	10	250	72	0.62	5.55	1.82	0.19	0.18	0.02	0.20	0.07	0.01	0.01	24.66
Forklift	Forklifts Composite	1	10	120	72	0.23	1.56	1.44	0.12	0.11	0.01	0.06	0.05	0.00	0.00	6.87
Place Concrete																
Concrete Pump	Pumps Composite	1	6	250	30	0.44	5.33	1.61	0.15	0.14	0.01	0.08	0.02	0.00	0.00	11.06
Excavation & Backfill - Bridge																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	2	290	9	0.15	1.21	0.48	0.04	0.04	0.00	0.01	0.00	0.00	0.00	0.94
Front-end Loaders	Rubber Tired Loaders Composite	1	2	250	9	0.15	1.33	0.46	0.05	0.04	0.00	0.01	0.00	0.00	0.00	0.82
Excavation & Backfill - Road																
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	74	1.50	13.25	4.61	0.45	0.42	0.06	0.49	0.17	0.02	0.02	67.31
Aggregate Base																
Motor Grader	Graders Composite	1	10	150	74	0.87	6.39	4.90	0.35	0.32	0.03	0.24	0.18	0.01	0.01	28.01
Asphalt Concrete																
Asphalt Paver	Pavers Composite	1	10	130	17	0.65	3.94	2.61	0.34	0.31	0.01	0.03	0.02	0.00	0.00	2.83
Roller	Rollers Composite	2	10	130	17	1.15	7.37	5.36	0.61	0.56	0.01	0.06	0.05	0.01	0.00	6.13
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	168	0.45	3.98	1.38	0.14	0.12	0.04	0.33	0.12	0.01	0.01	45.84
Motor Grader	Graders Composite	1	6	150	168	0.52	3.83	2.94	0.21	0.19	0.04	0.32	0.25	0.02	0.02	38.16
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	168	0.44	3.64	1.43	0.12	0.11	0.04	0.31	0.12	0.01	0.01	52.84
Water Truck	Off-Highway Trucks	1	6	175	168	0.51	3.46	3.04	0.19	0.18	0.04	0.29	0.26	0.02	0.01	38.51
Total						**38.09**	**337.38**	**132.86**	**12.67**	**11.66**	**1.64**	**16.54**	**6.10**	**0.56**	**0.52**	**2,306.23**

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Dump Truck (7)	42	24	1,008	168	169,344	0.66	19.92	2.98	0.51	0.35	0.06	1.67	0.25	0.04	0.03	288.11
Demolition of Hwy 101																
Dump Truck (2)	63	24	1,500	13	19,500	0.98	29.65	4.43	0.76	0.52	0.01	0.19	0.03	0.00	0.00	33.18
Install Internal Revetments/Shore Protection																
Dump Truck (13)	45	24	1,073	39	41,839	0.70	21.20	3.17	0.55	0.37	0.01	0.41	0.06	0.01	0.01	71.18
Concrete Delivery Trucks																
Concrete Truck (3)	6	24	144	30	4,320	0.09	2.85	0.43	0.07	0.05	0.00	0.04	0.01	0.00	0.00	7.35
Other Delivery Trucks																
Delivery Truck	2	24	48	9	432	0.03	0.95	0.14	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.73
Dump Trucks																
Dump Truck (38)	75	24	1,800	74	133,200	1.17	35.58	5.32	0.91	0.63	0.04	1.32	0.20	0.03	0.02	226.62
Base & Asphalt Trucks																
Dump Truck (3)	5	24	120	74	8,880	0.08	2.37	0.35	0.06	0.04	0.00	0.09	0.01	0.00	0.00	15.11
Indirect Support																
Dump Truck (1)	2	24	48	168	8,064	0.03	0.95	0.14	0.02	0.02	0.00	0.08	0.01	0.00	0.00	13.72
Total			**5,741**	**575**	**385,579**	**3.74**	**113.47**	**16.96**	**2.92**	**2.00**	**0.13**	**3.81**	**0.57**	**0.10**	**0.07**	**656.00**

Notes: Utility Road Surfact (Agg. Base) dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.

Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	338,688		0.23	1.89	4.49	0.29	0.16	0.02	0.16	0.38	0.02	0.01	115.79

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total						ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
						42.06	452.74	154.31	15.88	13.82	1.78	20.51	7.05	0.68	0.60	3,078.02

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	168
Number of Pump Construction Days	210

Alternative 2A - Construction - Phase 3

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Bulldozer	Rubber Tired Dozers Composite	2	10	300	17	2.96	24.49	8.45	1.02	0.94	0.03	0.21	0.07	0.01	0.01	19.02
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	17	1.50	13.25	4.61	0.45	0.42	0.01	0.11	0.04	0.00	0.00	15.44
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	2	20	750	210	7.70	92.54	30.70	2.73	2.51	0.81	9.72	3.22	0.29	0.26	1,461.42
Nesting Site/Transitional Areas																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	3	10	290	12	2.18	18.18	7.17	0.59	0.54	0.01	0.11	0.04	0.00	0.00	18.87
Bulldozer	Rubber Tired Dozers Composite	2	10	300	12	2.96	24.49	8.45	1.02	0.94	0.02	0.15	0.05	0.01	0.01	13.46
Off-road Hauler	Off-Highway Trucks Composite	3	10	725	12	6.43	47.80	19.39	1.68	1.54	0.04	0.29	0.12	0.01	0.01	48.55
Install Internal Revetments/Shore Protection																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	39	1.45	12.12	4.78	0.39	0.36	0.03	0.24	0.09	0.01	0.01	40.88
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	39	1.50	13.25	4.61	0.45	0.42	0.03	0.26	0.09	0.01	0.01	35.47
Highway 101 Bridge and Approaches																
Place Concrete																
Concrete Pump	Pumps Composite	1	6	300	30	0.44	5.33	1.61	0.15	0.14	0.01	0.08	0.02	0.00	0.00	11.06
Excavation & Backfill - Bridge																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	2	290	9	0.15	1.21	0.48	0.04	0.04	0.00	0.01	0.00	0.00	0.00	0.94
Front-end Loaders	Rubber Tired Loaders Composite	1	2	250	9	0.15	1.33	0.46	0.05	0.04	0.00	0.01	0.00	0.00	0.00	0.82
Excavation & Backfill - Road																
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	74	1.50	13.25	4.61	0.45	0.42	0.06	0.49	0.17	0.02	0.02	67.31
Aggregate Base																
Motor Grader	Graders Composite	1	10	150	74	0.87	6.39	4.90	0.35	0.32	0.03	0.24	0.18	0.01	0.01	28.01
Asphalt Concrete																
Asphalt Paver	Pavers Composite	1	10	130	17	0.65	3.94	2.61	0.34	0.31	0.01	0.03	0.02	0.00	0.00	2.83
Roller	Rollers Composite	2	10	130	17	1.15	7.37	5.36	0.61	0.56	0.01	0.06	0.05	0.01	0.00	6.13
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	168	0.45	3.98	1.38	0.14	0.12	0.04	0.33	0.12	0.01	0.01	45.84
Motor Grader	Graders Composite	1	6	150	168	0.52	3.83	2.94	0.21	0.19	0.04	0.32	0.25	0.02	0.02	38.16
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	168	0.44	3.64	1.43	0.12	0.11	0.04	0.31	0.12	0.01	0.01	52.84
Water Truck	Off-Highway Trucks	1	6	175	168	0.51	3.46	3.04	0.19	0.18	0.04	0.29	0.26	0.02	0.01	38.51
Total						**33.48**	**299.83**	**116.99**	**10.98**	**10.10**	**1.24**	**13.24**	**4.91**	**0.43**	**0.40**	**1,945.56**

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Dump Truck (7)	42	24	1,008	168	169,344	0.66	19.92	2.98	0.51	0.35	0.06	1.67	0.25	0.04	0.03	288.11
Install Internal Revetments/Shore Protection																
Dump Truck (13)	45	24	1,073	39	41,839	0.70	21.20	3.17	0.55	0.37	0.01	0.41	0.06	0.01	0.01	71.18
Concrete Delivery Trucks																
Concrete Truck (3)	6	24	144	30	4,320	0.09	2.85	0.43	0.07	0.05	0.00	0.04	0.01	0.00	0.00	7.35
Other Delivery Trucks																
Delivery Truck	2	24	48	9	432	0.03	0.95	0.14	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.73
Dump Trucks																
Dump Truck (38)	75	24	1,800	74	133,200	1.17	35.58	5.32	0.91	0.63	0.04	1.32	0.20	0.03	0.02	226.60
Base & Asphalt Trucks																
Dump Truck (3)	5	24	120	74	8,880	0.08	2.37	0.35	0.06	0.04	0.00	0.09	0.01	0.00	0.00	15.11
Indirect Support																
Dump Truck (1)	2	24	48	168	8,064	0.03	0.95	0.14	0.02	0.02	0.00	0.08	0.01	0.00	0.00	13.72
Total			**4,241**	**562**	**366,079**	**2.76**	**83.82**	**12.53**	**2.16**	**1.47**	**0.12**	**3.62**	**0.54**	**0.09**	**0.06**	**622.81**

Notes: Utility Road Surfact (Agg. Base) dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.
Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	2,016	338,688		0.23	1.89	4.49	0.29	0.16	0.02	0.16	0.38	0.02	0.01	115.79

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total						ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
						36.47	385.55	134.00	13.42	11.74	1.38	17.02	5.83	0.55	0.47	2,684.16

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	168
Number of Pump Construction Days	210

Alternative 2A - Construction - Phase 4

Off-Road Construction Equipment

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Equipment Type	Equipment Category	Number	Usage Factor (hrs/day)	Power Rating (hp)	Calculated Time - Rounded (days)	ROG	NOX	CO	PM10	PM2.5	ROG	NOX	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Clear & Grub																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	3	10	290	6	2.18	18.18	7.17	0.59	0.54	0.01	0.05	0.02	0.00	0.00	9.42
Bulldozer	Rubber Tired Dozers Composite	2	10	300	6	2.96	24.49	8.45	1.02	0.94	0.01	0.07	0.03	0.00	0.00	6.71
Off-Site Dredge to Beneficial Re-Use Areas																
Booster Pump	Pumps Composite	2	20	750	150	7.70	92.54	30.70	2.73	2.51	0.58	6.94	2.30	0.20	0.19	1,043.87
Install Internal Revetments/Shore Protection																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	2	10	290	10	1.45	12.12	4.78	0.39	0.36	0.01	0.06	0.02	0.00	0.00	10.47
Front-end Loaders	Rubber Tired Loaders Composite	2	10	250	10	1.50	13.25	4.61	0.45	0.42	0.01	0.07	0.02	0.00	0.00	9.08
Revegetation (minor equipment)																
Scour Protection																
Crane	Cranes	1	10	250	10	0.62	5.55	1.82	0.19	0.18	0.00	0.03	0.01	0.00	0.00	3.42
Excavation & Disposal (Beach Fill)																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	3	10	290	10	2.18	18.18	7.17	0.59	0.54	0.01	0.09	0.04	0.00	0.00	15.71
Bulldozer	Rubber Tired Dozers Composite	2	10	300	10	2.96	24.49	8.45	1.02	0.94	0.01	0.12	0.04	0.01	0.00	11.19
Motor Grader	Graders Composite	1	2	150	10	0.17	1.28	0.98	0.07	0.06	0.00	0.01	0.00	0.00	0.00	0.76
Cobble Blocking Features																
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	10	290	21	0.73	6.06	2.39	0.20	0.18	0.01	0.06	0.03	0.00	0.00	10.99
Front-end Loaders	Rubber Tired Loaders Composite	1	10	250	21	0.75	6.63	2.31	0.23	0.21	0.01	0.07	0.02	0.00	0.00	9.54
Indirect Support																
Front-end Loaders	Rubber Tired Loaders Composite	1	6	250	120	0.45	3.98	1.38	0.14	0.12	0.03	0.24	0.08	0.01	0.01	32.70
Motor Grader	Graders Composite	1	6	150	120	0.52	3.83	2.94	0.21	0.19	0.03	0.23	0.18	0.01	0.01	27.20
Hydl. Backhoe	Tractors/Loaders/Backhoes Composite	1	6	290	120	0.44	3.64	1.43	0.12	0.11	0.03	0.22	0.09	0.01	0.01	37.69
Water Truck	Off-Highway Trucks	1	6	175	120	0.51	3.46	3.04	0.19	0.18	0.03	0.21	0.18	0.01	0.01	27.46
Total						**25.10**	**237.67**	**87.62**	**8.14**	**7.49**	**0.77**	**8.47**	**3.07**	**0.27**	**0.25**	**1,256.21**

On Road Construction Emissions

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Trips Per Day	Distance	Average Daily Mileage	Calculated Time - Rounded (days)	Total Mileage	ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Excavation & Disposal (Beach Fill)																
Dump Truck (2)	42	1	42	10	417	0.03	0.82	0.12	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.71
Cobble Blocking Features																
Dump Truck (6)	21	24	494	21	10,382	0.32	9.77	1.46	0.25	0.17	0.00	0.10	0.02	0.00	0.00	17.66
Indirect Support																
Dump Truck (1)	2	24	48	120	5,760	0.03	0.95	0.14	0.02	0.02	0.00	0.06	0.01	0.00	0.00	9.80
Total			**584**	**151**	**16,559**	**0.38**	**11.55**	**1.73**	**0.30**	**0.20**	**0.01**	**0.16**	**0.02**	**0.00**	**0.00**	**28.17**

Notes: Utility Road Surfact (Agg. Base) dump truck trips assumes 2.1194 tons of stone in 1 cy. Number in () after equipment name represents the number of equipment.
Haul distance assumes that materials from the site will be hauled off and disposed of at the Mira Mar landfill located approximately 24 miles roundtrip from the site in San Diego

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
	Total Trips	Distance	Average Daily Mileage	Total Mileage		ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
Worker Trips	120	16.8	4,032	483,840		0.45	3.78	8.98	0.58	0.33	0.03	0.23	0.54	0.03	0.02	165.41

Note: Assumes a total of 40 workers per day and 20 visitors per day, consistent with the traffic report for the proposed project.

						Emissions Summary (lbs/day)					Emissions Summary (tons per phase)					
Total						ROG	NO_x	CO	PM10	PM2.5	ROG	NO_x	CO	PM10	PM2.5	Total GHG Emissions (MT CO2e)
						25.93	252.99	98.32	9.02	8.02	0.80	8.86	3.63	0.31	0.27	1,449.79

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	120
Number of Pump Construction Days	150

Alternative 2A - Dredge Emissions - Phase 1

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Number	1.0	

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	390	20	48.23	447.76	199.07	16.07	14.78	9.40	87.31	38.82	3.13	2.88	5,949.44

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF$_0$ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 2A - Electric Dredge Emissions - Phase 1

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

Activity	Number of Construction Days	Time (hours per day)	Daily Energy Consumption (kWh)	Emissions (metric tons per phase) CO2e*
Dredge	390	20	49,364.68	6,391.91

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 2A - Dredge Emissions - Phase 2

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Number	1.0	

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	210	20	48.23	447.76	199.07	16.07	14.78	5.06	47.01	20.90	1.69	1.55	3,203.54

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF$_0$ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 2A - Electric Dredge Emissions - Phase 2

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

				Emissions (metric tons per phase)
Activity	**Number of Construction Days**	**Time (hours per day)**	**Daily Energy Consumption (kWh)**	**CO2e***
Dredge	210	20	49,364.68	3,441.80

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 2A - Dredge Emissions - Phase 3

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Number	1.0	

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	210	20	48.23	447.76	199.07	16.07	14.78	5.06	47.01	20.90	1.69	1.55	3,203.54

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF$_0$ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 2A - Electric Dredge Emissions - Phase 3

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

Activity	Number of Construction Days	Time (hours per day)	Daily Energy Consumption (kWh)	Emissions (metric tons per phase) CO2e*
Dredge	210	20	49,364.68	3,441.80

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 2A - Dredge Emissions - Phase 4

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Number	1.0	

			Emissions (pounds per day)					Emissions (tons per phase)					Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5	CO2e*
Dredge	150	20	48.23	447.76	199.07	16.07	14.78	3.62	33.58	14.93	1.20	1.11	2,288.25

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.70	7.30	2.92	0.29	0.27	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.84	6.82	3.42	0.26	0.24	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF$_0$ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 2A - Electric Dredge Emissions - Phase 4

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

Activity	Number of Construction Days	Time (hours per day)	Daily Energy Consumption (kWh)	Emissions (metric tons per phase) CO2e*
Dredge	150	20	49,364.68	2,458.43

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Alternative 2A - Material Disposal

Assumptions

Main Generator Engine	5000	bhp
	3728.5	kW
Aux Generator Engines	3000	bhp
	2237.1	kW
Number	1.0	

			Emissions (pounds per day)						Emissions (tons)						Emissions (metric tons per phase)
Activity	Number of Construction Days	Time (hours per day)	ROG	NOx	CO	PM10	PM2.5	CO2e*	ROG	NOx	CO	PM10	PM2.5	CO2e*
Leucadia/Torrey Pines	72.40	2.12	12.71	115.59	52.36	4.28	3.94	8603.89	0.46	4.18	1.90	0.15	0.14	283.43
Moonlight Beach	21.00	0.77	4.62	42.03	19.04	1.56	1.43	3128.69	0.05	0.44	0.20	0.02	0.02	29.89
Solana Beach	29.20	0.39	2.31	21.02	9.52	0.78	0.72	1564.34	0.03	0.31	0.14	0.01	0.01	20.78
Total	122.60	3.28	12.71	115.59	52.36	4.28	3.94	8603.89	0.54	4.93	2.23	0.18	0.17	334.11

Notes: Assumes 1 tug round trip per day. Each tug would transport 2 barges per trip.
*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
5000 hp	0.70	7.42	2.92	0.31	0.29	652	184.16

Note: CO2 emission factor in g/kWh
Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - 2015 Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.84	6.93	3.42	0.27	0.25	652	184.16

Note: CO2 emission factor in g/kWh
Source: ARB Harborcraft Emission Inventory Database
CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.948	0.852

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period: *7*
EF$_0$ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Alternative 2A - Operations

Off-Road Construction Equipment

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
Equipment Type	**Equipment Category**	**Number**	**Usage Factor**	**Unit**	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Rubber Tired Dozer	Rubber Tired Dozers Composite	1	10	hrs/day	1.42	10.57	5.36	0.42	0.39	0.09	0.63	0.32	0.03	0.02	
Backhoe	Tractors/Loaders/Backhoes Composite	1	10	hrs/day	0.29	1.84	2.42	0.09	0.08	0.02	0.11	0.15	0.01	0.00	
Off-Highway Trucks	Off-Highway Trucks Composite	2	10	hrs/day	1.93	11.13	7.39	0.38	0.35	0.12	0.67	0.44	0.02	0.02	
Pump	Booster Pump	2	20	hrs/day	5.56	51.23	27.42	1.59	1.47	0.42	3.84	2.06	0.12	0.11	
					9.21	74.76	42.60	2.48	2.28	0.64	5.25	2.97	0.17	0.16	1347.15

On Road Construction Emissions

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
	Trips Per Day	**Distance**	**Average Daily Mileage**	**Total Mileage**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Heavy-Duty Trucks	2	12	24	2,880	0.01	0.22	0.05	0.01	0.01	0.001	0.013	0.003	0.001	0.000	4
Total			**24**	**2,880**	**0.01**	**0.22**	**0.05**	**0.01**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**4.48**

Note: Assumes 1 miscellaneous round truck trip per day.

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
	Total Trips	**Distance**	**Average Daily Mileage**	**Total Mileage**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
Worker Trips	80	16.8	1,344	161,280	0.08	1.85	0.84	0.16	0.08	0.00	0.11	0.05	0.01	0.00	46.17

Note: Assumes a total of 40 workers per day.

					Emissions Summary (lbs/day)					Emissions Summary (tons/year)					
Total					**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**ROG**	**NO_x**	**CO**	**PM10**	**PM2.5**	**Total GHG Emissions (MT CO2e)**
					9.29	76.84	43.49	2.65	2.37	0.64	5.38	3.02	0.18	0.16	1,397.80

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Number of Construction Days	120
Number of Pump Construction Days	150

Alternative 2A - Operations - Dredge

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engine	750	bhp
	559.3	kW
Number	1.0	

			Emissions (pounds per day)					Emissions (tons per year)					
Activity	**Number of Construction Days**	**Time (hours per day)**	**ROG**	**NOx**	**CO**	**PM10**	**PM2.5**	**ROG**	**NOx**	**CO**	**PM10**	**PM2.5**	**CO2e***
Dredge	150	20	38.32	301.20	213.93	10.43	9.60	2.87	22.59	16.04	0.78	0.72	2,288.25

*To account for N20 and CH4 emissions, an extra 5% was added to the CO2 emissions.

Main Engine - Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
3300 hp	0.55	4.83	3.20	0.19	0.18	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

Auxiliary Engine - Emission Factors (g/bhp-hr)

	ROG	NOx	CO	PM10	PM2.5	CO2	Fuel
1000 hp	0.68	4.86	3.45	0.17	0.16	652	184.16

Note: CO2 emission factor in g/kWh

Source: ARB Harborcraft Emission Inventory Database

CO2 emissions factor from Port of Long Beach. 2011 Emissions Inventory. Available at http://www.polb.com/environment/air/emissions.asp.

Load Factor

Engine	Load factor
Propulsion	0.45
Auxiliary	0.45

Source: ARB. Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in Californi

Table II-4 Fuel Correction Factor

Calendar Years	Horsepower Range	Model Years	NOx	PM
1994-2006	<25	Pre-1995	0.930	0.750
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.822
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
2007+	<25	Pre-1995	0.930	0.720
	25-50	Pre-1999		
	51-100	Pre-1998		
	101-175	Pre-1997		
	176+	Pre-1996		
	<25	1995+	0.948	0.800
	25-50	1999-2010		
	51-100	1998-2010		
	101-175	1997-2010		
	176+	1996-2010		
	All	2011+	0.940	0.052

Source: Off-road Exhaust Emissions Inventory Fuel Correction Factors *(2)*

The basic equation for the estimating emissions from a commercial harbor craft engine is:

$$E = EF_0 \times F \times (1 + D \times \frac{A}{UL}) \times HP \times LF \times Hr$$

Where:

E is the amount of emissions of a pollutant (ROG, CO, NOx, or PM) emitted during one period; [7]
EF₀ is the model year, horsepower and engine use (propulsion or auxiliary) specific zero hour emission factor (when engine is new);
F is the fuel correction factor which accounts for emission reduction benefits from burning cleaner fuel;
D is the horsepower and pollutant specific engine deterioration factor, which is the percentage increase of emission factors at the end of the useful life of the engine;
A is the age of the engine when the emissions are estimated;
UL is the vessel type and engine use specific engine useful life;
HP is rated horsepower of the engine;
LF is the vessel type and engine use specific engine load factor;
Hr is the number of annual operating hours of the engine.

Calendar Years	Horsepower Range	Model Years	NOx	PM
2007+	All	2011+	0.948	0.852

Source: ARB, Appendix B. Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

Alternative 2A - Operations - Electric Dredge Emissions

Assumptions

Main Generator Engine	2560	bhp
	1909.0	kW
Aux Generator Engines	750	bhp
	559.3	kW
Total kW	2468.2	

				Emissions (metric tons per year)
Activity	**Number of Construction Days**	**Time (hours per day)**	**Daily Energy Consumption (kWh)**	**CO2e***
Dredge	150	20	49,364.68	2,458.43

	Emission Factors (lb/MWh)
CO_2	720.490
N_2O	0.029
CH_4	0.010

Source: Climate Action Registry, 2012. SDG&E 2009 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector.

Global Warming Potential

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310

IPCC, Second Assessment Report. 1995.

Fugitive Dust Emissions - Summary

PM10

Fugitive Dust Emissions (pounds per day)					
Alternative	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**	**Total**
2A/1B	40.74	43.69	43.69	31.42	159.54
1A	41.73	23.07	-	-	64.80

Fugitive Dust Emissions (tons)					
Alternative	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**	**Total**
2A/1B	6.36	3.67	3.67	1.89	15.58
1A	4.51	0.83	-	-	5.34

PM2.5

Fugitive Dust Emissions (pounds per day)					
Alternative	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**	**Total**
2A/1B	2.14	2.30	2.30	1.65	8.39
1A	2.20	1.21	-	-	3.41

Fugitive Dust Emissions (tons)					
Alternative	**Phase 1**	**Phase 2**	**Phase 3**	**Phase 4**	**Total**
2A/1B	0.33	0.19	0.19	0.10	0.82
1A	0.24	0.04	-	-	0.28

Alternative 1A - Phase 1

Daily On-Site Construction Motor Vehicle Fugitive Particulate Matter Emissions												
						Uncontrolled Emission Factors (lb/mi)[b]		Uncontrolled Emissions (lb/day)[c]			Controlled Emissions (lb/day)[f]	
Vehicle Type	No.	Mi/Veh-Day[f]	Surface Type	Silt Loading (g/m^2)/ Silt Content (%)[a]	Vehicle Weight (tons)	PM10	PM2.5	PM10	PM2.5	Control Efficiency[d]	PM10	PM2.5
Dump Truck	85	0.5	Unpaved	6	25	3.97E+00	2.09E-01	168.6	8.9	75%	41.7	2.2

Note: Totals may not match sum of individual values because of rounding.

[a] Unpaved surface silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-D-1 for city and county roads

[b] Equations:

EF (unpaved) = k_u $(s/12)^a$ $(W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

[c] Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]

[d] Control efficiency from watering unpaved road twice a day (55%) and limiting maximum speed to 25 mph (44%), from Table XI-A, Mitigation Measure Examples, Fugitive Dust from Construction & Demolition, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

[e] Controlled emissions [lb/day] = Uncontrolled emissions [lb/day] x (1 - Control efficiency [%])

[f] Based on 1 mile roundtrip from Rios Ave to staging area

Alternative 1A - Phase 2

Daily On-Site Construction Motor Vehicle Fugitive Particulate Matter Emissions												
				Silt Loading (g/m^2)/ Silt Content (%)[a]		Uncontrolled Emission Factors (lb/mi)[b]		Uncontrolled Emissions (lb/day)[c]			Controlled Emissions (lb/day)[f]	
Vehicle Type	No.	Mi/Veh-Day[f]	Surface Type		Vehicle Weight (tons)	PM10	PM2.5	PM10	PM2.5	Control Efficiency[d]	PM10	PM2.5
Dump Truck	47	0.5	Unpaved	6	25	3.97E+00	2.09E-01	93.2	4.9	75%	23.1	1.2

Note: Totals may not match sum of individual values because of rounding.

[a] Unpaved surface silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-D-1 for city and county roads

[b] Equations:

EF (unpaved) = k_u $(s/12)^a$ $(W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

[c] Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]

[d] Control efficiency from watering unpaved road twice a day (55%) and limiting maximum speed to 25 mph (44%), from Table XI-A, Mitigation Measure Examples, Fugitive Dust from Construction & Demolition, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

[e] Controlled emissions [lb/day] = Uncontrolled emissions [lb/day] x (1 - Control efficiency [%])

[f] Based on average trip distances from paved roadways to staging areas

Alternative 2A/1B - Phase 1

Daily On-Site Construction Motor Vehicle Fugitive Particulate Matter Emissions												
						Uncontrolled Emission Factors (lb/mi)[b]		Uncontrolled Emissions (lb/day)[c]			Controlled Emissions (lb/day)[f]	
Vehicle Type	No.	Mi/Veh-Day[f]	Surface Type	Silt Loading (g/m^2)/ Silt Content (%)[a]	Vehicle Weight (tons)	PM10	PM2.5	PM10	PM2.5	Control Efficiency[d]	PM10	PM2.5
Dump Truck	83	0.5	Unpaved	6	25	3.97E+00	2.09E-01	164.6	8.7	75%	40.7	2.1

Note: Totals may not match sum of individual values because of rounding.

[a] Unpaved surface silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-D-1 for city and county roads

[b] Equations:

EF (unpaved) = k_u $(s/12)^a$ $(W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

[c] Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]

[d] Control efficiency from watering unpaved road twice a day (55%) and limiting maximum speed to 25 mph (44%), from Table XI-A, Mitigation Measure Examples, Fugitive Dust from Construction & Demolition, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

[e] Controlled emissions [lb/day] = Uncontrolled emissions [lb/day] x (1 - Control efficiency [%])

[f] Based on average trip distances from paved roadways to staging areas

Alternative 2A/1B - Phase 2

Daily On-Site Construction Motor Vehicle Fugitive Particulate Matter Emissions												
						Uncontrolled Emission Factors (lb/mi)[b]		Uncontrolled Emissions (lb/day)[c]			Controlled Emissions (lb/day)[f]	
Vehicle Type	No.	Mi/Veh-Day[f]	Surface Type	Silt Loading (g/m^2)/ Silt Content (%)[a]	Vehicle Weight (tons)	PM10	PM2.5	PM10	PM2.5	Control Efficiency[d]	PM10	PM2.5
Dump Truck	89	0.5	Unpaved	6	25	3.97E+00	2.09E-01	176.5	9.3	75%	43.7	2.3

Note: Totals may not match sum of individual values because of rounding.

[a] Unpaved surface silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-D-1 for city and county roads

[b] Equations:

EF (unpaved) = k_u $(s/12)^a$ $(W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

[c] Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]

[d] Control efficiency from watering unpaved road twice a day (55%) and limiting maximum speed to 25 mph (44%), from Table XI-A, Mitigation Measure Examples, Fugitive Dust from Construction & Demolition, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

[e] Controlled emissions [lb/day] = Uncontrolled emissions [lb/day] x (1 - Control efficiency [%])

[f] Based on average trip distances from paved roadways to staging areas

Alternative 2A/1B - Phase 3

Daily On-Site Construction Motor Vehicle Fugitive Particulate Matter Emissions												
						Uncontrolled Emission Factors (lb/mi)[b]		Uncontrolled Emissions (lb/day)[c]			Controlled Emissions (lb/day)[f]	
Vehicle Type	No.	Mi/Veh-Day[f]	Surface Type	Silt Loading (g/m^2)/ Silt Content (%)[a]	Vehicle Weight (tons)	PM10	PM2.5	PM10	PM2.5	Control Efficiency[d]	PM10	PM2.5
Dump Truck	89	0.5	Unpaved	6	25	3.97E+00	2.09E-01	176.5	9.3	75%	43.7	2.3

Note: Totals may not match sum of individual values because of rounding.

[a] Unpaved surface silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-D-1 for city and county roads

[b] Equations:

EF (unpaved) = k_u $(s/12)^a$ $(W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

[c] Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]

[d] Control efficiency from watering unpaved road twice a day (55%) and limiting maximum speed to 25 mph (44%), from Table XI-A, Mitigation Measure Examples, Fugitive Dust from Construction & Demolition, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

[e] Controlled emissions [lb/day] = Uncontrolled emissions [lb/day] x (1 - Control efficiency [%])

[f] Based on average trip distances from paved roadways to staging areas

Alternative 2A/1B - Phase 4

Daily On-Site Construction Motor Vehicle Fugitive Particulate Matter Emissions												
						Uncontrolled Emission Factors (lb/mi)[b]		Uncontrolled Emissions (lb/day)[c]			Controlled Emissions (lb/day)[f]	
Vehicle Type	No.	Mi/Veh-Day[f]	Surface Type	Silt Loading (g/m^2)/ Silt Content (%)[a]	Vehicle Weight (tons)	PM10	PM2.5	PM10	PM2.5	Control Efficiency[d]	PM10	PM2.5
Dump Truck	64	0.5	Unpaved	6	25	3.97E+00	2.09E-01	126.9	6.7	75%	31.4	1.7

Note: Totals may not match sum of individual values because of rounding.

[a] Unpaved surface silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-D-1 for city and county roads

[b] Equations:

EF (unpaved) = k_u $(s/12)^a$ $(W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

[c] Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]

[d] Control efficiency from watering unpaved road twice a day (55%) and limiting maximum speed to 25 mph (44%), from Table XI-A, Mitigation Measure Examples, Fugitive Dust from Construction & Demolition, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

[e] Controlled emissions [lb/day] = Uncontrolled emissions [lb/day] x (1 - Control efficiency [%])

[f] Based on average trip distances from paved roadways to staging areas

San Diego 2015 On-Road Emission Factors

VEH	FUEL	MDLYR	SPEED	POP	VMT	TRIPS	ROG_RUNEX	CO_RUNEX	NOX_RUNEX	CO2_RUNEX	PM10_Total	PM2_5_Total	CH4	N2O
			(Miles/hr)	(Vehicles)	(Miles/day)	(Trips/day)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)
LDA	GAS	AllMYr	AllSpeeds	1,169,183	42,600,784	7,361,744	0.045	1.290	0.136	302.103	0.047	0.019		
LDA	DSL	AllMYr	AllSpeeds	5,466	179,217	31,713	0.038	0.215	0.576	315.879	0.072	0.043		
LDT1	GAS	AllMYr	AllSpeeds	172,849	6,187,163	1,061,257	0.075	2.505	0.269	357.183	0.048	0.021		
LDT1	DSL	AllMYr	AllSpeeds	210	6,180	1,102	0.066	0.312	0.691	314.863	0.099	0.068		
LDT2	GAS	AllMYr	AllSpeeds	423,444	16,224,269	2,675,455	0.037	1.498	0.192	432.459	0.047	0.019		
LDT2	DSL	AllMYr	AllSpeeds	187	5,979	1,022	0.046	0.252	0.690	323.109	0.080	0.050		
Average							0.051	1.012	0.426	340.933	0.066	0.037	0.028	0.037

Source: EMFAC 2011

VEH	FUEL	MDLYR	SPEED	POP	VMT	TRIPS	ROG_RUNEX	CO_RUNEX	NOX_RUNEX	CO2_RUNEX	PM10_Total	PM2_5_Total	CH4	N2O
			(Miles/hr)	(Vehicles)	(Miles/day)	(Trips/day)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)
T7 tractor	DSL	AllMYr	AllSpeeds	2,454	392,614	0	0.296	1.343	8.984	1699.527	0.231	0.158	0.0051	0.0048

Source: EMFAC 2011

San Diego 2020 On-Road Emission Factors

VEH	FUEL	MDLYR	SPEED (Miles/hr)	POP (Vehicles)	VMT (Miles/day)	TRIPS (Trips/day)	ROG_RUNEX (gms/mile)	CO_RUNEX (gms/mile)	NOX_RUNEX (gms/mile)	CO2_RUNEX (gms/mile)	PM10_Total (gms/mile)	PM2_5_Total (gms/mile)	CH4 (gms/mile)	N2O (gms/mile)
LDA	GAS	AllMYr	AllSpeeds	1,261,438	46,436,329	7,971,039	0.03	0.10	0.83	244.16	0.05	0.02		
LDA	DSL	AllMYr	AllSpeeds	5,897	203,726	36,279	0.02	0.39	0.13	265.72	0.06	0.03		
LDT1	GAS	AllMYr	AllSpeeds	186,176	6,674,684	1,134,440	0.04	0.17	1.56	297.84	0.05	0.02		
LDT1	DSL	AllMYr	AllSpeeds	226	8,187	1,308	0.03	0.45	0.17	259.42	0.07	0.04		
LDT2	GAS	AllMYr	AllSpeeds	450,141	17,355,693	2,832,803	0.02	0.11	0.93	364.76	0.05	0.02		
LDT2	DSL	AllMYr	AllSpeeds	199	7,528	1,228	0.02	0.47	0.14	280.32	0.06	0.03		
Average							0.026	0.283	0.626	285.370	0.055	0.027	0.028	0.037

Source: EMFAC 2011

VEH	FUEL	MDLYR	SPEED (Miles/hr)	POP (Vehicles)	VMT (Miles/day)	TRIPS (Trips/day)	ROG_RUNEX (gms/mile)	CO_RUNEX (gms/mile)	NOX_RUNEX (gms/mile)	CO2_RUNEX (gms/mile)	PM10_Total (gms/mile)	PM2_5_Total (gms/mile)	CH4 (gms/mile)	N2O (gms/mile)
T7 tractor	DSL	AllMYr	AllSpeeds	3,262	531,839	-	0.22	1.02	4.20	1553.04	0.18	0.11	0.0051	0.0048

Source: EMFAC 2011

APPENDIX L

NOISE TECHNICAL APPENDIX

SAN ELIJO LAGOON RESTORATION PROJECT
NOISE TECHNICAL APPENDIX

Introduction

This appendix provides methodologies, measurements, and modeling results conducted for the noise analysis for the San Elijo Lagoon Restoration Project. Model outputs included in this appendix are described in Section 3.12 (Noise) of the San Elijo Lagoon Restoration Project Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS). Appendix J contains (1) a description of the approach/methodology for the noise analysis, (2) project noise modeling output sheets using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (RD-77-108), and (3) field noise monitoring data sheets.

Approach/Methodology

Project-generated noise was evaluated in a number of different ways. Construction noise would include both the lagoon restoration and materials disposal/placement components of the project. To address these different project components, different methodologies were used. Noise during construction of the lagoon restoration component could occur as a result of increased construction traffic (on-road construction traffic) as well as equipment noise during grading/dredging activities (off-road construction noise). Two different modeling efforts were conducted to address those noise sources, as described below and provided in the output sheets at the end of this appendix.

Materials placement/disposal was addressed utilizing an approach used for the 2012 Regional Beach Sand Project (RBSP) completed by the San Diego Association of Governments (SANDAG) (2011). That analysis is described in Section 3.12 of the EIR/EIS.

FHWA Highway Traffic Noise Prediction Model Output Sheets

<u>On-Road Project Construction Vehicle Traffic Noise</u>

Existing traffic and existing traffic plus project construction traffic noise levels were modeled using the FHWA Highway Traffic Noise Prediction Model (RD-77-108). Community noise equivalent level (CNEL) and equivalent noise level (L_{eq}) for each roadway scenario below (existing and with project), summarized in Section 3.12 of the EIR/EIS, are provided in the data output sheets.

Highway 101

Existing CNEL
Existing Plus Project CNEL
Existing Peak Hour L_{eq}
Existing Plus Project Peak Hour L_{eq}

Manchester Avenue

Existing CNEL
Existing Plus Project CNEL
Existing Peak Hour L_{eq}
Existing Plus Project Peak Hour L_{eq}

Lomas Santa Fe

Existing CNEL
Existing Plus Project CNEL
Existing Peak Hour L_{eq}
Existing Plus Project Peak Hour L_{eq}

Chesterfield Drive

Existing CNEL
Existing Plus Project CNEL
Existing Peak Hour L_{eq}
Existing Plus Project Peak Hour L_{eq}

<u>Off-Road Project Construction Vehicles and Equipment</u>

The FHWA Highway Traffic Noise Prediction Model was also used to evaluate the noisiest traffic hour expected to occur during the project. This hour is expected to occur during the demolition of existing Highway 101 and construction of a bridge to span the new lagoon inlet. Construction of the bridge would involve demolition and construction; both of which would be variable in terms of worker and truck traffic generation. Worst-case traffic volumes associated with these activities would include 20 employee vehicles and 15 trucks arriving to the site. Noise levels are expected to reach 47 A-weighted decibels (dBA) L_{eq} and 48 dBA CNEL. The output sheets for each scenario below are provided at the end of this appendix:

- Vegetation Clearing CNEL
- Vegetation Clearing Peak Hour

- Dike Removal Peak Hour
- Dike Removal CNEL
- Dredging CNEL
- Dredging Peak Hour
- Bridge Replacement CNEL
- Bridge Replacement Peak Hour

Field Noise Monitoring Data Sheets

For each noise monitoring location, a data sheet was completed in the field to include date, time, weather conditions, and location and measurement observations including noise sources. Data sheets are provided at the end of this appendix for measurements taken at San Elijo Lagoon and previously taken at the following area beaches for material placement/disposal for the 2012 RBSP:

- Leucadia
- Moonlight
- Cardiff
- Solana Beach
- Torrey Pines

References

San Diego Association of Governments (SANDAG)
2011 Regional Beach Sand Project II EA/Final EIR. May.

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Vegetation Clearing CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	110.00
										SPEED	40.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	1.24	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	% A	27.00
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16	% HT	72.90
ADJUSTMENTS											
Flow	-5.41	-29.72	-1.10	-35.40	-59.71	-31.09	-35.40	-59.71	-31.09		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**52.09**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Vegetation Clearing Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	20.00
										SPEED	40.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	0.42	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00	% A	50.00
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16	% HT	49.90
ADJUSTMENTS											
Flow	-10.14	-37.13	-10.15	-40.13	-67.12	-40.14	-40.13	-67.12	-40.14		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**46.12**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Dike Removal Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	12.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	% A	50.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	49.90
ADJUSTMENTS											
Flow	-12.87	-39.86	-12.88	-42.86	-69.85	-42.87	-42.86	-69.85	-42.87		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**44.42**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Dike Removal CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	41.00
										SPEED	40.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	0.75	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00	% A	44.00
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16	% HT	55.90
ADJUSTMENTS											
Flow	-7.57	-34.01	-6.54	-37.57	-64.00	-36.53	-37.57	-64.00	-36.53		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**46.72**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Dredging CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	30.00
										SPEED	40.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	0.62	0.00	0.00	0.00	0.00	0.00	0.62	0.00	0.00	% A	99.80
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16	% HT	0.10
ADJUSTMENTS											
Flow	-8.38	-38.37	-38.37	-35.37	-65.36	-65.36	-8.39	-38.38	-38.38		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**40.33**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Dredging Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	10.00
										SPEED	40.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	0.21	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	% A	99.80
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16	% HT	0.10
ADJUSTMENTS											
Flow	-13.15	-43.14	-43.14	-40.14	-70.13	-70.13	-13.16	-43.15	-43.15		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**29.28**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Bridge Replacement CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	90.00
										SPEED	40.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	2.51	0.00	1.23	0.00	0.00	0.00	0.00	0.00	0.00	% A	67.00
Speed in MPH	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	67.36	76.31	81.16	67.36	76.31	81.16	67.36	76.31	81.16	% HT	32.90
ADJUSTMENTS											
Flow	-2.33	-30.59	-5.42	-32.33	-60.59	-35.41	-32.33	-60.59	-35.41		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**48.05**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		
LEQ	39.96	20.65	50.67	9.96	-9.34	20.68	9.96	-9.34	20.68		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Bridge Replacement Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	30.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	0.84	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	% A	67.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	0.10
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	32.90
ADJUSTMENTS											
Flow	-7.62	-35.88	-10.71	-37.61	-65.87	-40.70	-37.61	-65.87	-40.70		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**46.81**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Highway 101 Existing CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	18040.00
										SPEED	55.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	571.27	18.04	12.03	35.70	1.13	0.75	107.11	3.38	2.26	% A	95.00
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3.00
SE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	2.00
ADJUSTMENTS											
Flow	19.86	4.85	3.09	7.82	-7.19	-8.95	12.59	-2.42	-4.18		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**69.97**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Highway 101 Existing Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	1804.00
										SPEED	55.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	57.13	1.80	1.20	3.57	0.11	0.08	10.71	0.34	0.23	% A	95.00
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3.00
SE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	2.00
ADJUSTMENTS											
Flow	9.86	-5.15	-6.91	-2.18	-17.19	-18.95	2.59	-12.42	-14.18		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**59.08**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Highway 101 Existing Plus Project CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	18175.00
										SPEED	55.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	575.54	18.18	12.12	35.97	1.14	0.76	107.91	3.41	2.27	% A	95.00
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3.00
SE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	2.00
ADJUSTMENTS											
Flow	19.89	4.89	3.12	7.85	-7.16	-8.92	12.62	-2.38	-4.15		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**70.00**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Highway 101 Existing Plus Project Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	1818.00
										SPEED	55.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	57.57	1.82	1.21	3.60	0.11	0.08	10.79	0.34	0.23	% A	95.00
Speed in MPH	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	3.00
SE CALCULATIONS											
Reference levels	72.73	79.85	83.81	72.73	79.85	83.81	72.73	79.85	83.81	% HT	2.00
ADJUSTMENTS											
Flow	9.89	-5.11	-6.87	-2.15	-17.15	-18.92	2.62	-12.38	-14.14		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**59.11**

San Elijo Construction Traffic

Manchester Avenue Existing CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	7100.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	229.57	4.73	2.37	14.35	0.30	0.15	43.04	0.89	0.44	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	16.77	-0.09	-3.10	4.73	-12.13	-15.14	9.50	-7.36	-10.37		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**63.19**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

San Elijo Construction Traffic

Manchester Avenue Existing Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	710.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	22.96	0.47	0.24	1.43	0.03	0.01	4.30	0.09	0.04	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	6.77	-10.09	-13.10	-5.27	-22.13	-25.14	-0.50	-17.36	-20.37		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**52.30**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Manchester Avenue Existing Plus Project CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	7369.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	238.26	4.91	2.46	14.89	0.31	0.15	44.67	0.92	0.46	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	16.93	0.08	-2.94	4.89	-11.97	-14.98	9.66	-7.19	-10.21		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**63.35**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Manchester Avenue Existing Plus Project Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	737.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	23.83	0.49	0.25	1.49	0.03	0.02	4.47	0.09	0.05	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	6.93	-9.92	-12.93	-5.11	-21.97	-24.98	-0.34	-17.19	-20.20		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**52.46**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Lomas Sante Fe Existing CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	23410.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	756.92	15.61	7.80	47.31	0.98	0.49	141.92	2.93	1.46	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	21.95	5.10	2.08	9.91	-6.95	-9.96	14.68	-2.17	-5.19		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**68.37**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Lomas Sante Fe Existing Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	2341.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	75.69	1.56	0.78	4.73	0.29	0.05	14.19	0.10	0.15	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	11.95	-4.90	-7.92	-0.09	-12.17	-19.96	4.68	-16.95	-15.19		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**57.48**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Lomas Sante Fe Existing Plus Project CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	23616.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	763.58	15.74	7.87	47.72	0.98	0.49	143.17	2.95	1.48	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	21.99	5.13	2.12	9.95	-6.91	-9.92	14.72	-2.14	-5.15		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**68.41**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

San Elijo Construction Traffic

Lomas Sante Fe Existing Plus Project Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	2362.00
										SPEED	45.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	76.37	1.57	0.79	4.77	0.10	0.05	14.32	0.30	0.15	% A	97.00
Speed in MPH	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	69.34	77.62	82.14	69.34	77.62	82.14	69.34	77.62	82.14	% HT	1.00
ADJUSTMENTS											
Flow	11.99	-4.87	-7.88	-0.05	-16.91	-19.92	4.72	-12.14	-15.15		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**57.52**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Chesterfield Drive Existing CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	17950.00
										SPEED	30.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	580.38	11.97	5.98	36.27	0.75	0.37	108.82	2.24	1.12	% A	97.00
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76	% HT	1.00
ADJUSTMENTS											
Flow	22.56	5.70	2.69	10.52	-6.34	-9.35	15.29	-1.57	-4.58		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**63.12**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Chesterfield Drive Existing Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	1795.00
										SPEED	30.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	58.04	1.20	0.60	3.63	0.07	0.04	10.88	0.22	0.11	% A	97.00
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76	% HT	1.00
ADJUSTMENTS											
Flow	12.56	-4.30	-7.31	0.52	-16.34	-19.35	5.29	-11.57	-14.58		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**52.23**

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Chesterfield Drive Existing Plus Project CNEL

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	18021.00
										SPEED	30.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	582.68	12.01	6.01	36.42	0.75	0.38	109.25	2.25	1.13	% A	97.00
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76	% HT	1.00
ADJUSTMENTS											
Flow	22.58	5.72	2.71	10.54	-6.32	-9.33	15.31	-1.55	-4.56		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**CNEL**	**63.14**
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00		

FHWA Sound32 Spreadsheet

San Elijo Construction Traffic

Lomas Sante Fe Existing Plus Project Peak Hour

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	1802.00
										SPEED	30.00
										DISTANCE	50.00
PUT PARAMETERS											
Vehicles per hou	58.26	1.20	0.60	3.64	0.08	0.04	10.92	0.23	0.11	% A	97.00
Speed in MPH	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00		
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00		
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	% MT	2.00
SE CALCULATIONS											
Reference levels	62.51	73.11	78.76	62.51	73.11	78.76	62.51	73.11	78.76	% HT	1.00
ADJUSTMENTS											
Flow	12.58	-4.28	-7.29	0.54	-16.32	-19.33	5.31	-11.55	-14.56		
Distance	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	LEFT	-90.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	RIGHT	90.00
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	**DAY LEQ**	**52.25**

PROJECT: SELRP PROJECT #: 60209588

DATE: 11/20/12 ENGINEER/ANALYST: J. GOODSON, R. PELLOS

Receptor ID: LT-1 / ST-7 SLM Model: 820 (SN: 1573) Calibrator Model: 200 (SN: 4637) Data File: ___

LOCATION

Location Description: IN SAN ELIJO LAGOON OFF OF TRAIL, SOUTH OF CHANNEL AND NORTH OF BARBARA AVE. ~~EAST~~ MIDWAY BETWEEN HWY-101 AND I-5.

(Sketch meter location below and take at least 2 photographs of meter location)

Distance from edge of roadway: 2,460 ft (I-5) Overall Roadway Width: 150 ft (I-5) Lane Widths: 12

Is Parking Allowed along Street: NO Width of Parking Lane: —

Distance from barriers: — Barrier Type: — Barrier Height: —

Location Comments: NEAR TO THE BACKYARDS OF RESIDENCES ALONG THE NORTH SIDE OF BARBARA AVE. AFTER LOOKING AT GOOGLE EARTH THIS PART OF THE ROAD MAY ACTUALLY BE N. GRANADOS AVE.

METEOROLOGY

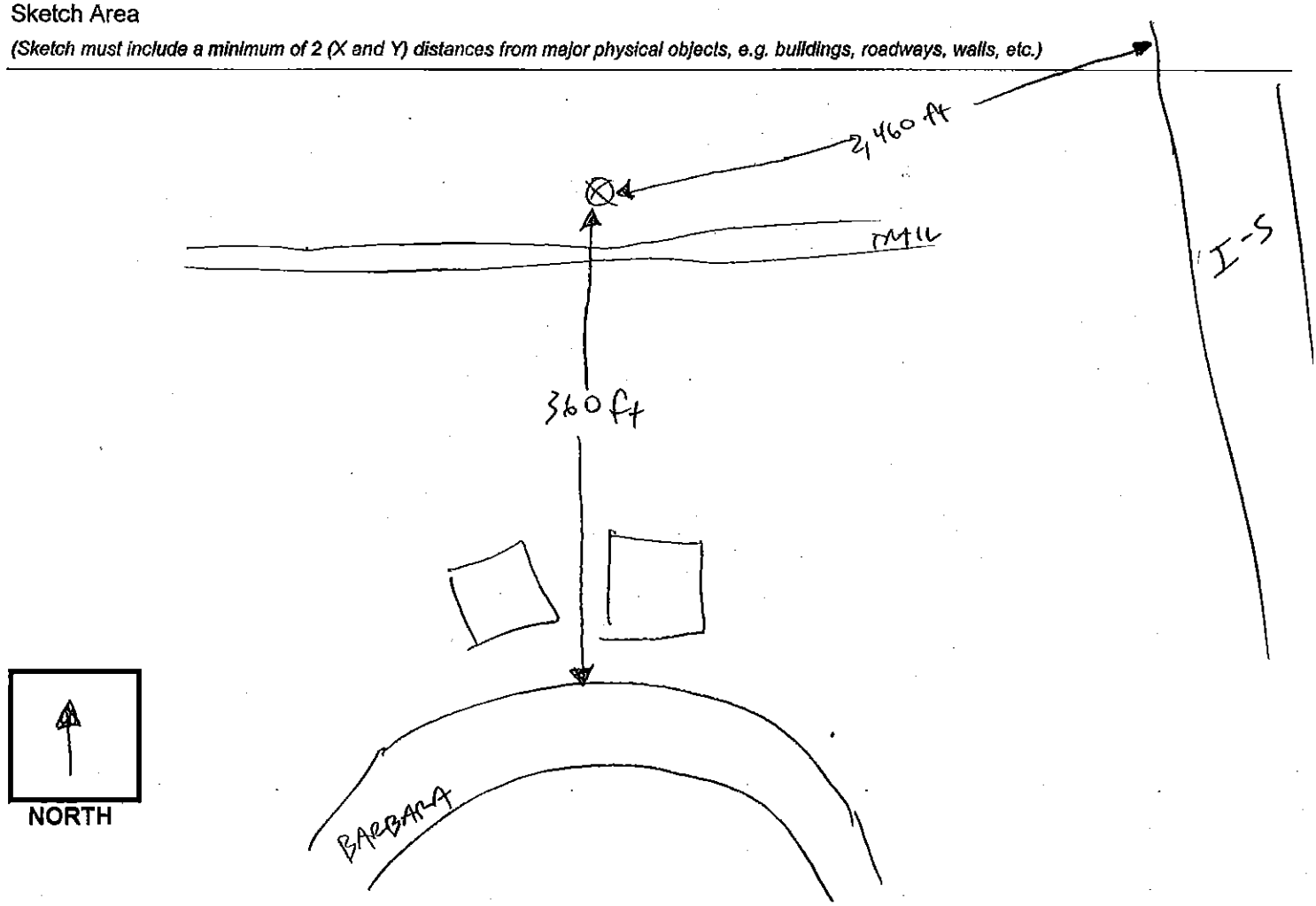
Temperature: _____ Wind Speed: _____

Wind Direction: _____ Other (gusts, etc.): _____

Meteorological Comments: _____

Sketch Area

(Sketch must include a minimum of 2 (X and Y) distances from major physical objects, e.g. buildings, roadways, walls, etc.)



PROJECT: SELRP PROJECT #: 60209505

DATE: 11/20/12 ENGINEER/ANALYST: J GOODSON R PELLOS

ST-7

Receptor ID: 471 SLM Model: 820 (SN: 1573) Calibrator Model: 200 (SN: 4637) Data File: ___

MEASUREMENT INFORMATION

Start Time: 4:43 Stop Time: 5:28

Principal Source(s): TRAFFIC ON I5; HWY-101;

Other Source(s): BIRD VOCALIZATIONS;

Average Observed Noise Level: _____

Maximum L_{eq} Observed: _____ Source(s): _____

Minimum L_{eq} Observed: _____

Comments: _____

TRAFFIC COUNT DATA

Start Time: _____ Stop Time: _____

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

PROJECT: SELRP PROJECT #: 60209588

DATE: 11/21/12 ENGINEER/ANALYST: PELLOS

Receptor ID: ST-1 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File:

LOCATION

Location Description: AT THE NORTHERN END OF N. RIOS AVE ON TRAIL IN SAN ELIJO LAGOON, JUST NORTH OF CUL-DE-SAC.

(Sketch meter location below and take at least 2 photographs of meter location)

Distance from edge of roadway: 72ft Overall Roadway Width: 35ft Lane Widths: 11ft

Is Parking Allowed along Street: YES Width of Parking Lane: 8ft

Distance from barriers: N/A Barrier Type: Barrier Height:

Location Comments: IN LINE W/ POOL AREA AT COMPLEX TO THE WEST AND BACKYARDS OF RESIDENTS TO THE EAST. INTERSECTION N. RIOS AVE AND SOLANA POINT CIRCLE

METEOROLOGY

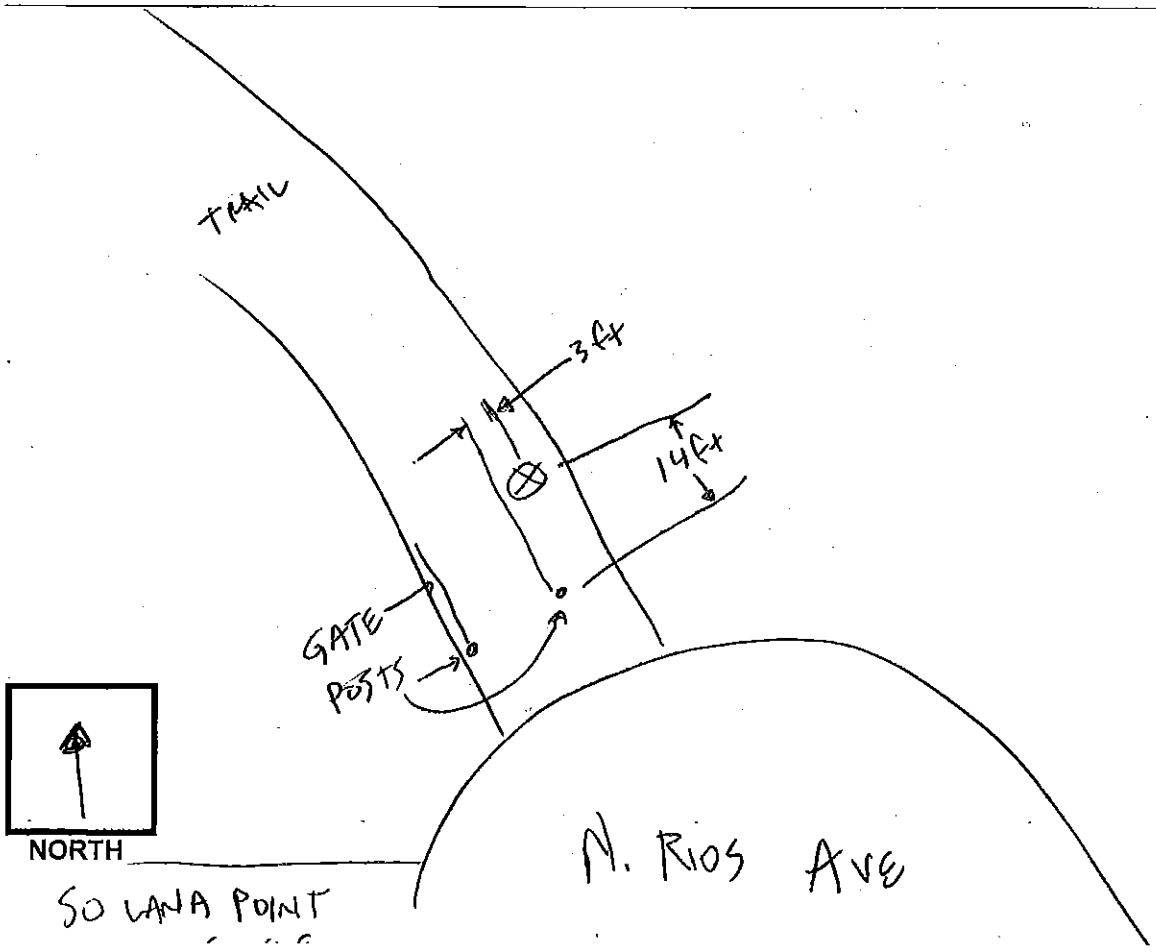
Temperature: 66 Wind Speed: 1.3 mph

Wind Direction: NW Other (gusts, etc.): 5.7 mph

Meteorological Comments: SUNNY 68% HUMIDITY

Sketch Area

(Sketch must include a minimum of 2 (X and Y) distances from major physical objects, e.g. buildings, roadways, walls, etc.)



PROJECT: SELRP PROJECT #: 60209555

DATE: 11/21/12 ENGINEER/ANALYST: PELLS

Receptor ID: ST-1 SLM Model: Y20 (SN: 165) Calibrator Model: 200 (SN 6203) Data File: ___

MEASUREMENT INFORMATION

Start Time: 13:08 Stop Time: 13:28

Principal Source(s): TRAFFIC ON I-5

Other Source(s): TRAFFIC ON R10 ; BIRD VOCALIZATIONS ; HELICOPTER ; SMALL PLANE

Average Observed Noise Level: 47 dBA

Maximum L_{eq} Observed: 52 dBA Source(s): SMALL PROPELLOR AIRPLANE 13:20

Minimum L_{eq} Observed: 44 dBA

Comments:

52 dBA SMALL PLANE @ 13:22

55 dBA HELICOPTER @ 13:23

56 dBA HELICOPTER @ 13:25

57 dBA SMALL PLANE @ 13:27:25

TRAFFIC COUNT DATA

Start Time: 13:08 Stop Time: 13:28 R10

Direction: BOTH Speed: 15 mph

Autos	Med. Trucks	Heavy Trucks
IIII		

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

PROJECT: SECRP PROJECT #: 602.0958

DATE: 11/21/12 ENGINEER/ANALYST: PEL/DS

Receptor ID: ST-2 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File: ___

LOCATION

Location Description: AT NORTHERN END OF SANTA INEZ NEAR 828 SANTA INEZ

(Sketch meter location below and take at least 2 photographs of meter location)

Distance from edge of roadway: 10ft Overall Roadway Width: 35ft Lane Widths: 10

Is Parking Allowed along Street: YES Width of Parking Lane: 8

Distance from barriers: N/A Barrier Type: ___ Barrier Height: ___

Location Comments: IN LINE W/ BACKYARDS OF ADJACENT RESIDENCES

METEOROLOGY

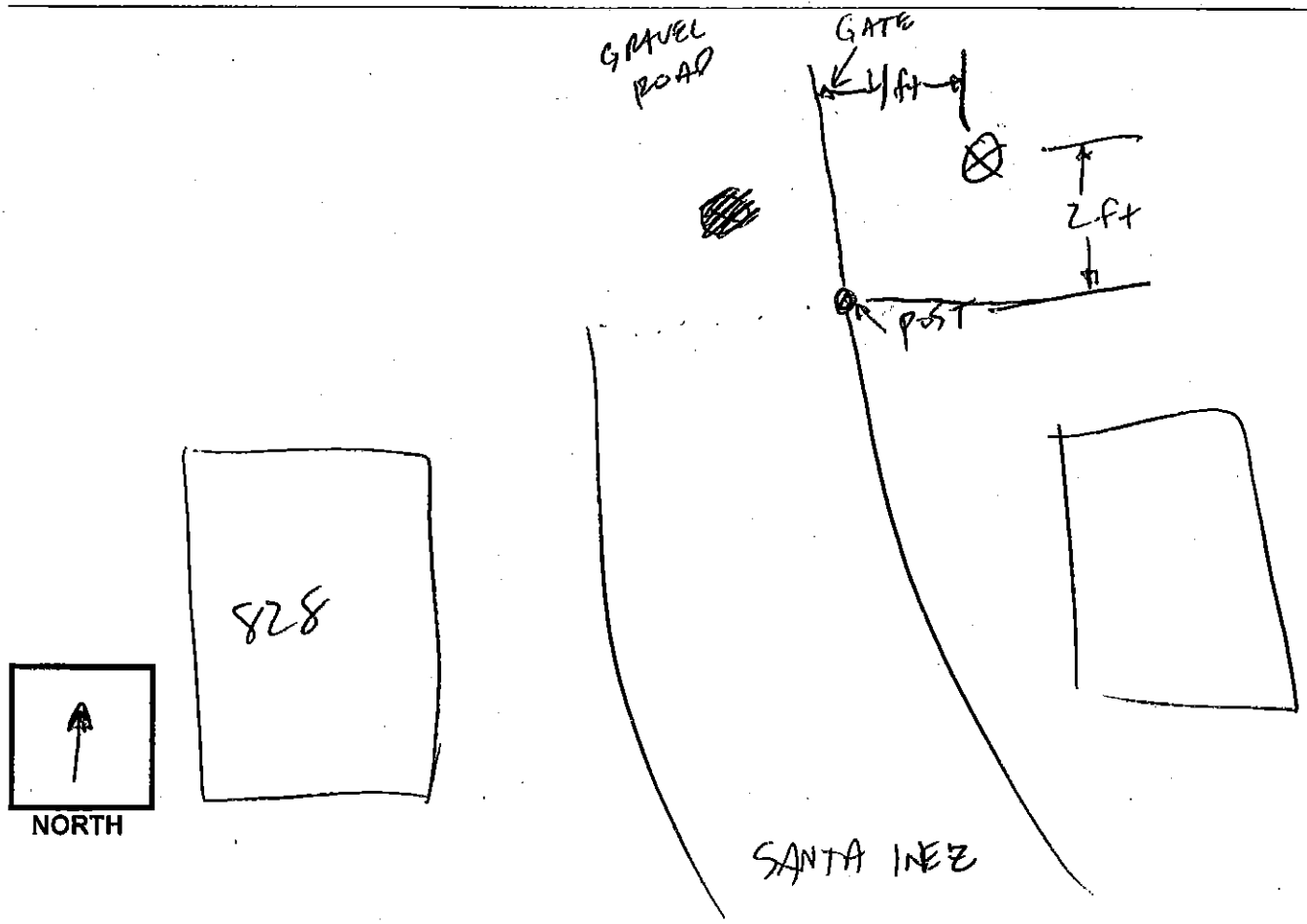
Temperature: 66°F Wind Speed: 1.3 mph

Wind Direction: NW Other (gusts, etc.): 5.7 mph

Meteorological Comments: SUNNY 68% HUMIDITY

Sketch Area

(Sketch must include a minimum of 2 (X and Y) distances from major physical objects, e.g. buildings, roadways, walls, etc.)



PROJECT: SELRP PROJECT #: 60205908

DATE: 11/21/12 ENGINEER/ANALYST: PELLOS

Receptor ID: ST-2 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File: ___

MEASUREMENT INFORMATION

Start Time: 14:08 Stop Time: 14:28

Principal Source(s): TRAFFIC ON I-5

Other Source(s): TRAFFIC ON SANTA INEZ, BIRD VOCALIZATIONS

Average Observed Noise Level: 60 dBA

Maximum L_{eq} Observed: 86 dBA Source(s): GARBAGE TRUCK 14:14

Minimum L_{eq} Observed: 58 dBA

Comments: 66dBA CAR PASSING BY ON GRAVEL ROAD 14:23

68dBA MEDIUM TRUCK PASSING ON GRAVEL ROAD @ 14:27

CONSTRUCTION (DRILLING) IN LAGOON HAS INCREASE TRAFFIC ON LOCAL ROAD FOR HEAVY/MED TRUCKS.

TRAFFIC COUNT DATA

Start Time: 14:08 Stop Time: 14:28 SANTA INEZ

Direction: BOTH Speed: 15 mph

Autos	Med. Trucks	Heavy Trucks
111	1	1

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

PROJECT: SELRP PROJECT #: 60209588

DATE: 11/21/12 ENGINEER/ANALYST: PELLOS

Receptor ID: ST X 3 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File: ___

LOCATION

Location Description: BETWEEN 2919 AND 2913 CAPE SEBASTIAN PL. BEHIND ~~THE~~ COMPLEX CARDIFF COVE. IN LINE W/ BACKYARD PORCHES

(Sketch meter location below and take at least 2 photographs of meter location)

Distance from edge of roadway: 55ft Overall Roadway Width: 30 ft Lane Widths: 12ft

Is Parking Allowed along Street: NO Width of Parking Lane: N/A

Distance from barriers: N/A Barrier Type: ——— Barrier Height: ———

Location Comments: AREA RAISED ABOVE MANCHESTER AVE. BUT NO BARRIERS ARE PRESENT

METEOROLOGY

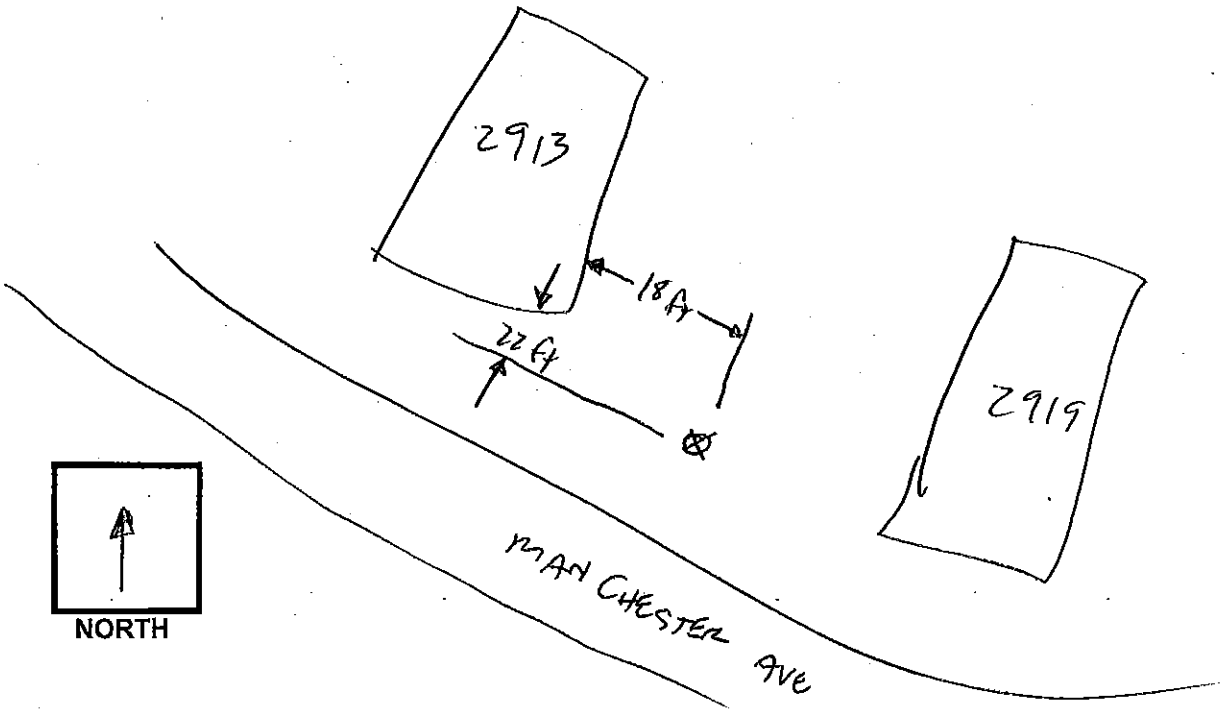
Temperature: 69°F Wind Speed: 0.7 mph

Wind Direction: WEST Other (gusts, etc.): 2.7 mph

Meteorological Comments: SUNNY ~~72°~~ 72% HUMIDITY

Sketch Area

(Sketch must include a minimum of 2 (X and Y) distances from major physical objects, e.g. buildings, roadways, walls, etc.)



PROJECT: SELRD **PROJECT #:** 60209588

DATE: 11/21/12 **ENGINEER/ANALYST:** PELLOS

Receptor ID: ST-3 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File: ___

MEASUREMENT INFORMATION

Start Time: 11:19 Stop Time: ~~TEST~~ 11:41

Principal Source(s): TRAFFIC ON MANCHESTER

Other Source(s): LANDSCAPING ACTIVITY IN NEARBY COMPLEXES; TRAFFIC ON CAPE SEBASTIAN TRANS

Average Observed Noise Level: 53 dBA

Maximum L_{eq} Observed: 70 dBA Source(s): CAR ON MANCHESTER 11:19

Minimum L_{eq} Observed: 47 dBA

Comments:

71 dBA BLOWER @ 11:28
69 dBA CAR ON MANCHESTER AVE @ 11:30
75 dBA BLOWER @ 11:36
70 dBA BLOWER @ 11:38

TRAFFIC COUNT DATA

Start Time: _____ Stop Time: _____

Direction: _____ Speed: 45 mph

Autos	Med. Trucks	Heavy Trucks
TRAFFIC SAME AS ST-5		

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

PROJECT: SELRP PROJECT #: 60209558

DATE: 11/21/12 ENGINEER/ANALYST: PELLIS

Receptor ID: ST-4 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File:

LOCATION

Location Description: AT INTERSECTION SAN ELIJO AVE AND MANCHESTER AVE ON TRAIL FOR SAN ELIJO LAGOON. IN LINE WITH THE BACKYARDS OF

(Sketch meter location below and take at least 2 photographs of meter location)

Distance from edge of roadway: 54 ft Overall Roadway Width: 27 ft Lane Widths: 12

Is Parking Allowed along Street: NO Width of Parking Lane:

Distance from barriers: 21 ft Barrier Type: EARTHEN MOUND Barrier Height: 10ft

Location Comments:

ADJACENT RESIDENCES ~~ALONG~~ SAN ELIJO AVE.

METEOROLOGY

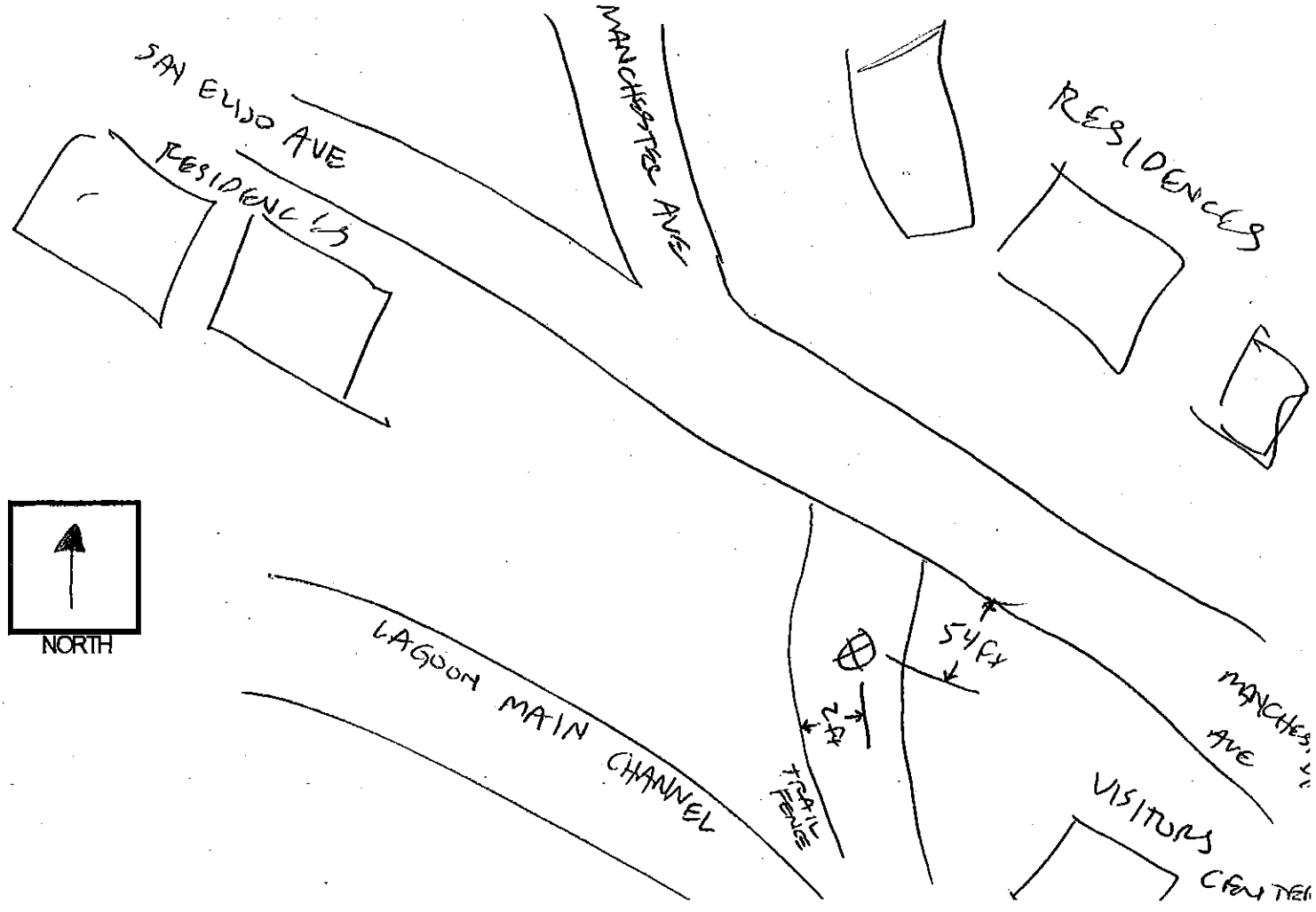
Temperature: 64°F Wind Speed: 0.1mph

Wind Direction: WEST Other (gusts, etc.): 1.6 mph

Meteorological Comments: 76% HUMIDITY ~~CLEAR~~ OVERCAST 100% COVER

Sketch Area

(Sketch must include a minimum of 2 (X and Y) distances from major physical objects, e.g. buildings, roadways, walls, etc.)



PROJECT: ~~SDT~~ SELRP PROJECT #: 60209558

DATE: 11/21/12 ENGINEER/ANALYST: PELLOS

Receptor ID: ST-~~3~~ 4 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File:

MEASUREMENT INFORMATION

Start Time: 10:16 Stop Time: ~~10:56~~ 10:41

Principal Source(s): TRAFFIC ON MANCHESTER AVE

Other Source(s): TRAFFIC ON HWY-101; CONSTRUCTION ON HOUSES ALONG SAN ELIJO AVE; BIRD VOCALIZATIONS; TRAIN; OCEAN WAVES?; HELICOPTER

Average Observed Noise Level: 50

Maximum L_{eq} Observed: 58 Source(s): CAR PASSING ON MANCHESTER

Minimum L_{eq} Observed: 42

Comments:

65dBA TRAIN @ 10:25

65dBA CAR ON MANCHESTER @ 10:29

62 dBA CAR " " @ 10:32

TRAFFIC COUNT DATA

Start Time: 10:25 Stop Time: 10:35

Direction: BOTH Speed: 35 mph 40mph

Autos	Med. Trucks	Heavy Trucks
𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸		
𝍸		

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

PROJECT: SELF PROJECT #: 6020958 5

DATE: 11/21/12 ENGINEER/ANALYST: PELLOS

Receptor ID: ST-5 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN 6203) Data File: ___

LOCATION

Location Description: ON TRAIL IN SAN ELIJO LAGOON; JUST EAST OF HWY-(0) AND SOUTH of LAGOON; NORTH OF NIOS AVE

(Sketch meter location below and take at least 2 photographs of meter location)

Distance from edge of roadway: 1,256 ft (HWY-101) Overall Roadway Width: 75ft (HWY-101) Lane Widths: 12 ft

Is Parking Allowed along Street: NO Width of Parking Lane: —

Distance from barriers: — Barrier Type: — Barrier Height: —

Location Comments: ~~CALIFORNIA GNATCATCHER~~ GNATCATCHER OBSERVED AT MONITORING LOCATION

METEOROLOGY

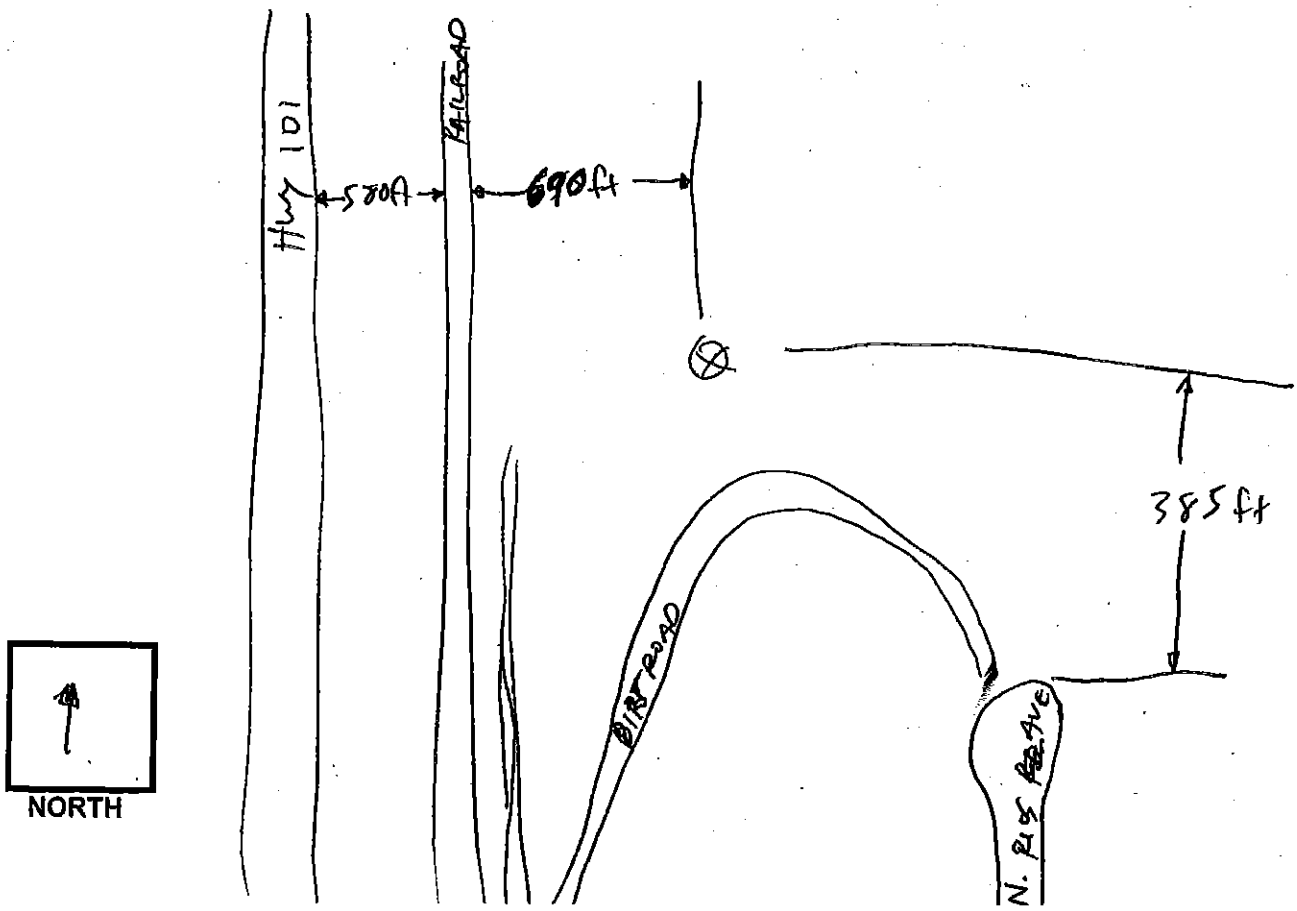
Temperature: 63.°F Wind Speed: 0

Wind Direction: NW Other (gusts, etc.): 1.7 mph

Meteorological Comments: 75% HUMIDITY

Sketch Area

(Sketch must include a minimum of 2 (X and Y) distances from major physical objects, e.g. buildings, roadways, walls, etc.)



PROJECT: SELRP PROJECT #: 60205958

DATE: 11/21/12 ENGINEER/ANALYST: BELLOS

Receptor ID: ST-A5 SLM Model: 820 (SN: 1668) Calibrator Model: 200 (SN: 6203) Data File: ___

MEASUREMENT INFORMATION

Start Time: 15:40 Stop Time: 16:00 02

Principal Source(s): TRAFFIC ON HWY. 101 AND I-5

Other Source(s): BIRD VOCALIZATION; AIRPLANE; HELICOPTER; 2 PERSON TALKING ON TRAIL

Average Observed Noise Level: 43 dBA

Maximum L_{eq} Observed: 48 dBA Source(s): SMALL PROPELLER AIRPLANE

Minimum L_{eq} Observed: 41 dBA

Comments: 63 dBA MAIN @ 15:57

TRAFFIC COUNT DATA

Start Time: 15:55 Stop Time: 16:00 Hwy-101

Direction: BOTH Speed: 35-40 mph

Autos	Med. Trucks	Heavy Trucks
150		

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

PROJECT: SELRP PROJECT #: 60209558

DATE: 11/21/12 ENGINEER/ANALYST: R PELLOS

Receptor ID: ST-6 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File: ___

LOCATION

Location Description: ON TRAIL IN THE SAN ELIJO LAGOON PRESERVE EAST OF I-5

(Sketch meter location below and take at least 2 photographs of meter location)

Distance from edge of roadway: 1,090ft Overall Roadway Width: 150ft Lane Widths: 12

Is Parking Allowed along Street: NO Width of Parking Lane: —

Distance from barriers: — Barrier Type: — Barrier Height: —

Location Comments: MEASUREMENT TAKEN 3ft ABOVE GROUND FOR NEXT HEIGHT.

METEOROLOGY

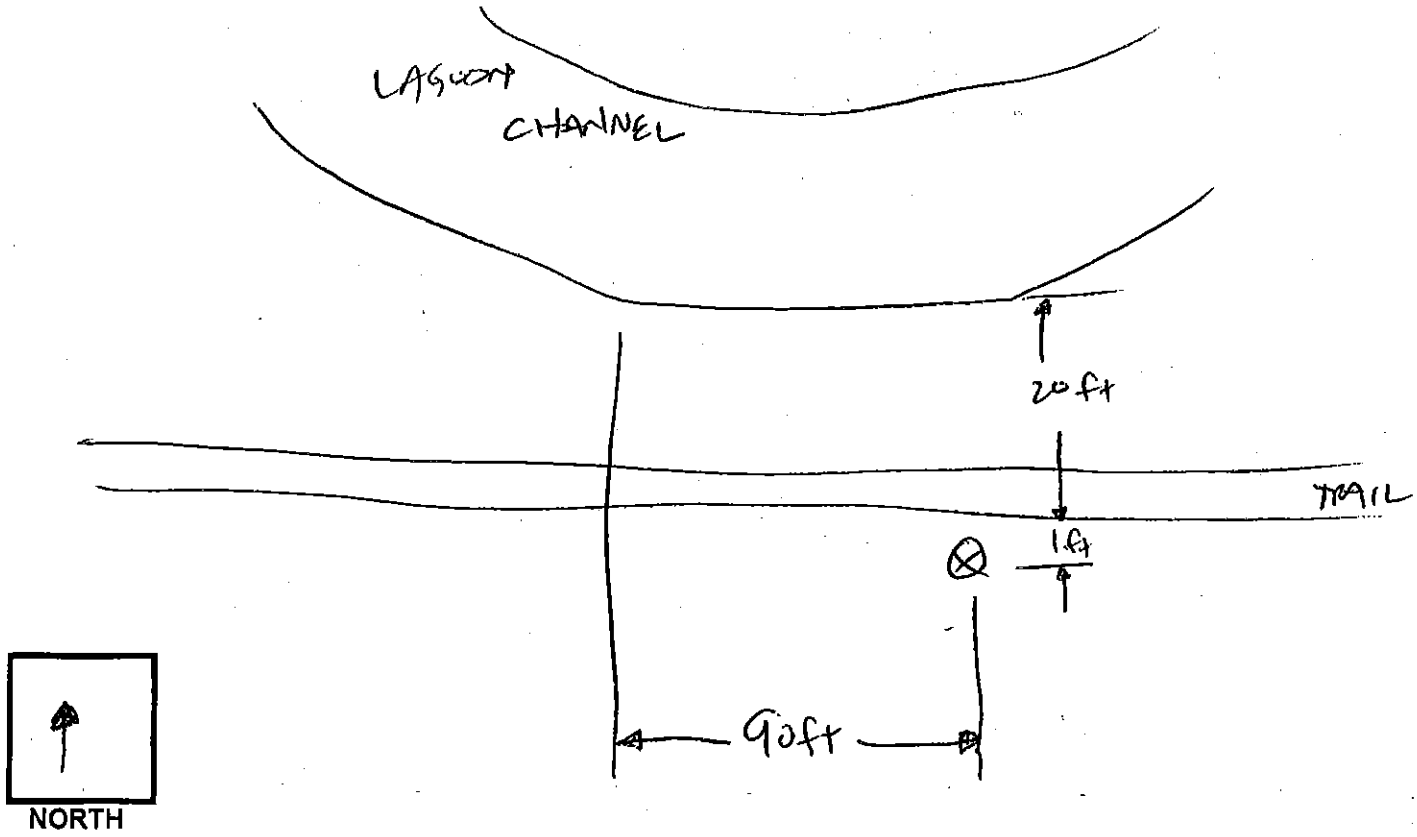
Temperature: 66°F Wind Speed: 1.3 mph

Wind Direction: NW Other (gusts, etc.): 4.6 mph

Meteorological Comments: SUNNY

Sketch Area

(Sketch must include a minimum of 2 (X and Y) distances from major physical objects, e.g. buildings, roadways, walls, etc.)



PROJECT: SELRP PROJECT #: 60209588.

DATE: 11/21/12 ENGINEER/ANALYST: PELLOS

Receptor ID: ST-6 SLM Model: 820 (SN: 1665) Calibrator Model: 200 (SN: 6203) Data File: ____

MEASUREMENT INFORMATION

Start Time: 14:42 Stop Time: 15:02

Principal Source(s): TRAFFIC ON I-5

Other Source(s): WIND IN VEGETATION, BIRD VOCALIZATION

Average Observed Noise Level: 53 dBA

Maximum L_{eq} Observed: 55dBA Source(s): TRUCK ON I-5

Minimum L_{eq} Observed: 51

Comments: 55dBA JOGGER ON TRAIL 14:55

56dBA TRAFFIC ON I-5

~~MEASU~~

TRAFFIC COUNT DATA

Start Time: _____ Stop Time: _____

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks
NOT VISIBLE		

Direction: _____ Speed: _____

Autos	Med. Trucks	Heavy Trucks

APPENDIX M

GEOTECHNICAL DATA REPORT

DATA REPORT

GEOTECHNICAL DATA REPORT
SAN ELIJO LAGOON
RESTORATION PROJECT

Prepared for

Chris Webb
Moffatt & Nichol
3780 Kilroy Airport Way
Long Beach, CA 90806

URS Project No. 27661119.10000
Revised June 13, 2012

David L. Schug, P.G., C.E.G., C.Hg.
Principal Geologist

Derek Rector, P.G.
Project Geologist

URS

4225 Executive Square, Suite 1600
La Jolla, CA 92037
858.812.9292 Fax: 858.812.9293

TABLE OF CONTENTS

Section 1 Introduction 1-1

Section 2 Field Explorations 2-1

2.1 Locations and Access 2-1
2.2 Sampling Sequence 2-1
2.3 Sample collection and preservation 2-2

Section 3 Grain Size Tests 3-1

Section 4 Analytical Tests 4-1

Section 5 Subsurface Conditions 5-1

5.1 Geologic Setting 5-1
5.2 Sediment Descriptions 5-1

Figures

Figure 1 Site Plan and Exploration Locations

Photographs

Photograph 1 Drilling, Logging, and Sample Collection
Photograph 2 Soil Sampler and Decontamination Setup

Appendices

Appendix A Summary Table of Explorations and Boring Logs
Appendix B Grain Size Tests
Appendix C Analytical Tests

SECTION 1 INTRODUCTION

URS Corporation (URS) is pleased to provide this report in support of the San Elijo Lagoon Restoration Project (SELRP). The goal of the SELRP is to protect, restore, and maintain by way of adaptive management the San Elijo Lagoon ecosystem and adjacent uplands. Accomplishing these goals will help perpetuate native flora and fauna, characteristic of southern California, as well helping to maintain estuarine and brackish marsh hydrology. The Project area is shown on Figure 1.

Construction of the SELRP could result in up to approximately one million cubic yards of surplus material. Re-use of this material in beneficial methods are being considered. In order to help determine the best method of re-use of the material to be removed, URS is performed a number of subsurface explorations at the lagoon from the Fall of 2011 through the Spring of 2012. The samples collected were used to provide grain size data and chemical analysis of the subsurface materials. This information is to assist Moffatt & Nichol in the evaluation of potential export materials generated from the construction of the SELRP.

SECTION 2 FIELD EXPLORATIONS

Between November 8, 2011 and December 17, 2011 URS performed exploratory sampling in the San Elijo Lagoon Nature Reserve. All access, drilling, and sampling were coordinated with environmental monitors from the San Elijo Lagoon Conservancy. A supplemental phase of explorations was performed between February 8, 2011 and February 10, 2011. Locations of the sampling points are shown on Figure 1.

Drilling was primarily performed by hollow stem or solid stem methods using a hand carried tripod drill rig. Where possible some locations were drilled using an all-terrain drill to collect samples. Samples were also collected by hand-driving a 3.5 inch sampler or an SPT sampler into the subsurface. Samples were collected from depths ranging between the surface to 31.5 feet below the ground surface (bgs).

Sample collection was performed in samplers that were cleaned in an environmental (Alconox) bath, and rinsed once with clean water, and a second time with de-ionized water. This cleaning process was done in the field between each sample collection.

A total of 55 subsurface explorations were performed. A geologic log of each sample location was recorded by a geologist in the field. The logs contain the location name, GPS coordinate, location, method of drilling or sampling, total depth drilled or sampled, and geologic descriptions of the materials encountered. Logs of the borings are presented in Appendix A; Table A-1 provides a summary of the explorations.

2.1 LOCATIONS AND ACCESS

Proposed locations of the exploratory borings were determined by Moffatt & Nichol and are shown in their Soil Analysis Plan (SAP) dated August 2, 2011. These locations were selected based on gaps in previous data and in locations where the deepest cuts were proposed. Locations were adjusted in the field as necessary based on input from environmental monitors in the field to avoid protected or sensitive species, the relative firmness of the surface, and access constraints of the drilling equipment.

Most of the explorations were approached by foot and the drilling and sampling equipment was carried by hand. In cases where crossing a channel was necessary, a small flat bottom boat was used to transport the equipment from one bank to another. Those explorations that were accessible by more conventional methods (i.e. a tracked rig, or all-terrain rig) were drilled by those means.

2.2 SAMPLING SEQUENCE

The sampling sequence of the explorations was determined by accessibility, and holding time constraints for analytical testing, tides, and weather. Once a sample was collected, analysis for chemical constituents was required to begin within 7 days. As outlined in the SAP, composite samples were to be created from discreet samples from proximal exploratory locations. In order to send composite samples to the analytical lab all sample locations within a composite need to be completed within the 7 day holding time period. The sequence of sampling was therefore modified daily to accommodate all the constraints and variables of access.

2.3 SAMPLE COLLECTION AND PRESERVATION

Discreet samples were collected from each exploration at various depths in order to characterize the soil stratigraphy of the subsurface. All samples were saved in sealed and labeled plastic baggies. The sealed sample baggies were then stored on ice in coolers until they were used to create composite samples for analytical and grain size testing.

SECTION 3 GRAIN SIZE TESTS

All discreet samples representing all the samples collected from explorations were sent to the URS geotechnical laboratory for grain size testing. Composites reflecting those used for chemical analysis were created in the URS laboratory and tested. In general there were two stratigraphic layers encountered in the field, and the composites were created to separate the upper layer from the lower layer.

All composite samples were sieve tested consistent with American Society for Testing and Materials (ASTM) D 422-63. Gradation curves were generated from the grain size tests and are presented in Appendix B.

SECTION 4 ANALYTICAL TESTS

Composite samples were created from portions of the discreet samples collected in the explorations. Any remaining portions of the discreet samples were delivered to the URS soils laboratory for holding and grain size testing. As outlined in the SAP, each composite sample was created by mixing the various samples in a clean pan until a consistent color and texture was achieved. This homogenized sample was then placed in glass jars, labeled, and re-placed on ice in a cooler.

A courier from the analytical laboratory (CalScience Laboratories of Long Beach California), would pick up the composited samples the same day they were created and deliver them to the laboratory for analysis. Chain-of-Custody (COC) procedures were followed for all exchanges of sample from the field geologist and the courier.

All composited samples delivered to CalScience Laboratories were analyzed for metals, non-metals, pesticides, and organics per USACE Inland Testing Manual (ITM) guidelines, as outlined in the SAP. The results of these analyses are presented in Appendix C.

SECTION 5 SUBSURFACE CONDITIONS

5.1 GEOLOGIC SETTING

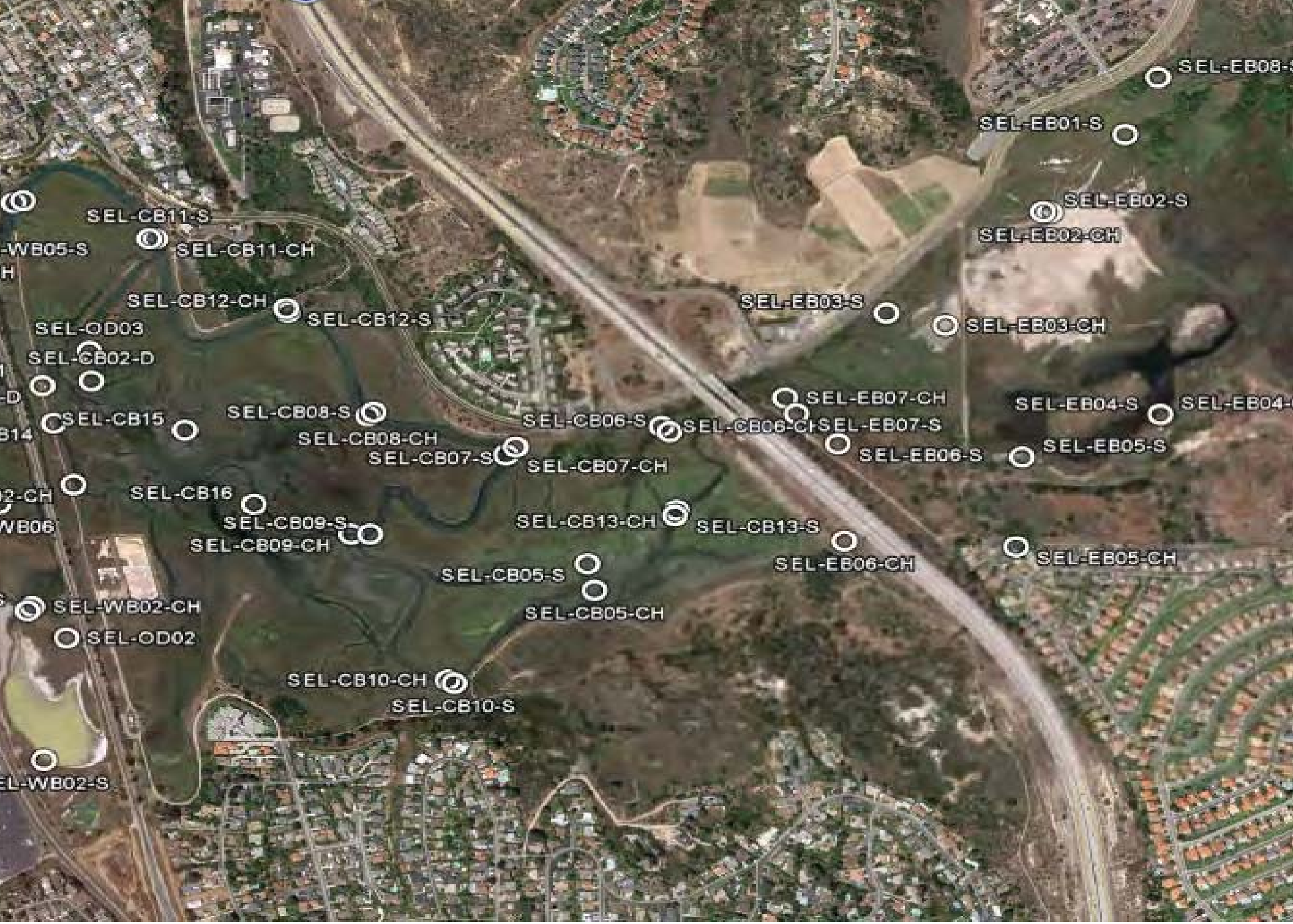
About 20,000 years ago, sea level was much lower than present day sea level, allowing rivers and creeks in the North San Diego County area to cut their channels (incise) downward and extend offshore. The rivers backfilled their channels as sea level rose (transgressed) during the Holocene (past 10,000 years). San Elijo Lagoon is within the backfilled former channel of Encina Creek. The lagoonal sediments within the modern estuary/lagoon were deposited within a shallow intertidal setting with some alluvial deposition during floods or other periods of high runoff from the surrounding valleys.

5.2 SEDIMENT DESCRIPTIONS

All of the borings penetrated lagoonal deposits with the deepest borings reaching a total depth of about 31.5 feet bgs. The lagoonal deposits in the borings show two distinct sedimentary layers 1) a relatively thin clay/silt layer extending from the ground surface to average depths of about 2 feet bgs, and 2) silty sand to poorly graded sand to the maximum depth of the borings. A few borings (e.g., SEL-OD02 and SEL-WB07) penetrated fill soils up to about 3 feet thick consisting mostly of silty sand with cobbles.

The soft to very soft, brown to olive-brown silty clay to clayey silt layer extended to depths typically ranging between about 1 and 3 feet bgs. Soils of this layer were mostly classified as CH and ML type soils, according to the USCS. The clay/silt layer was thicker in several borings, including SEL-CB07-S (about 6 feet bgs) and SEL-EB02-S (about 9 feet bgs). The silty clay/clayey silt layer was mostly laterally continuous between the borings, thickening in the east basin to up to about 9 feet thick, and thinning significantly or pinching out in parts of the West Basin.

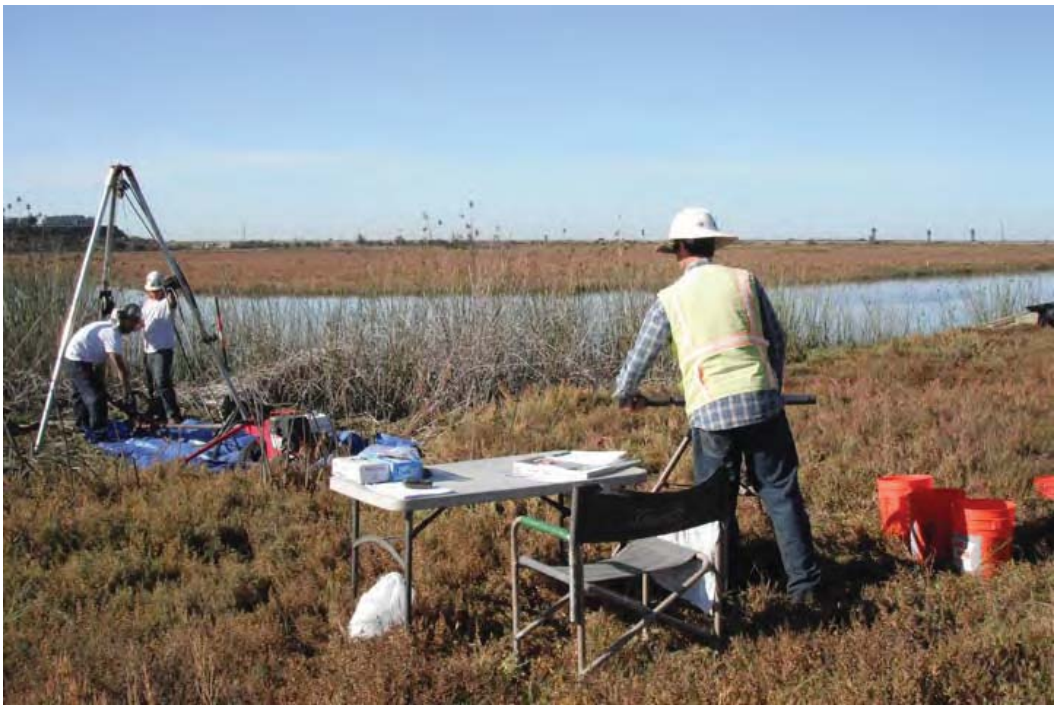
Below the clay/silt layer, loose to medium dense, grey to dark grey silty sand to poorly graded sand was encountered to depths up to about 31.5 feet bgs. The sandy deposits were mostly classified as SM, SM-SP, SP and type soils. The sand was predominately fine-grained with a small percentage of medium-grained sand. Shell fragments were frequently observed in the borings. Sparse pebbles and gravels were encountered in the borings nearest the shoreline. None of the borings encountered refusal on gravels or other hard materials.



Reference - Google Earth Professional 2011.

Locations of
Sa

Photograph 1 Drilling, Logging, and Sample Collection



Photograph 2 Soil Sampler and Decon Setup

Table A-1
Summary Of Explorations

Boring/Sample Location ID	Boring Location (Decimal Degrees, WGS84)	Hole Depth (feet)	Method of Drilling/Collection
SEL-CB01-D	33.01152, 117.27428	21.5	Hollow Stem Auger
SEL-CB02-D	33.01045, 117.27601	15.0	Hollow Stem Auger
SEL-CB03-D	33.01036, 117.27692	26.5	Hollow Stem Auger
SEL-CB04-CH	33.01381, 117.27745	1.5	Hand Driven
SEL-CB04-S	33.01385, 117.27728	13.5	Hollow Stem Auger
SEL-CB05-CH	33.00650, 117.26669	1.5	Hand Driven
SEL-CB05-S	33.00700, 117.26682	13.5	Hollow Stem Auger
SEL-CB06-CH	33.00959, 117.26545	1.5	Hand Driven
SEL-CB06-S	33.00949, 117.26530	9.5	Hollow Stem Auger
SEL-CB07-CH	33.00905, 117.26833	1.5	Hand Driven
SEL-CB07-S	33.00920, 117.26815	9.5	Hollow Stem Auger
SEL-CB08-CH	33.00979, 117.27089	1.5	Hand Driven
SEL-CB08-S	33.00986, 117.27078	9.5	Hollow Stem Auger
SEL-CB09-CH	33.00756, 117.27120	1.5	Hand Driven
SEL-CB09-S	33.00756, 117.27085	13.5	Hollow Stem Auger
SEL-CB10-CH	33.00479, 117.26941	1.5	Hand Driven
SEL-CB10-S	33.00473, 117.26929	9.5	Hollow Stem Auger
SEL-CB11-CH	33.01313, 117.27483	1.5	Hand Driven
SEL-CB11-S	33.01313, 117.27494	13.5	Hollow Stem Auger
SEL-CB12-CH	33.01175, 117.27237	1.5	Hand Driven
SEL-CB12-S	33.01182, 117.27240	9.5	Hollow Stem Auger
SEL-CB13-CH	33.00801, 117.26517	1.5	Hand Driven
SEL-CB13-S	33.00791, 117.26520	9.5	Hollow Stem Auger
SEL-CB14	33.00965, 117.27671	30.0	Solid Stem Auger
SEL-CB15	33.00952, 117.27428	30.0	Solid Stem Auger
SEL-CB16	33.00812, 117.27300	30.0	Solid Stem Auger
SEL-EB01-S	33.01510, 117.25686	13.5	Hollow Stem Auger
SEL-EB02-CH	33.01363, 117.25826	1.5	Hand Driven
SEL-EB02-S	33.01364, 117.25838	13.5	Hollow Stem Auger
SEL-EB03-CH	33.01150, 117.26019	1.5	Hand Driven
SEL-EB03-S	33.01173, 117.26128	13.5	Hollow Stem Auger
SEL-EB04-CH	33.00982, 117.25621	1.5	Hand Driven
SEL-EB04-S	33.00980, 117.25619	13.5	Hollow Stem Auger
SEL-EB05-CH	33.00732, 117.25888	1.5	Hand Driven
SEL-EB05-S	33.00901, 117.25877	13.5	Hollow Stem Auger
SEL-EB06-CH	33.00743, 117.26206	1.5	Hand Driven
SEL-EB06-S	33.00926, 117.26218	13.5	Hollow Stem Auger
SEL-EB07-CH	33.01013, 117.26316	1.5	Hand Driven
SEL-EB07-S	33.00983, 117.26295	13.5	Hollow Stem Auger
SEL-EB08-S	33.01618, 117.25625	13.5	Hollow Stem Auger
SEL-OD01	33.01021, 117.27858	9.0	Hollow Stem Auger
SEL-OD-01A	33.01023, 117.27864	21.5	Hollow Stem Auger
SEL-OD01-CH	33.10126, 117.27849	1.5	Hand Driven
SEL-OD02	33.00560, 117.27647	21.5	Hollow Stem Auger
SEL-OD02-CH	33.00849, 117.27634	1.5	Hand Driven

Table A-1

Summary Of Explorations

Boring/Sample Location ID	Boring Location (Decimal Degrees, WGS84)	Hole Depth (feet)	Method of Drilling/Collection
SEL-OD03	33.01101, 117.27605	18.0	Hollow Stem Auger
SEL-WB01-D-CH	33.00862, 117.27841	1.5	Hand Driven
SEL-WB02-CH	33.00619, 117.27711	1.5	Hand Driven
SEL-WB02-S	33.00328, 117.27689	13.5	Hollow Stem Auger
SEL-WB03-S	33.00611, 117.27719	13.5	Hollow Stem Auger
SEL-WB04-S	33.01171, 117.27875	13.5	Hollow Stem Auger
SEL-WB05-CH	33.01293, 117.27879	1.5	Hand Driven
SEL-WB05-S	33.01293, 117.27888	12.0	Hollow Stem Auger
SEL-WB06	33.00813, 117.27773	28.0	Solid Stem Auger
SEL-WB07	33.00943, 117.27860	31.5	Mud Rotary

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Key to Logs

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number. Unnumbered sample indicates no sample recovery.

5 **Blows per foot:** Number of blows required to advance driven sampler 12 inches beyond first 6-inch interval, or distance noted, using a 140-lb hammer with a 30-inch drop.

6 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

7 **Material Description:** Description of material encountered; may include relative density/consistency, moisture, color, particle size; texture, weathering, and strength of formation material.

8 **Water Content:** Water content of soil sample measured in laboratory, expressed as percentage of dry weight of specimen.

9 **Dry Unit Weight:** Dry density of soil sample measured in laboratory, in pounds per cubic foot.

10 **Remarks and Other Tests:** Comments and observations regarding drilling or sampling made by driller or field personnel.

SA	Sieve Analysis, %<#200 sieve
WA	Wash Analysis, %<#200 sieve
LL	Liquid Limit, from Atterberg limits test, %
PI	Plasticity Index (LL-PL), %
DS	Direct Shear test
EI	Expansion Index
CORR	Corrosivity test suite

TYPICAL MATERIAL GRAPHIC SYMBOLS

Silty SAND (SM)

Poorly graded SAND with silt (SP-SM)

Clayey SAND to sandy fat CLAY (SC/CH)

Silty SAND to clayey SAND (SM-SC)

Fat CLAY (CH)

TYPICAL SAMPLER GRAPHIC SYMBOLS

ModCal Piston Sampler

Standard Penetration sampler

OTHER GRAPHIC SYMBOLS

First water encountered at time of drilling and sampling (ATD)

Water level measured at specified time after completion of drilling and sampling

Minor change in material properties within a stratum

Inferred or gradational contact between strata

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.
3. GPS coordinates are in decimal degrees (Datum - WGS84).

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB01-D

Date(s) Drilled	**12/05/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**21.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**170 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01152, 117.27428**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very loose, wet, dark gray to gray, silty SAND (SM), fine to medium grained			
		1	Push					
2					With some clay			
					Becomes loose, fine grained			
		2	11					
4								
6								
		3	17					
8								
10					Medium dense, wet, gray, poorly graded SAND with silt (SP-SM), medium grained			
12								
14								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB01-D

Sheet 2 of 2

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	16		4	16					
	18								
	20		5	10					
	22					Bottom of boring at 21.5 feet			
	24								
	26								
	28								
	30								
	32								

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB02-D

Sheet 1 of 1

Date(s) Drilled	**12/06/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**15.0 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01045, 117.27601**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, olive gray, fat CLAY (CH)			
2		1	Push					
					Very loose, wet, light gray, silty SAND (SM), fine grained			
4		2	4		With trace fine mica			
		3	6					
6					Medium dense, wet, gray, poorly graded SAND with silt (SP-SM), medium grained, with trace fine mica			
8		4	12					
		5	25					
10								
		6	15					
12								
14					Bottom of boring at 15 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB02-D

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB03-D

Date(s) Drilled	**12/17/11**	Logged By	**K. Shaner**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**26.5 feet**
Drill Rig Type	**MARL M5**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01036, 117.27692**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Loose, very moist, yellowish brown, silty SAND (SM), fine grained			
		1	6					
2					Very soft, wet, gray, fine sandy CLAY (CL), ?? odor, slight mica content			
		2	2					
4								
		3	5		Very loose, wet, gray, silty SAND (SM), fine grained, some clay, odorous, slight mica content			
6								
8		4	17		Becomes loose, no clay, slight odor			
10		5	10		No odor			
12								
14								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB03-D

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	16		6	16					
	18								
	20		7	14		Increase silt content			
	22								
	24								
	26		8	26		Becomes medium dense			
						Bottom of boring at 26.5 feet			
	28								
	30								
	32								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB04-CH

Sheet 1 of 1

Date(s) Drilled	**11/16/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.01381, 117.27745**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, light gray to gray, poorly graded SAND with silt (SP-SM) with some rounded cobbles			
		1						
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB04-CH

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB04-S

Sheet 1 of 1

Date(s) Drilled	**11/16/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01385, 117.27728**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, gray to dark gray, fat CLAY (CH)			
		1	2		Very loose, wet, light gray, silty SAND (SM), medium grained			
2								
		2	10		Medium dense, wet, gray, silty SAND (SM), fine to medium grained			
4		3	4					
6		4	13					
8		5	19					
10		6	12					
12		7	17					
					Bottom of boring at 13.5 feet			
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB04-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB05-CH

Sheet 1 of 1

Date(s) Drilled	**11/15/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00650, 117.26669**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Black organic matter (4"-6") over very soft, wet, gray, fat CLAY (CH)			
		1						
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB05-S

Sheet 1 of 1

Date(s) Drilled	**11/15/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00700, 117.26682**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, olive gray, fat CLAY (CH)			
2		1	1					
		2	3		Very loose, wet, olive brown, silty SAND (SM), fine grained			
4		3	6		Loose, wet, light brown, silty SAND (SM) with trace fine mica			
6		4	20		Medium dense, wet, gray to light gray, poorly graded SAND with silt (SP-SM), medium grained			
8		5	17					
10		6	10		Medium dense, wet, gray, silty SAND (SM), medium grained			
12		7	22					
14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB05-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB06-CH

Sheet 1 of 1

Date(s) Drilled	**11/14/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00959, 117.26545**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Black organic matter (6"-12") over very soft, wet, gray, fat CLAY (CH)			Channel is very deep in this area (>8')
		1						
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB06-S

Sheet 1 of 1

Date(s) Drilled	**11/09/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**9.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00949, 117.26530**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Soft, wet, dark brown, fat CLAY (CH)			
		1	2					
2					Very loose, wet, olive brown, silty SAND (SM), fine grained			
		2	2					
4								
		3	3		Decrease in silt			
6					Medium dense, wet, gray to light gray, poorly graded SAND with silt (SP-SM), fine to medium grained			
		4	11					
8								
		5	3					
10					Bottom of boring at 9.5 feet			
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB06-S

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB07-CH

Sheet 1 of 1

Date(s) Drilled	**11/11/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00905, 117.26833**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Black organic matter (~6") over very soft, wet, gray, fat CLAY (CH)			
		1						
2					Bottom of boring at 1.5 feet			
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB07-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB07-S

Sheet 1 of 1

Date(s) Drilled	**11/09/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**9.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00920, 117.26815**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, moist, dark brown, fat CLAY (CH)			
		1	Push					
2					Soft, moist, brown, sandy fat CLAY (CH)			
		2	2					
4					Increase in sand, becomes wet			
		3	5					
6					Loose, wet, gray to light gray, poorly graded SAND with silt (SP-SM), fine to medium grained			
		4	7					
8					Decrease in silt			
		5	7					
10					Bottom of boring at 9.5 feet			
12								
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB07-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB08-CH

Sheet 1 of 1

Date(s) Drilled	**11/11/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00979, 117.27089**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		1			LAGOONAL DEPOSITS Very soft, wet, gray to dark gray, fat CLAY (CH)			
						Bottom of boring at 1.5 feet			
	2								
	4								
	6								
	8								
	10								
	12								
	14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB08-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB08-S

Sheet 1 of 1

Date(s) Drilled	**11/11/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**9.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00986, 117.27078**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, dark gray, fat CLAY (CH)			
		1	Push					
2					Very loose, wet, gray, clayey to silty SAND (SC-SM)			
		2	Push					
4					Very loose, wet, gray, silty SAND (SM)			
		3	2					
6					Medium dense, wet, gray, poorly graded SAND with silt (SP-SM), fine grained			
		4	10					
8								
		5	16					
10					Bottom of boring at 9.5 feet			
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB08-S

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB09-CH

Sheet 1 of 1

Date(s) Drilled	**11/14/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00756, 117.27120**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1			LAGOONAL DEPOSITS Very soft, wet, dark gray to dark gray, fat CLAY (CH)			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB09-S

Sheet 1 of 1

Date(s) Drilled	**11/14/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00756, 117.27085**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, dark gray, fat CLAY (CH)			
		1	1					
2					Loose, wet, olive brown, silty SAND (SM), fine to medium grained with trace mica			
		2	4					
4					Becomes gray, fine grained			
		3	4					
6								
		4	5					
8					Medium dense, wet, gray to light gray, poorly graded SAND with silt (SP-SM), medium grained			
		5	17					
10								
		6	4					
12								
		7	12					
14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB09-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB10-CH

Sheet 1 of 1

Date(s) Drilled	**11/15/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00479, 117.26941**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		1			LAGOONAL DEPOSITS Black organic matter (~6") over very soft, wet, gray, fat CLAY (CH)			
						Bottom of boring at 1.5 feet			
	2								
	4								
	6								
	8								
	10								
	12								
	14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB10-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB10-S

Sheet 1 of 1

Date(s) Drilled	**11/11/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**9.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00473, 117.26929**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, moist, dark brown to dark gray, fat CLAY (CH)			
		1	Push					
2					Becomes moist to wet, gray, with sand			
		2	4		Very loose, wet, gray, silty SAND (SM) fine to medium grained, with clay			
4					Medium dense, wet, light gray, poorly graded SAND with silt (SP-SM) with trace shell fragments			
		3	10					
6								
		4	11					
8								
		5	13					
10					Bottom of boring at 9.5 feet			
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB10-S

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB11-CH

Sheet 1 of 1

Date(s) Drilled	**11/17/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.01313, 117.27483**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, gray, olive gray, clayey fine SAND to sandy fat CLAY (SC/CH)			
		1						
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB11-CH

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB11-S

Sheet 1 of 1

Date(s) Drilled	**11/17/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01313, 117.27494**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very loose, wet, olive brown to gray, silty SAND (SM), fine grained, with clay and trace fine mica			
		1	1					
2					Very soft, wet, gray, fat CLAY (CH) with trace fine sand and mica			
		2	2					
4		3	4					
					Medium dense, wet, gray to light gray, poorly graded SAND with silt (SP-SM), medium grained			
6		4	10					
8					Becomes loose			
		5	5					
10					Becomes medium dense with shell fragments			
		6	12					
12					Medium dense, wet, gray, silty SAND (SM), fine grained with trace fine mica			
		7	13					
14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB11-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB12-CH

Sheet 1 of 1

Date(s) Drilled	**11/11/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.01175, 117.27237**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		1			LAGOONAL DEPOSITS Very soft, wet, gray to dark gray, fat CLAY (CH)			
						Bottom of boring at 1.5 feet			
	2								
	4								
	6								
	8								
	10								
	12								
	14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB12-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB12-S

Sheet 1 of 1

Date(s) Drilled	**11/08/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**9.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01182, 117.27240**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, moist, dark brown, fat CLAY (CH)			
2		1	Push					
4		2	3		Very loose, wet, olive brown, silty SAND (SM)			
					Medium dense, wet, gray to light gray, poorly graded SAND with silt (SP-SM)			
6		3	27					
8		4	18					
10					Bottom of boring at 9.5 feet			
12								
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB12-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB13-CH

Sheet 1 of 1

Date(s) Drilled	**11/10/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00801, 117.26517**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, moist, gray to dark gray, fat CLAY (CH)			
		1						
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB13-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB13-S

Sheet 1 of 1

Date(s) Drilled	**11/10/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**9.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00791, 117.26520**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0					LAGOONAL DEPOSITS Very soft, moist to wet, dark brown to gray, fat CLAY (CH)			
			1	Push					
	2					Very loose, wet, gray, silty SAND (SM), fine grained, with clay			
			2	2					
	4					Medium dense, wet, light gray, poorly graded SAND with silt (SP-SM), fine grained, with some shell fragments			
			3	5					
	6								
			4	10					
	8								
			5	14					
	10					Bottom of boring at 9.5 feet			
	12								
	14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/15/2012 SEL-CB13-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB14

Sheet 1 of 1

Date(s) Drilled	**02/10/12**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Solid Stem Auger**	Drill Bit Size/Type	**3-inch OD**	Total Depth of Borehole	**30.0 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Grab**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00965, 117.27671**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		1		LAGOONAL DEPOSITS Very soft, wet, light gray, fat CLAY (CH) with little sand			
					Very loose, wet, gray, silty SAND (SM), fine grained, with trace clay			
	5		2					
			3					
	10				Becomes loose, gray to dark gray, medium grained			
	15		4		Increase in density			
	20				With trace shell fragments			
	25		5					
	30				Bottom of boring at 30 feet			
	35							

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/15/2012 SEL-CB14

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB15

Sheet 1 of 1

Date(s) Drilled	**02/08/12**	Logged By	**D. Schug**	Checked By	**D. Rector**
Drilling Method	**Solid Stem Auger**	Drill Bit Size/Type	**3-inch OD**	Total Depth of Borehole	**30.0 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Grab**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00952, 117.27428**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		1A			LAGOONAL DEPOSITS Soft, wet, brown, clayey SILT to silty fat CLAY (MH/CH)			
			5			Loose, wet, gray, fine sandy SILT to silty fine SAND (ML/SM)			
	5		6 7			Loose, wet, gray, silty fine SAND (SM)			
	10								
	15		1			Increase in density			
	20		2						
	25		3						
	30		4			Bottom of boring at 30 feet			
	35								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB15

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-CB16

Sheet 1 of 1

Date(s) Drilled	**02/09/12**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Solid Stem Auger**	Drill Bit Size/Type	**3-inch OD**	Total Depth of Borehole	**30.0 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Grab**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00812, 117.27300**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0					LAGOONAL DEPOSITS Very soft, wet, olive brown, fat CLAY (CH) with trace sand			
			1						
			2			Very loose to very soft, wet, light gray to gray, clayey SAND to sandy CLAY (SC/CH), fine grained			
	5					Loose, wet, gray, poorly graded SAND with silt (SP-SM), fine grained			
			3						
	10								
	15		4			Becomes medium dense, fine to medium grained			
	20								
	25		5						
	30					Bottom of boring at 30 feet			
	35								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-CB16

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB01-S

Sheet 1 of 1

Date(s) Drilled	**12/05/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**170 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01510, 117.25686**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, moist, brown, fat CLAY (CH)			
		1	3					
2					Wit trace sand			
		2	4					
4		3	Push					
6		4	2					
8					Becomes olive brown			
		5	Push					
					Medium dense, wet, gray, silty SAND (SM), fine grained			
10		6	25					
12					With trace shell fragments			
		7	21					
					Bottom of boring at 13.5 feet			
14								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB02-CH

Sheet 1 of 1

Date(s) Drilled	**11/29/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.01363, 117.25826**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Very soft, wet, brown to dark gray, clayey fine SAND to sandy fat CLAY (SC/CH)			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB02-S

Sheet 1 of 1

Date(s) Drilled	**11/29/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01364, 117.25838**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0					LAGOONAL DEPOSITS Loose, moist, yellowish brown, silty SAND (SM) with little clay			
			1	7					
	2					Soft, most, olive brown to gray, fat CLAY (CH)			
			2	2					
	4					Becomes very soft, olive brown			
			3	Push					
	6								
			4	Pus					
	8								
			5	Push					
						Medium dense, wet, gray, poorly graded SAND with silt (SP-SM), fine grained			
	10								
			6	14					
	12								
			7	12					
	14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB02-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB03-CH

Sheet 1 of 1

Date(s) Drilled	**12/01/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.01150, 117.26019**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Very soft, moist to wet, brown, fat CLAY (CH)			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB03-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB03-S

Sheet 1 of 1

Date(s) Drilled	**12/01/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01173, 117.26128**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Soft, most, brown, fat CLAY (CH)			
		1	2					
2					Becomes very soft			
		2	Push					
4		3	Push					
6					Medium dense, wet, olive brown, silty SAND (SM), medium grained with trace fine mica, shell fragments			
		4	10					
8					Becomes very loose			
		5	1					
10					Loose, wet, gray, poorly graded SAND with silt (SP-SM), medium grained with few shell fragments, trace fine mica			
		6	6					
12								
		7	22					
14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB03-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB04-CH

Sheet 1 of 1

Date(s) Drilled	**12/02/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00982, 117.25621**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Very soft, wet, dark gray, fat CLAY (CH)			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB04-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB04-S

Sheet 1 of 1

Date(s) Drilled	**12/02/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00980, 117.25619**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Soft, wet, olive brown, sandy fat CLAY (CH)			
2		1	2					
4		2	3		Soft, wet, olive brown to brown, SILT (ML)			
6		3	4					
8		4	3		Very loose, wet, olive brown, silty SAND (SM), fine grained			
10		5	2		Loose, wet, gray, poorly graded SAND with silt (SP-SM), medium grained, with few shell fragments			
12		6	5					
14		7	9		Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB04-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB05-CH

Sheet 1 of 1

Date(s) Drilled	**12/02/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00732, 117.25888**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Soft, wet, dark gray, fat CLAY (CH)			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB05-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB05-S

Sheet 1 of 1

Date(s) Drilled	**12/02/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00901, 117.25877**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					COLLUVIUM/ALLUVIUM Loose, moist, yellowish brown, clayey SAND (SC), coarse grained			
		1	4		Soft, moist, gray, sandy fat CLAY (CH)			
2		2	2					
4		3	3		Soft, moist, olive brown, SILT (ML)			
6		4	3		Very loose, wet, olive brown, silty SAND (SM) with trace fine mica			
8		5	12					
10		6	16		Medium dense, wet, gray, poorly graded SAND with silt (SP-SM), with few shell fragments			
12		7	13					
14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB05-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB06-CH

Sheet 1 of 1

Date(s) Drilled	**12/01/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00743, 117.26206**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Very soft, wet, gray, fat CLAY (CH)			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB06-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB06-S

Sheet 1 of 1

Date(s) Drilled	**12/01/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00926, 117.26218**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, olive brown, sandy fat CLAY (CH)			
					Very loose, wet, light gray, clayey SAND (SC), coarse grained			
		1	1					
2					Very soft, wet, gray to olive brown, fat CLAY (CH)			
		2	2					
4					Very loose, wet, olive brown, silty SAND (SM), medium grained, with trace fine mica			
		3	Push					
6					Becomes loose, fine grained			
		4	7					
8					Becomes medium dense, gray			
		5	17					
10								
		6	5					
12								
		7	15					
14					Bottom fo boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB06-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB07-CH

Sheet 1 of 1

Date(s) Drilled	**12/01/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.01013, 117.26316**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Very soft, wet, olive brown, fat CLAY (CH)			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB07-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB07-S

Sheet 1 of 1

Date(s) Drilled	**12/01/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00983, 117.26295**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					ALLUVIUM Very loose, moist, light brown, clayey SAND (SC), coarse grained			
		1	2		LAGOONAL DEPOSITS Soft, moist, gray, fat CLAY (CH) with trace sand			
2					Becomes olive brown			
		2	3					
4					Becomes very soft, wet			
		3	Push					
6					Very loose, wet, olive brown, silty SAND (SM), fine grained, with trace fine mica			
		4	3					
8					Medium dense, wet, gray, poorly graded SAND with silt (SP-SM), medium grained			
		5	14					
10					Becomes loose			
		6	8					
12					Loose, wet, gray, silty SAND (SM), fine to medium grained			
		7	8					
14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB07-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-EB08-S

Sheet 1 of 1

Date(s) Drilled	**11/29/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01618, 117.25625**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Soft, moist, brown, fat CLAY (CH)			
		1	5		Loose, wet, light yellowish brown, clayey SAND (SC)			
2					Soft, moist, olive brown, fat CLAY (CH)			
		2	2					
4					Becomes very soft, sandy fat clay			
		3	1					
6								
		4	1					
8								
		5	2					
10					Medium dense, wet, gray, silty SAND (SM), fine grained with trace fine mica			
		6	18					
12					Becomes loose			
		7	5					
14					Bottom of boring at 13.5 feet			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-EB08-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD02

Sheet 1 of 1

Date(s) Drilled	**12/07/11**	Logged By	**K. Shaner**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**9.0 feet**
Drill Rig Type	**MARL M5**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01021, 117.27858**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very loose, moist, silty SAND (SM), fine to very fine grained			
2								
		1	4					
4								
					Strong odor, trace clay			
		2	7					
6								
		3	18					
8								
					Bottom of boring at 9 feet			
10								
12								
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-OD01

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD-01A

Date(s) Drilled	**12/07/11**	Logged By	**K. Shaner**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**21.5 feet**
Drill Rig Type	**MARL M5**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01023, 117.27864**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Loose, wet, gray, clayey fine SAND (SC), odorous			
2								
4								
6		1	2					
8								
10		2	17		Medium dense, wet, gray, silty SAND (SM), fine grained, micaceous			
12								
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-OD-01A

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD-01A

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	16		3	27					
	18					Becomes light gray			
	20		4	16					
	22					Bottom of boring at 21.5 feet			
	24								
	26								
	28								
	30								
	32								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD01-CH

Sheet 1 of 1

Date(s) Drilled	**12/07/11**	Logged By	**K. Shaner**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.10126, 117.27849**		

Elevation, feet / Depth, feet	SAMPLES Type / Number	SAMPLES Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0				LAGOONAL DEPOSITS Very soft, wet, gray, fat CLAY (CL), odorous			
				Bottom of boring at 1.5 feet			
2							
4							
6							
8							
10							
12							
14							

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD02

Date(s) Drilled	**12/07/11**	Logged By	**K. Shaner**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**21.5 feet**
Drill Rig Type	**MARL M5**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00560, 117.27647**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0					FILL Moist, yellowish brown, silty sand with cobble			
	2								
			1	5		LAGOONAL DEPOSITS (??) Very loose, moist, brown, silty SAND (SM), fine to medium grained			
	4								
			2	16		Becomes loose to medium nese, gray, slightly micaceous, trace shells			
	6								
			3	18					
	8								
	10					Becomes very loose			
			4	5					
	12								
	14								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD02

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	16		5	20		Becomes loose to medium dense			
	18								
	20		6	22					
						Bottom of boring at 21.5 feet			
	22								
	24								
	26								
	28								
	30								
	32								

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD02-CH

Sheet 1 of 1

Date(s) Drilled	**12/07/11**	Logged By	**K. Shaner**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00849, 117.27634**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS 8" of lagoonal clay over loose, wet, brownish gray, silty SAND (SM), fine to medium grained			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-OD02-CH

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD03

Sheet 1 of 2

Date(s) Drilled	**12/06/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**18.0 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01101, 117.27605**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS VEry loose, wet, gray, clayey, silty SAND (SC-SM)			
		1	Push					
2					Medium dense, wet gray, silty SAND (SM), fine grained, with trace fine mica			
		2	13					
4		3	12					
6					Becomes very loose, olive brown			
		4	2					
8					Medium dense, moist, gray, poorly graded SAND with silt (SP-SM), medium grained, with trace fine mica			
		5	12					
10								
12		6	3					
14					Medium dense, wet, olive brown, silty SAND (SM) with few clay			

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-OD03

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-OD03

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	16		7	25					
			8	38		Dense, moist, gray, poorly graded SAND with silt (SP-SM), medium grained, with trace fine mica			
	18					Bottom of boring at 18 feet			
	20								
	22								
	24								
	26								
	28								
	30								
	32								

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB01-D-CH

Sheet 1 of 1

Date(s) Drilled	**12/07/11**	Logged By	**K. Shaner**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Push SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00862, 117.27841**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Very soft, wet, gray, fat CLAY (CH), odorous			
2					Bottom of boring at 1.5 feet			
4								
6								
8								
10								
12								
14								

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB02-CH

Sheet 1 of 1

Date(s) Drilled	**11/18/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Push**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.00619, 117.27711**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0		1	Push		LAGOONAL DEPOSITS Very soft, wet, gray, fat CLAY (CH) with few sand			
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-WB02-CH

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB02-S

Sheet 1 of 1

Date(s) Drilled	**11/18/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00328, 117.27689**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Loose, moist, gray, poorly graded SAND with silt (SP-SM) with few rounded, flat cobbles			
		1	8		Becomes medium dense			
2		2	11					
4		3	13		Becomes gray to light gray			
6		4	18					
8		5	13					
10		6	9					
12		7	14					
14					Bottom of boring at 13.5 feet			

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-WB02-S

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB03-S

Sheet 1 of 1

Date(s) Drilled	**11/21/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00611, 117.27719**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very loose, wet, brownish gray, silty SAND (SM)			
		1	4					
2					Medium dense, wet, gray to dark gray, poorly graded SAND with silt (SP-SM), medium grained sand			
		2	12					
4		3	3					
6		4	10					
8		5	14					
10		6	50					
12		7	45					
					Bottom of boring at 13.5 feet			
14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-WB03-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB04-S

Sheet 1 of 1

Date(s) Drilled	**11/21/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**13.5 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01171, 117.27875**		

Elevation, feet / Depth, feet	SAMPLES Type	Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Very soft, wet, dark gray, fat CLAY (CH) with few sands			
		1	Push		Very loose, wet, dark gray, silty SAND to clayey SAND (SM-SC), medium grained			
2		2	2					
4		3	2		Very loose, wet, gray to dark gray, silty SAND (SM), fine grained with trace fine mica			
6		4	12		Medium dense, wet, gray, poorly graded SAND with silt (SP-SM), medium grained			
8		5	23					
10		6	18		← Decrease in sand size			
12		7	15					
14					Bottom of boring at 13.5 feet			

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-WB04-S

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB05-CH

Sheet 1 of 1

Date(s) Drilled	**11/17/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hand driven**	Drill Bit Size/Type	**NA**	Total Depth of Borehole	**1.5 feet**
Drill Rig Type	**NA**	Drilling Contractor	**NA**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**ModCal Piston Sampler**	Hammer Data	**NA**
Borehole Completion	**Soil cuttings**	Location	**33.01293, 117.27879**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0					LAGOONAL DEPOSITS Loose, wet, olive gray, silty SAND (SM), fine to medium grained			
		1						
					Bottom of boring at 1.5 feet			
2								
4								
6								
8								
10								
12								
14								

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB05-S

Sheet 1 of 1

Date(s) Drilled	**11/17/11**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Hollow Stem Auger**	Drill Bit Size/Type	**6.5-inch OD**	Total Depth of Borehole	**12.0 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.01293, 117.27888**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0					LAGOONAL DEPOSITS 6" clayey sand over soft, wet, olive brown to gray, fat CLAY (CH) with fine sand			
			1	4					
	2					Very dense, wet, olive brown, silty SAND (SM), fine grained			
			2	4					
	4					Medium dense, wet, gray to light gray, poorly graded SAND with silt (SP-SM), medium grained			
			3	13					
	6								
			4	16					
	8								
			5	14					
	10					Becomes light gray, coarse grained, with shell fragments			
			6	16					
	12					Bottom of boring at 12 feet			
	14								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-WB05-S

URS

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB06

Sheet 1 of 1

Date(s) Drilled	**02/09/12**	Logged By	**D. Rector**	Checked By	**D. Rector**
Drilling Method	**Solid Stem SUger**	Drill Bit Size/Type	**3-inch OD**	Total Depth of Borehole	**28.0 feet**
Drill Rig Type	**Tripod**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth		Sampling Method(s)	**Grab**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00813, 117.27773**		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		1			LAGOONAL DEPOSITS Very soft, wet, olive brown, fat CLAY (CH)			
						Very loose, wet, gray, silty SAND (SM), fine grained with little clay			
			2						
	5								
			3						
	10								
						Loose, wet, gray, silty sand (SM), fine grained			
			4						
	15								
						Increase in density			
	20		5						
	25		6						
						Bottom of boring at 28 feet			
	30								
	35								

URS

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-WB06

Project: San Elijo Lagoon Restoration
Project Location: Encinitas, CA
Project Number: 27661119.10000

Log of Boring SEL-WB07

Sheet 1 of 1

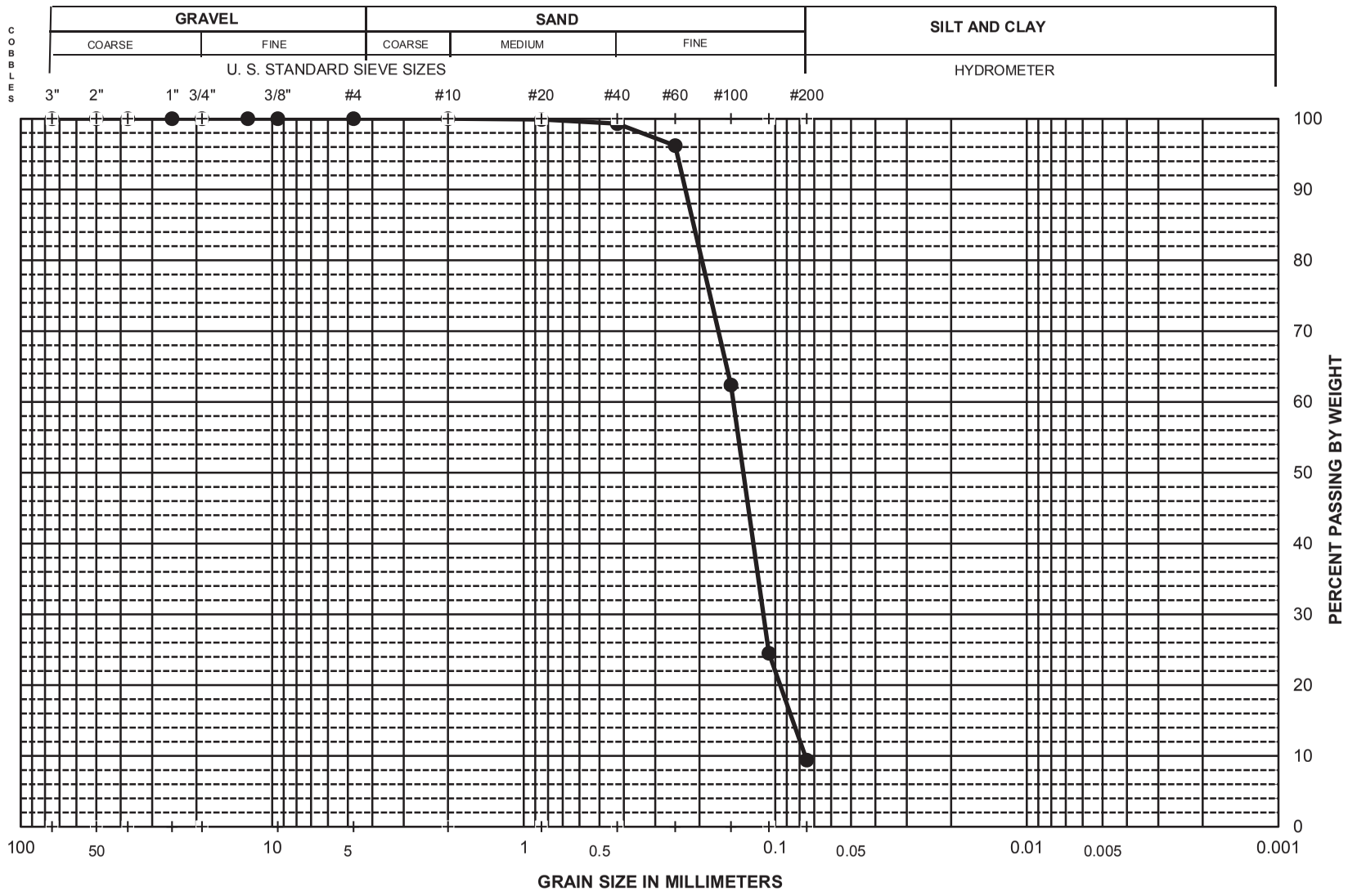
Date(s) Drilled	**02/08/12**	Logged By	**D. Schug**	Checked By	**D. Rector**
Drilling Method	**Mud Rotary**	Drill Bit Size/Type	**3.5-inch drag bit**	Total Depth of Borehole	**31.5 feet**
Drill Rig Type	**Mini Mole Track Rig**	Drilling Contractor	**Pacific Drilling**	Approximate Surface Elevation	
Water Level Depth	**±1-foot bgs (tidal)**	Sampling Method(s)	**Grab/SPT**	Hammer Data	**140 lbs/30" drop**
Borehole Completion	**Soil cuttings**	Location	**33.00943, 117.27860**		

Elevation, feet / Depth, feet	SAMPLES Type	SAMPLES Number	Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
0								
	X	1			FILL Wet, dark gray, silty sand with organics ▽			
					LAGOONAL DEPOSITS Loose, wet, dark gray, silty fine SAND (SM) with organics			
5		2	9					
					Gravels			
10		3	20		Medium dense, wet, gray, silty SAND (SM), very fine grained, with pebbles and shell fragments			
					Gravels			
15		4	18					
20		5	57		Becomes very dense			
					Dense, wet, gray, poorly graded SAND with silt (SP-SM)			
25		6	46					
					Dense, wet, dark gray, silty fine SAND (SM)			
30		7	37					
					Bottom of boring at 31.5 feet			
35								

Report: GEO_10_SNA; File: 27661119.GPJ; 2/14/2012 SEL-WB07

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.3
#60	0.250	96.2
#100	0.150	62.4
#140	0.106	24.5
#200	0.075	9.4
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	90.6
% Fines	9.4

D_{85}	0.211
D_{60}	0.147
D_{50}	0.134
D_{30}	0.111
D_{15}	0.085
D_{10}	0.076
C_u	1.9
C_c	1.1

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB01-D	Fines	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

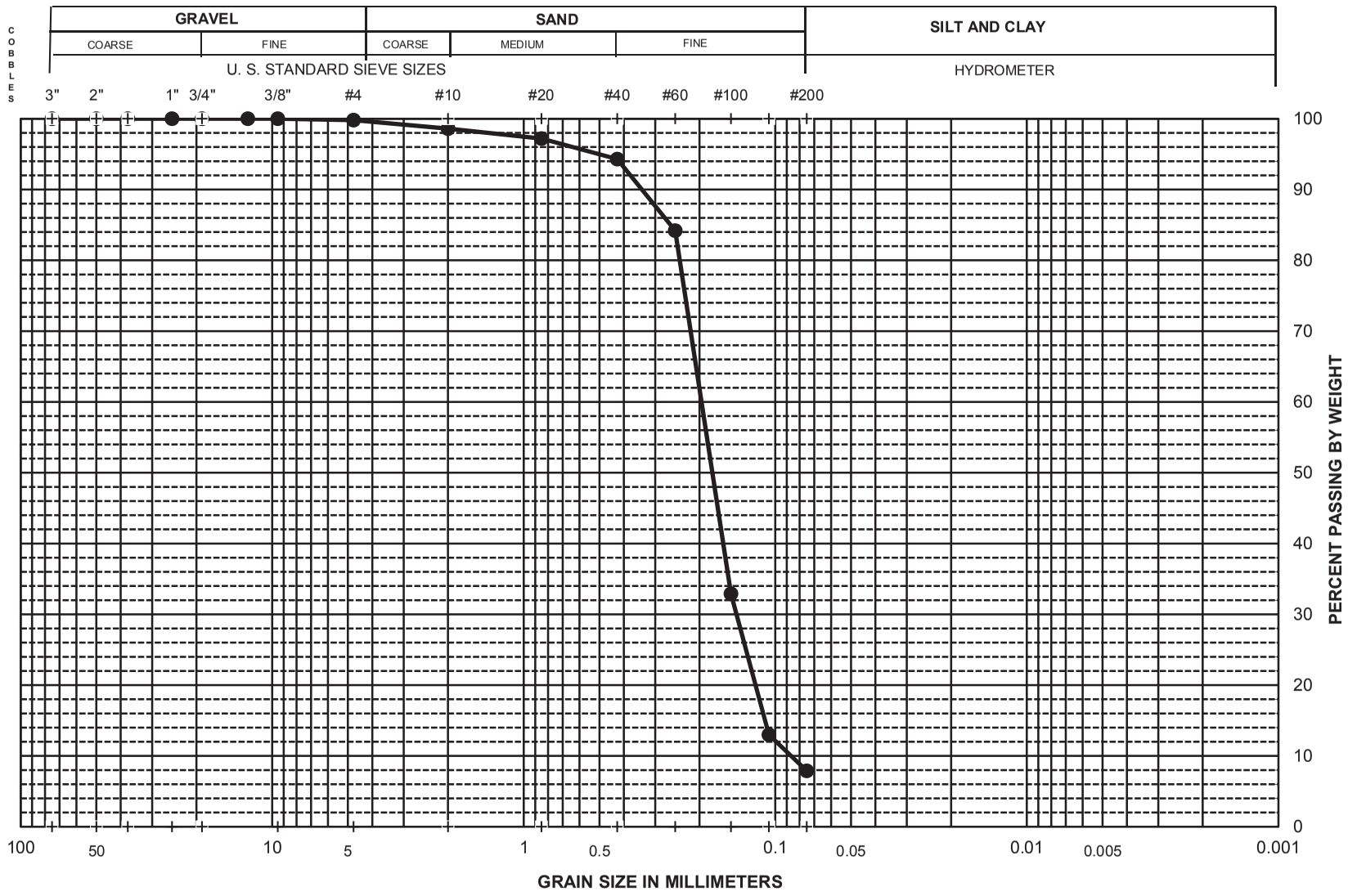
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB01-D Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.8
#10	2.00	98.6
#20	0.850	97.2
#40	0.425	94.3
#60	0.250	84.2
#100	0.150	32.9
#140	0.106	13.0
#200	0.075	7.9
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.2
% Sand	91.9
% Fines	7.9

D_{85}	0.261
D_{60}	0.196
D_{50}	0.178
D_{30}	0.143
D_{15}	0.110
D_{10}	0.086
C_u	2.3
C_c	1.2

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB01-D	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

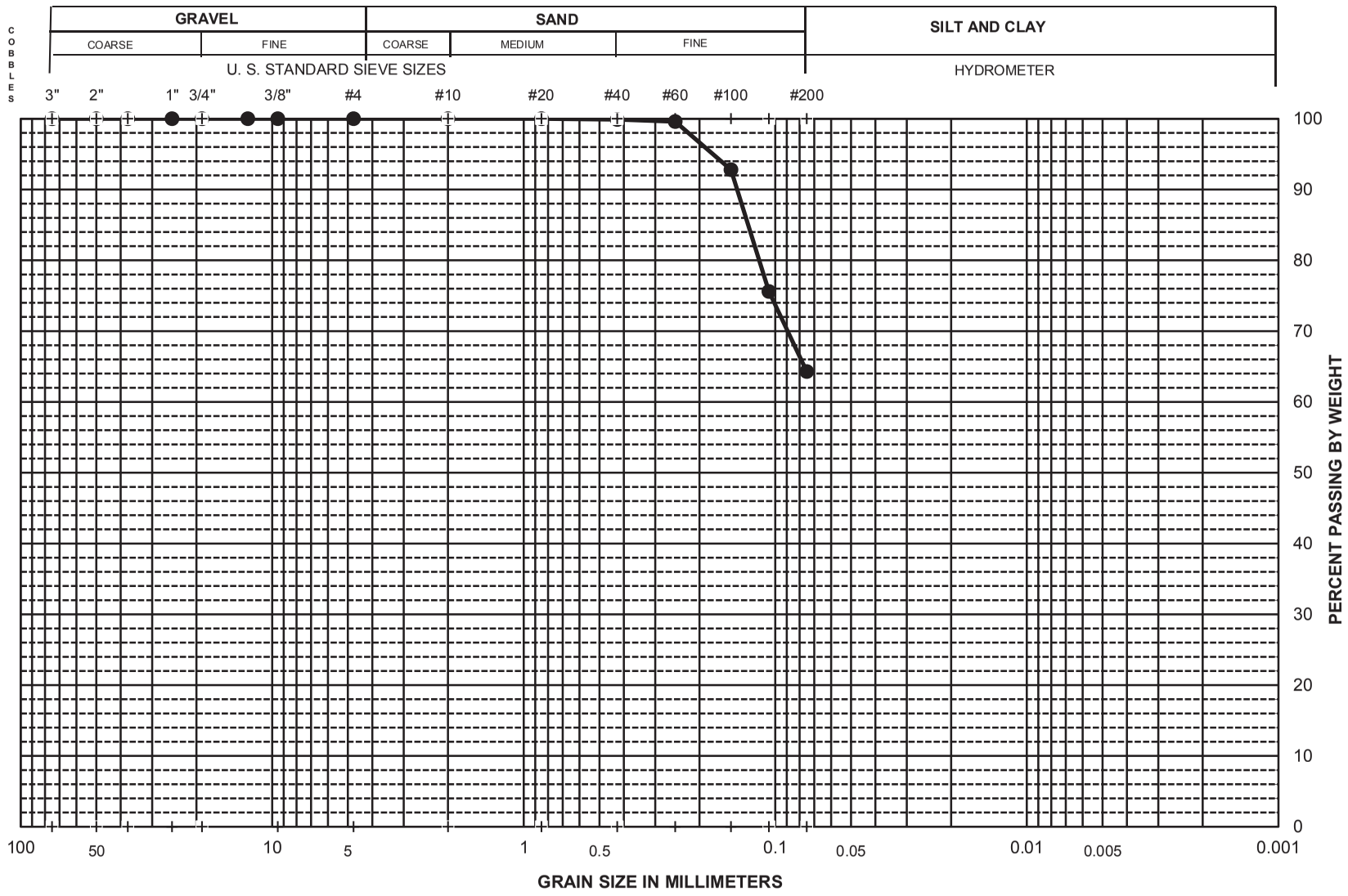
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB01-D Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	100.0
#40	0.425	99.9
#60	0.250	99.6
#100	0.150	92.8
#140	0.106	75.6
#200	0.075	64.3
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	35.7
% Fines	64.3

D_{85}	0.128
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB02-D	Fines	NA	●	NA	NA	NA	NA	**Gray sandy Clay (CH)**

PROJECT NAME: **San Elijo Lagoon**

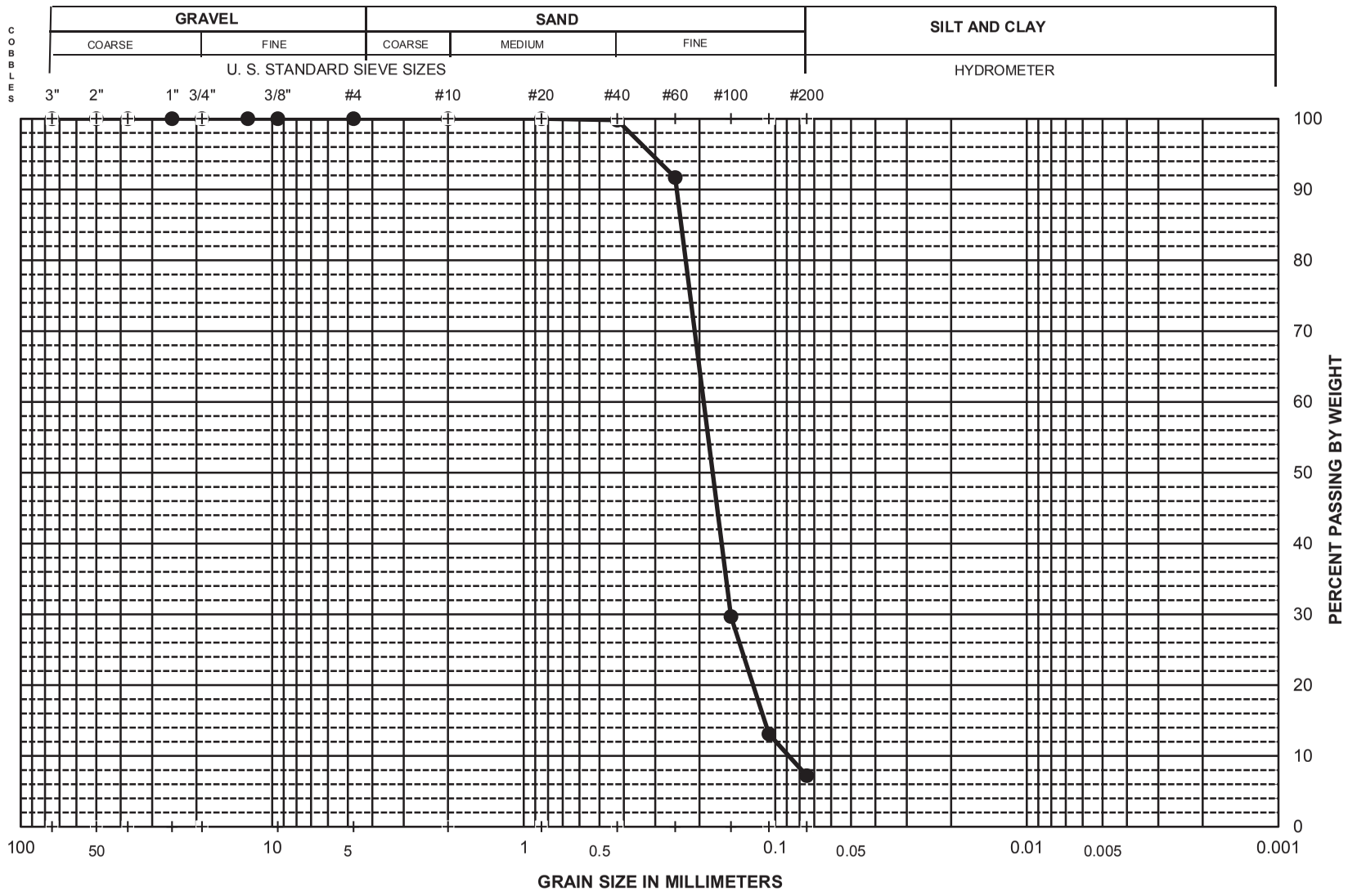
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB02-D Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	100.0
#40	0.425	99.8
#60	0.250	91.7
#100	0.150	29.7
#140	0.106	13.1
#200	0.075	7.2

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.0
% Sand	92.8
% Fines	7.2

D_{85}	0.237
D_{60}	0.193
D_{50}	0.177
D_{30}	0.150
D_{15}	0.110
D_{10}	0.088
C_u	2.2
C_c	1.3

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB02-D	Sands	NA	●	NA	NA	NA	NA	**Gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

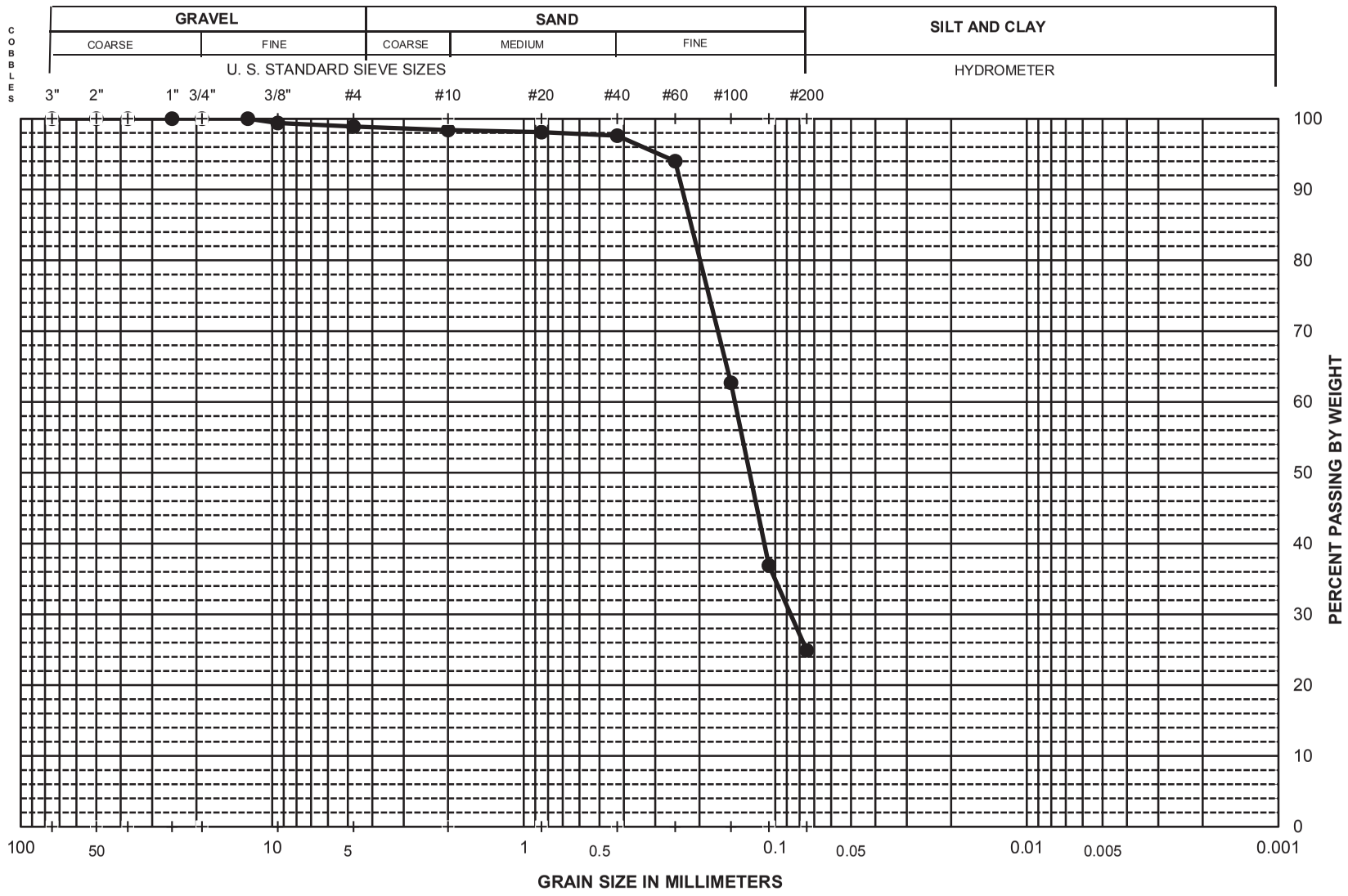
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB02-D Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	99.4
#4	4.75	98.9
#10	2.00	98.4
#20	0.850	98.1
#40	0.425	97.6
#60	0.250	94.0
#100	0.150	62.7
#140	0.106	36.9
#200	0.075	24.9
Hydrometer Analysis		

% Cobbles	XX
% Gravel	1.1
% Sand	74.0
% Fines	24.9

D_{85}	0.216
D_{60}	0.145
D_{50}	0.126
D_{30}	0.087
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB03-D	Fines	NA	●	NA	NA	NA	NA	**Gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

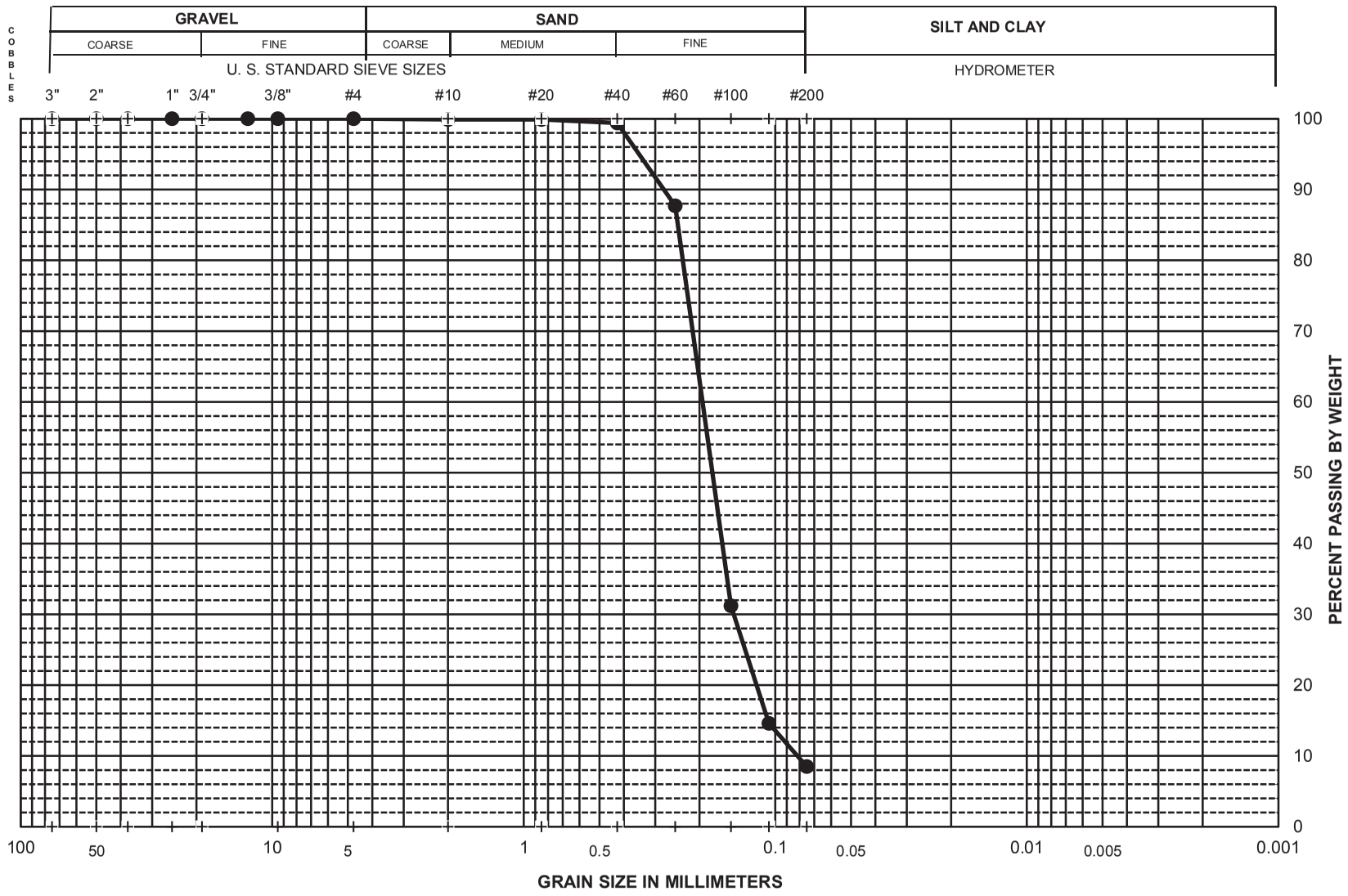
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB03-D Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.9
#40	0.425	99.4
#60	0.250	87.7
#100	0.150	31.2
#140	0.106	14.6
#200	0.075	8.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	91.5
% Fines	8.5

D_{85}	0.244
D_{60}	0.195
D_{50}	0.178
D_{30}	0.146
D_{15}	0.107
D_{10}	0.082
C_u	2.4
C_c	1.3

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB03-D	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

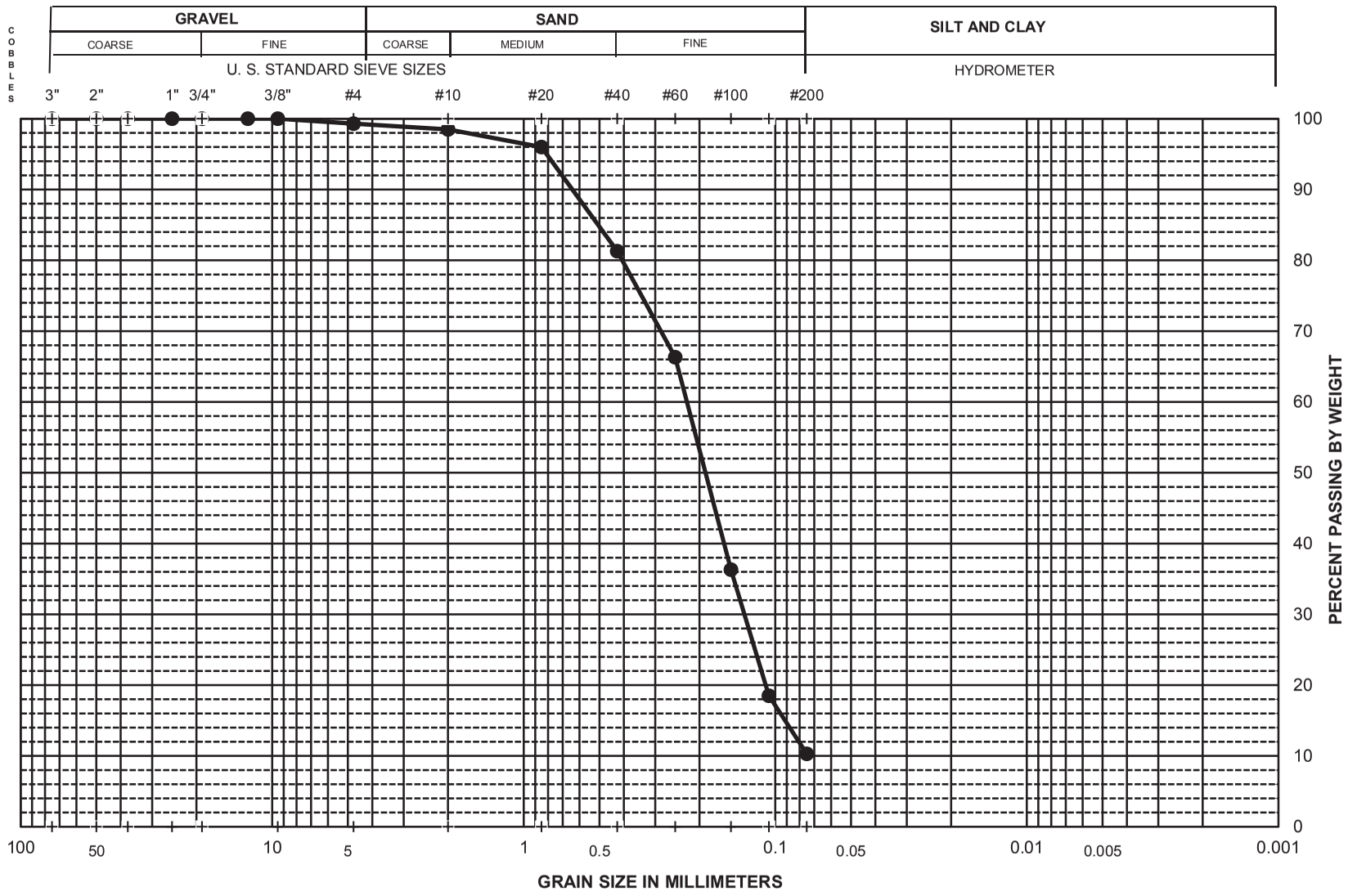
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB03-D sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.3
#10	2.00	98.5
#20	0.850	96.0
#40	0.425	81.3
#60	0.250	66.3
#100	0.150	36.3
#140	0.106	18.5
#200	0.075	10.3
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.7
% Sand	89.0
% Fines	10.3

D_{85}	0.506
D_{60}	0.225
D_{50}	0.189
D_{30}	0.133
D_{15}	0.091
D_{10}	0.075
C_u	3.0
C_c	1.0

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB04	Fines	NA	●	NA	NA	NA	NA	**Very dark gary poorly graded Sand with clay (SP-SC)**

PROJECT NAME: **San Elijo Lagoon**

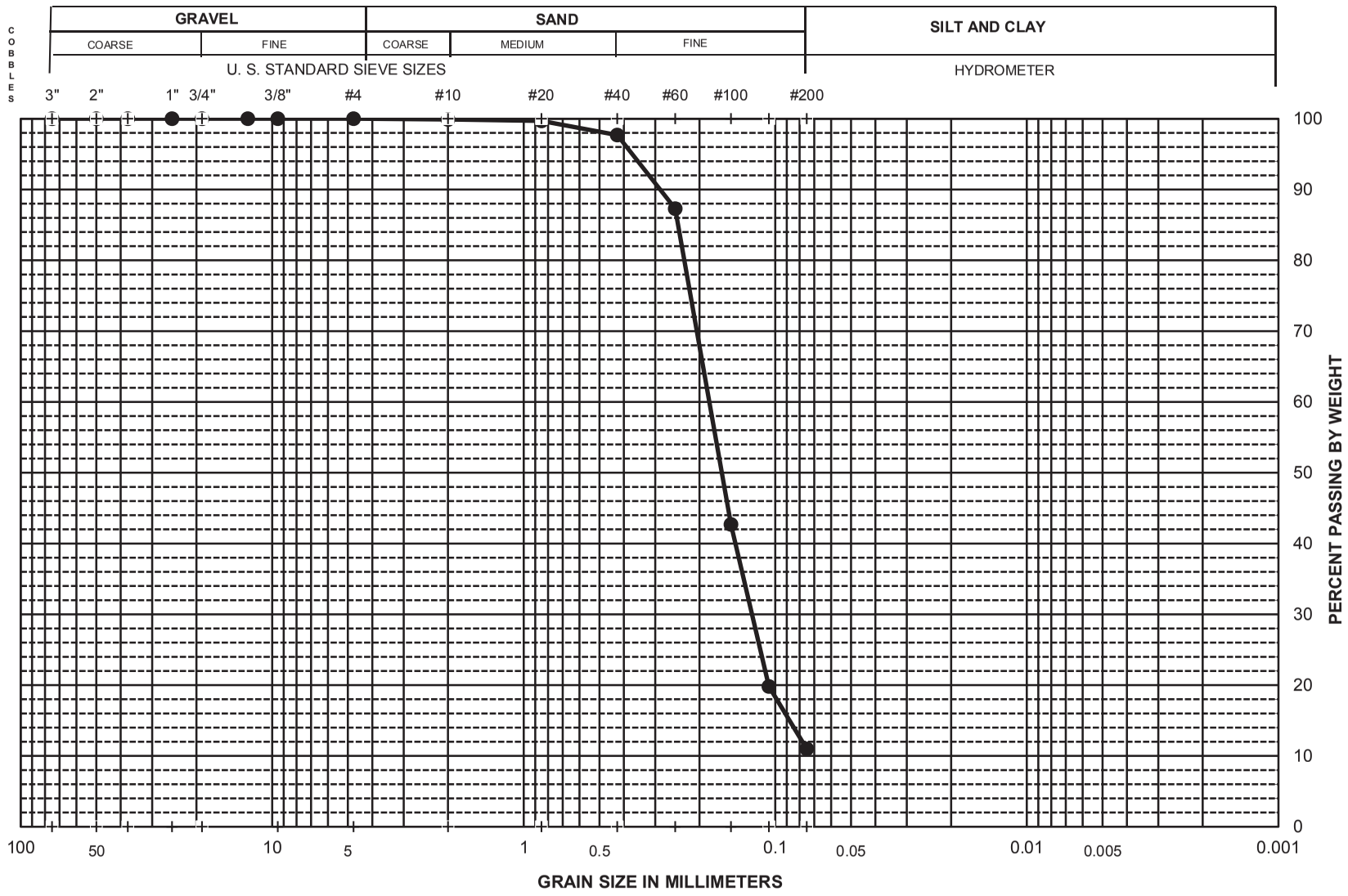
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB04 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.7
#40	0.425	97.7
#60	0.250	87.3
#100	0.150	42.7
#140	0.106	19.8
#200	0.075	11.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	89.0
% Fines	11.0

D_{85}	0.244
D_{60}	0.183
D_{50}	0.163
D_{30}	0.124
D_{15}	0.088
D_{10}	0.075
C_u	2.4
C_c	1.1

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB04	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

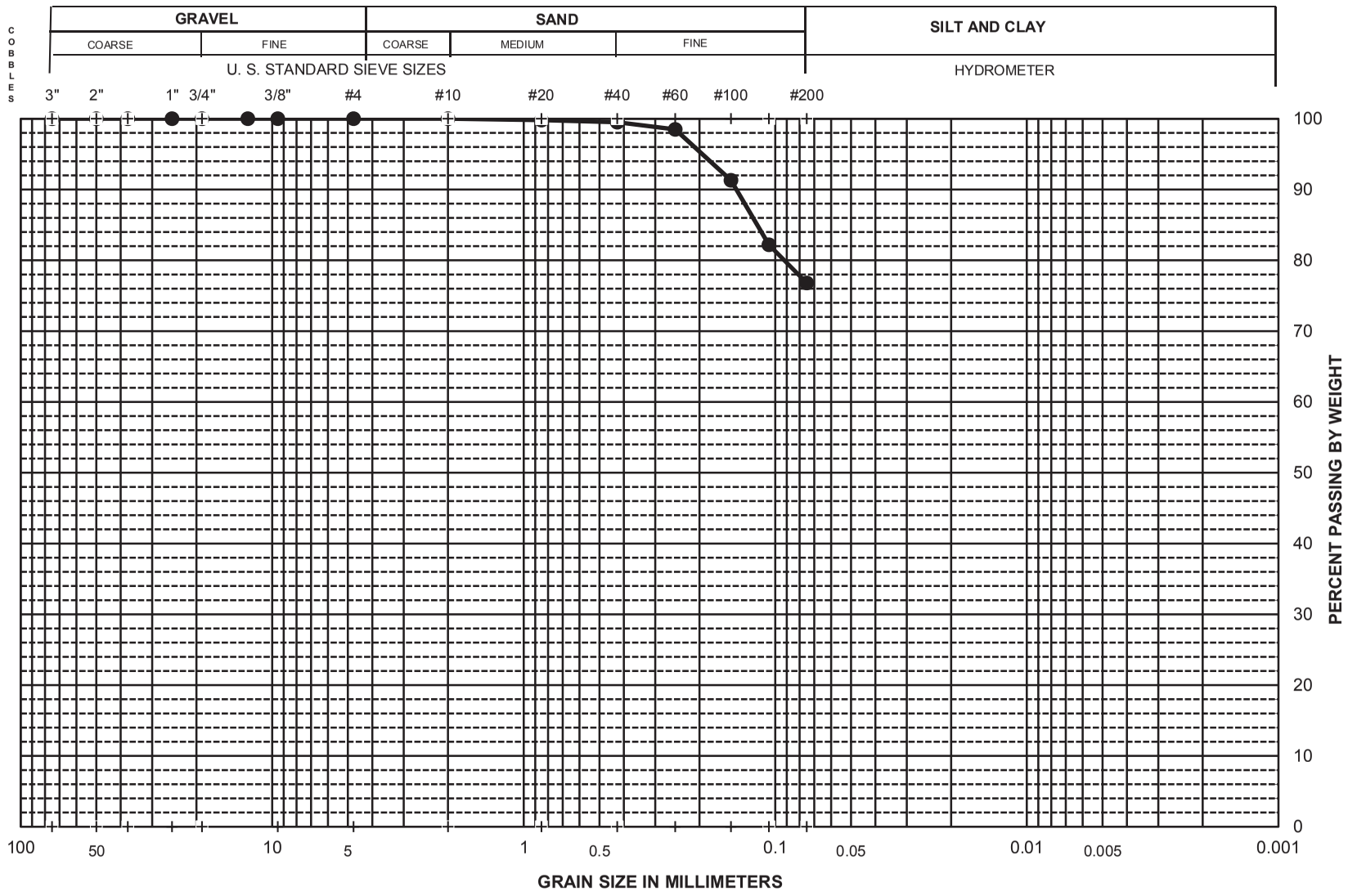
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	99.5
#60	0.250	98.5
#100	0.150	91.3
#140	0.106	82.2
#200	0.075	76.8
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	23.2
% Fines	76.8

D_{85}	0.118
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB05	Fines	NA	●	NA	NA	NA	NA	**Gray Clay with sand (CL)**

PROJECT NAME: **San Elijo Lagoon**

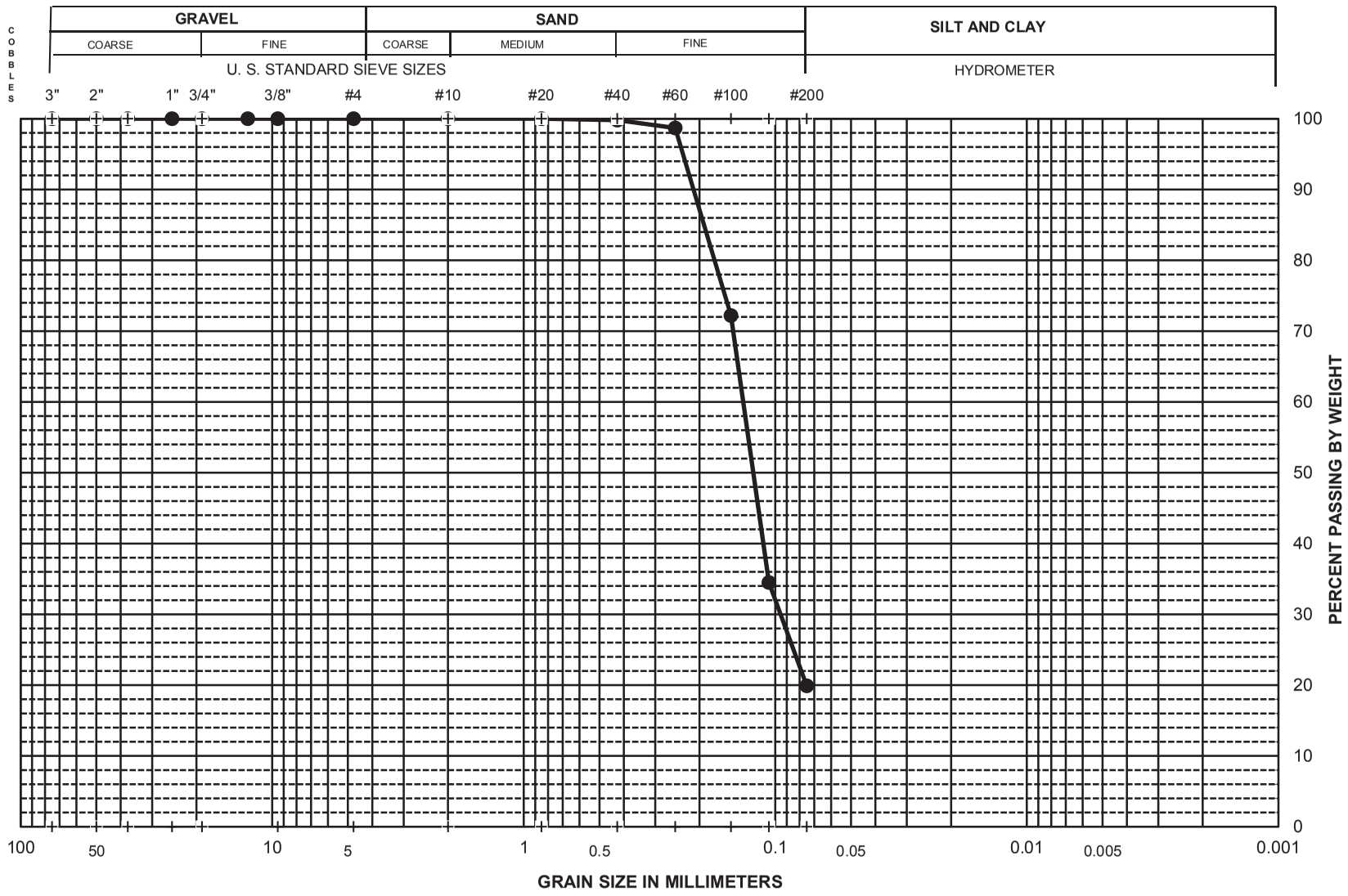
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB05 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	100.0
#40	0.425	99.8
#60	0.250	98.7
#100	0.150	72.2
#140	0.106	34.5
#200	0.075	19.9
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	80.1
% Fines	19.9

D_{85}	0.192
D_{60}	0.134
D_{50}	0.122
D_{30}	0.095
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB05	Sands	NA	●	NA	NA	NA	NA	**Gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

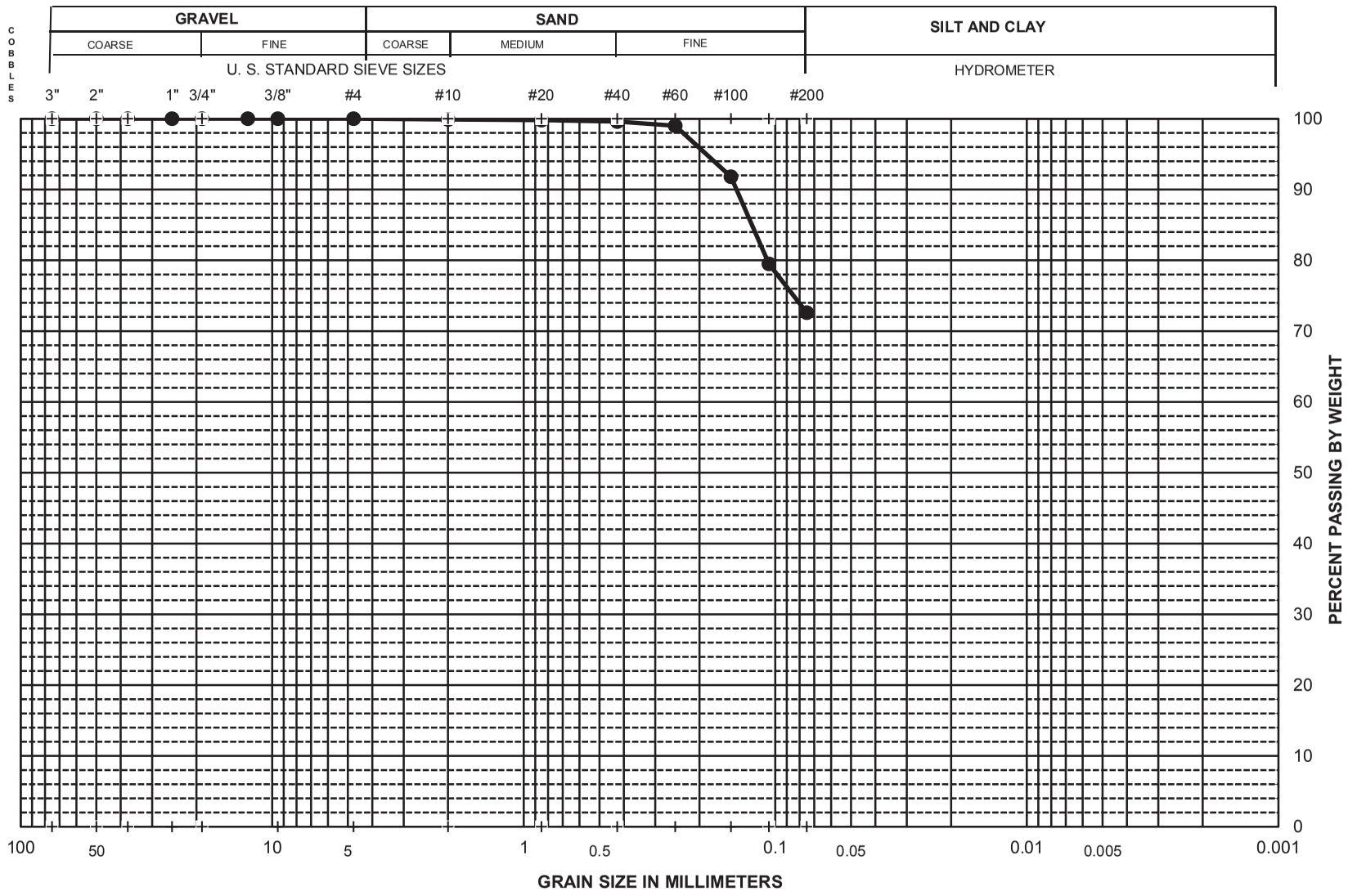
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB05 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.8
#40	0.425	99.6
#60	0.250	99.0
#100	0.150	91.8
#140	0.106	79.5
#200	0.075	72.6
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	27.4
% Fines	72.6

D_{85}	0.124
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB06	Fines	NA	●	NA	NA	NA	NA	**Olive gray Clay with sand (CH)**

PROJECT NAME: **San Elijo Lagoon**

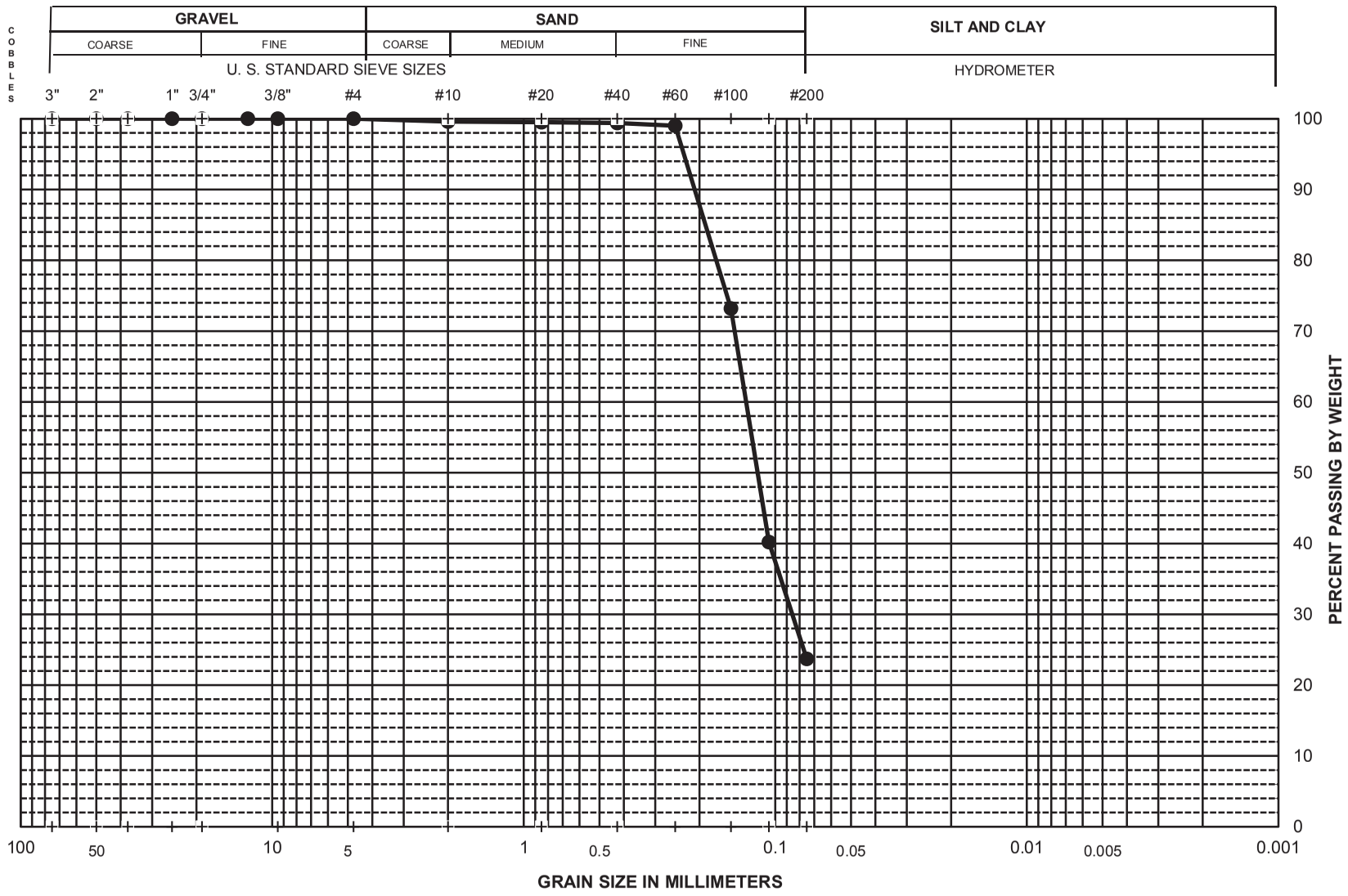
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB06 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.6
#20	0.850	99.5
#40	0.425	99.4
#60	0.250	99.0
#100	0.150	73.2
#140	0.106	40.2
#200	0.075	23.7
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	76.3
% Fines	23.7

D_{85}	0.189
D_{60}	0.131
D_{50}	0.118
D_{30}	0.086
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB06	Sands	NA	●	NA	NA	NA	NA	**Olive gray clayey Sand (SC)**

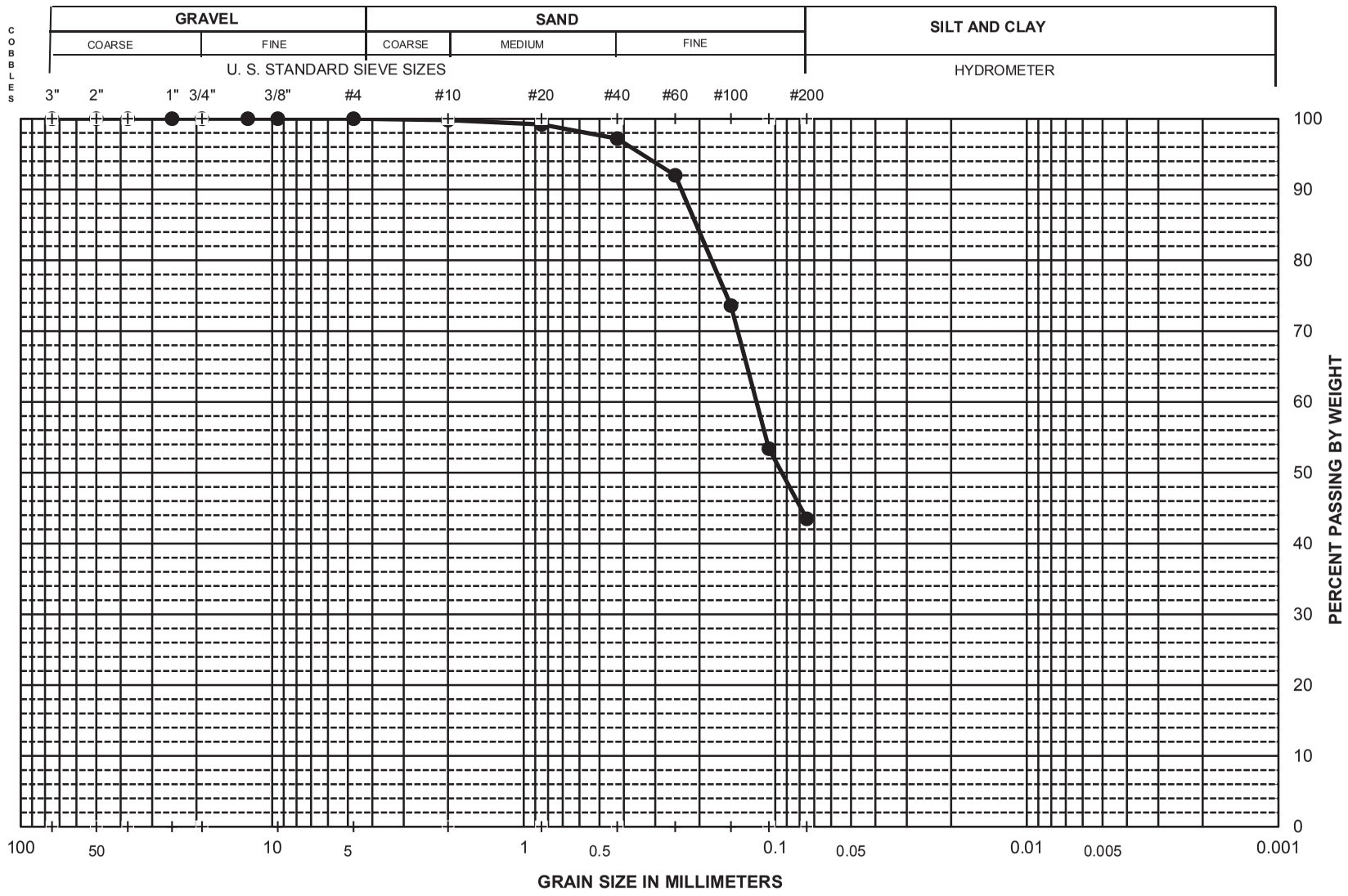
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.8
#20	0.850	99.2
#40	0.425	97.2
#60	0.250	92.0
#100	0.150	73.6
#140	0.106	53.4
#200	0.075	43.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	56.5
% Fines	43.5

D_{85}	0.206
D_{60}	0.119
D_{50}	0.094
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB07	Fines	NA	●	NA	NA	NA	NA	**Gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

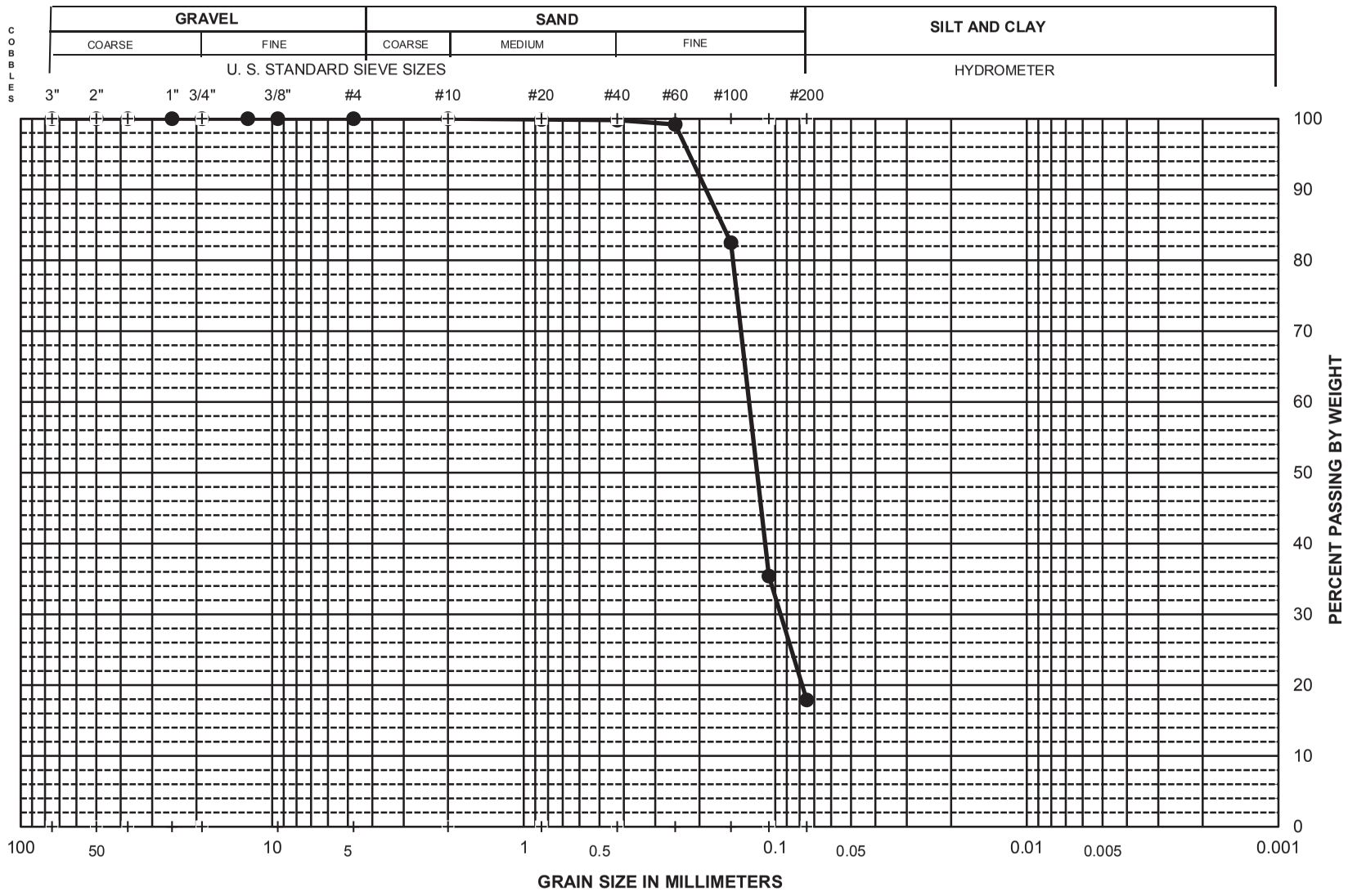
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB07 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.8
#60	0.250	99.2
#100	0.150	82.5
#140	0.106	35.4
#200	0.075	17.9
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	82.1
% Fines	17.9

D_{85}	0.162
D_{60}	0.127
D_{50}	0.118
D_{30}	0.095
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB07	Sands	NA	●	NA	NA	NA	NA	**Gray silty Sand (SM)**

PROJECT NAME: **San Elijo Lagoon**

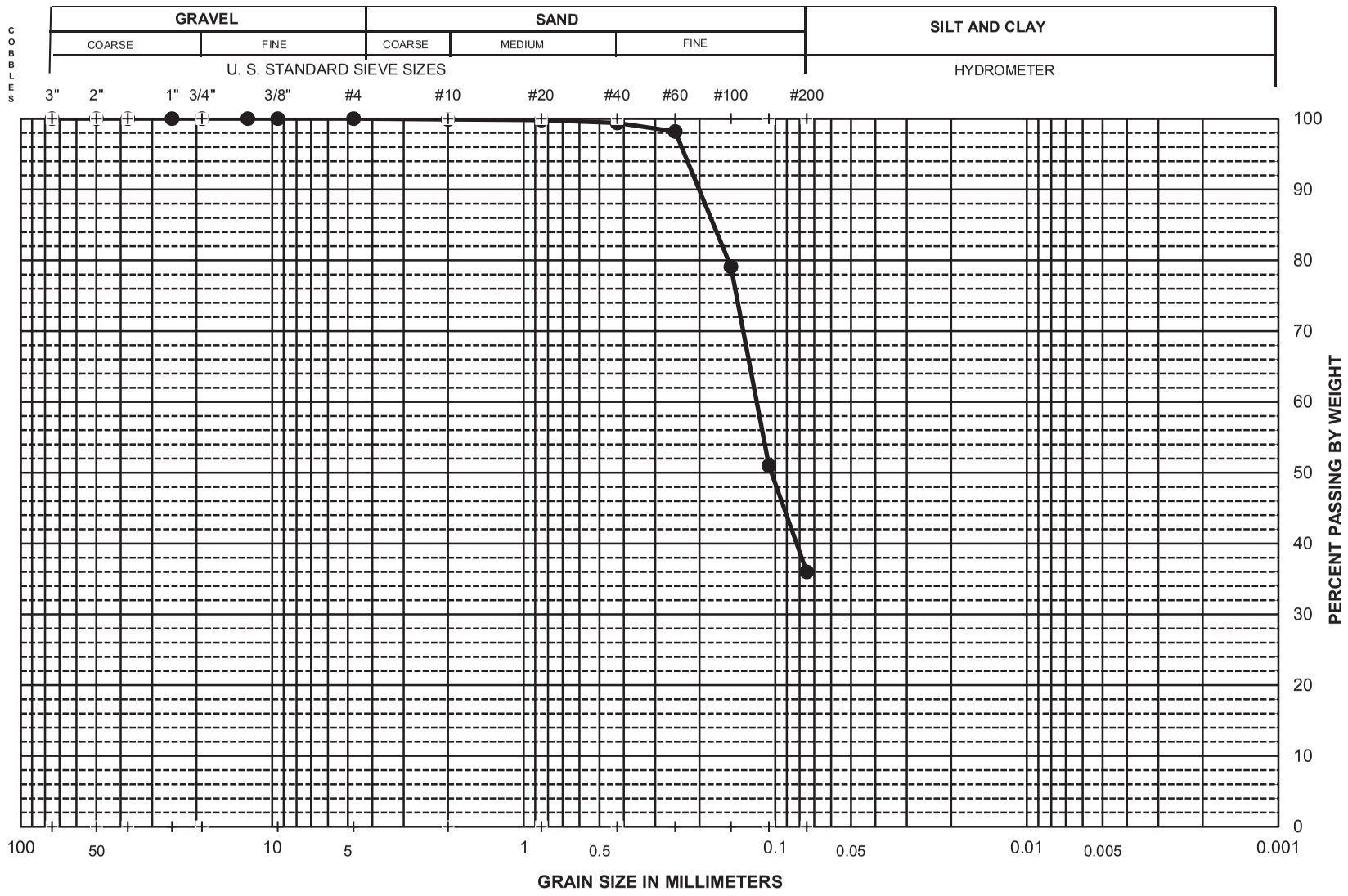
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB07 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.8
#40	0.425	99.4
#60	0.250	98.2
#100	0.150	79.1
#140	0.106	51.0
#200	0.075	36.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	64.0
% Fines	36.0

D_{85}	0.176
D_{60}	0.118
D_{50}	0.104
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB08	Fines	NA	●	NA	NA	NA	NA	**Gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

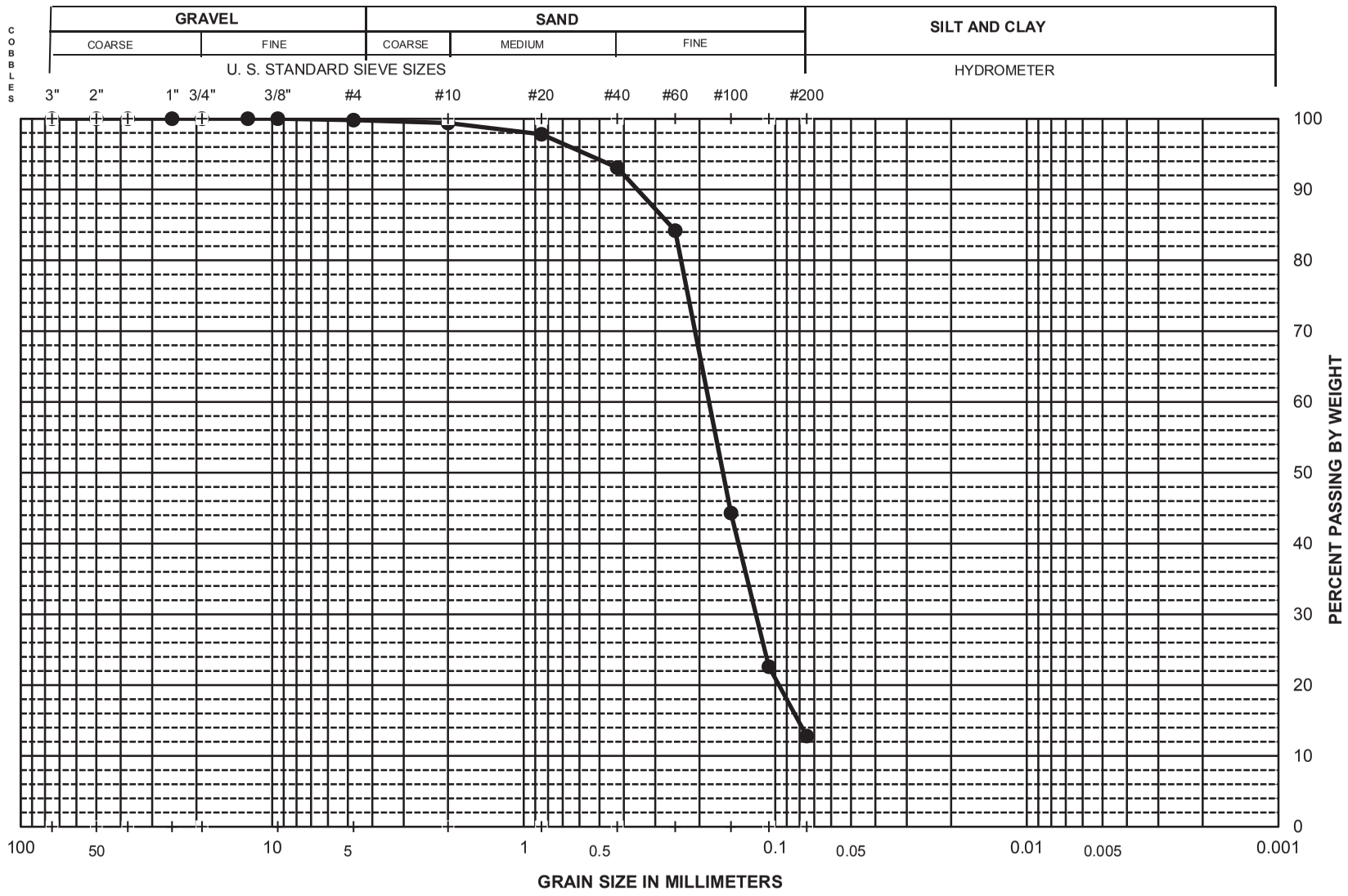
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB08 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.8
#10	2.00	99.4
#20	0.850	97.8
#40	0.425	93.1
#60	0.250	84.2
#100	0.150	44.3
#140	0.106	22.6
#200	0.075	12.8
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.2
% Sand	87.0
% Fines	12.8

D_{85}	0.262
D_{60}	0.183
D_{50}	0.161
D_{30}	0.119
D_{15}	0.081
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB08	Sands	NA	●	NA	NA	NA	NA	**Dark gray silty Sand (SM)**

PROJECT NAME: **San Elijo Lagoon**

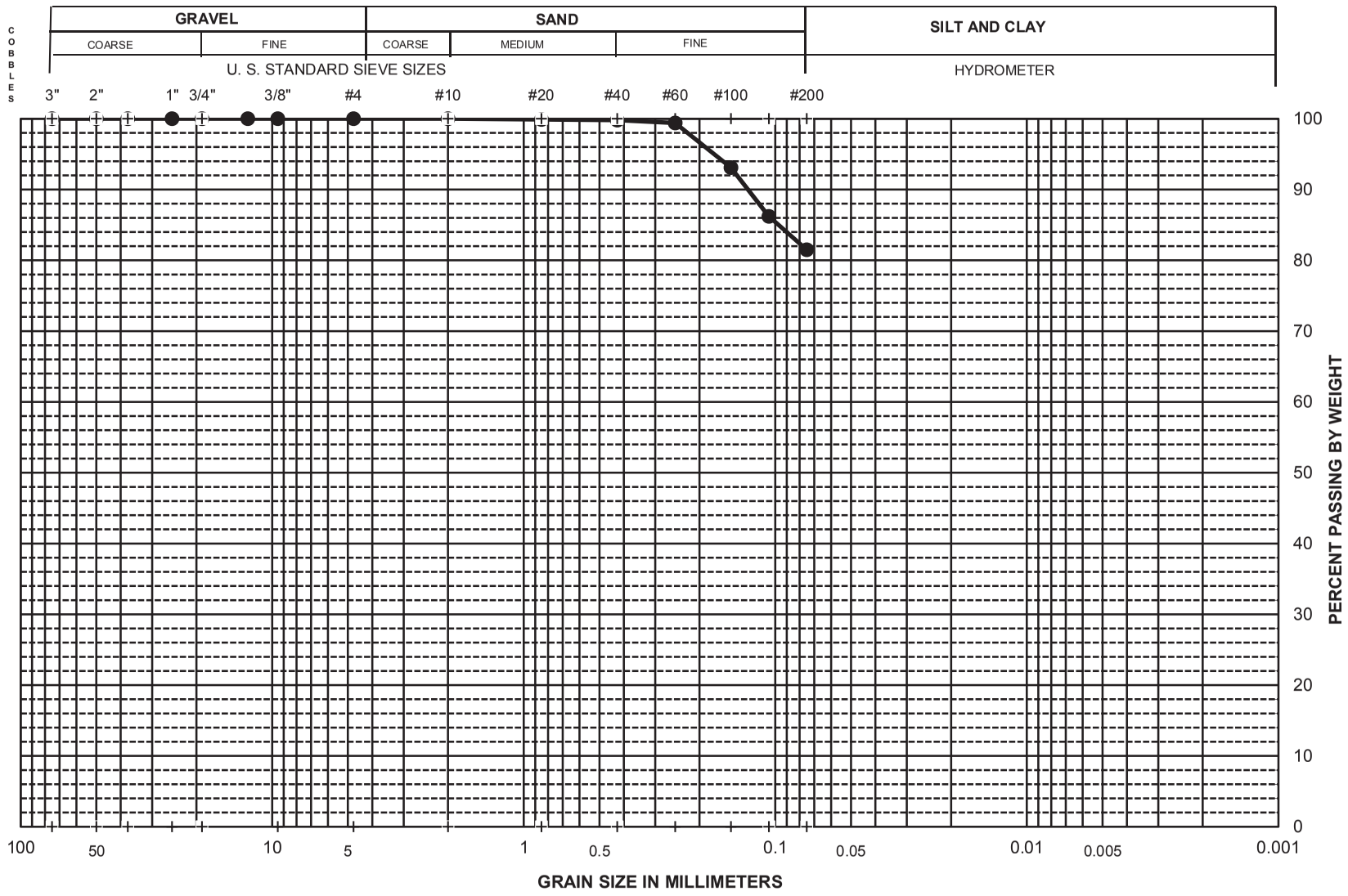
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB08 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.8
#60	0.250	99.4
#100	0.150	93.1
#140	0.106	86.2
#200	0.075	81.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	18.5
% Fines	81.5

D_{85}	0.097
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB09	Fines	NA	●	NA	NA	NA	NA	**Gray Clay with sand (CH)**

PROJECT NAME: **San Elijo Lagoon**

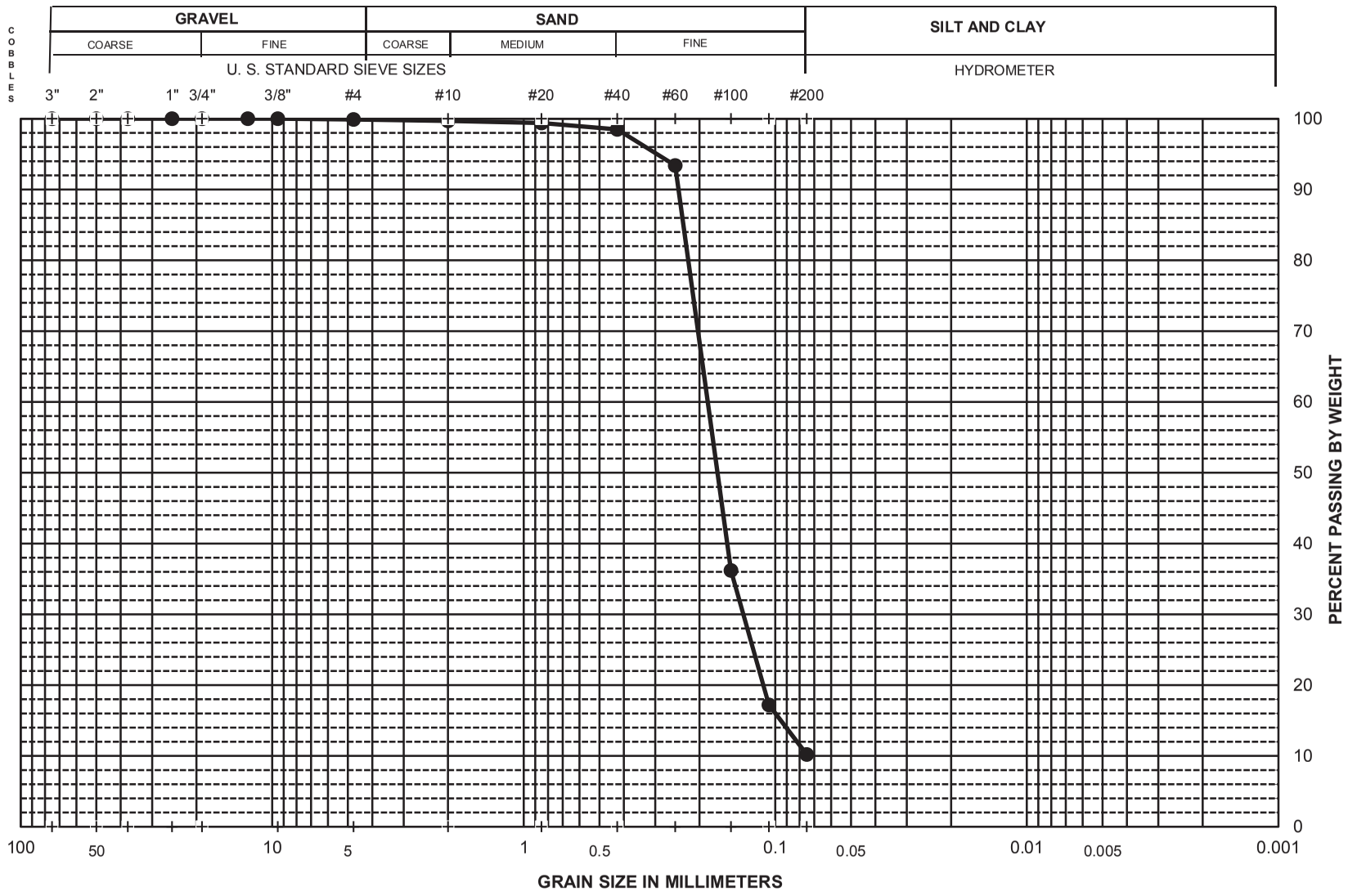
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB09 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.9
#10	2.00	99.7
#20	0.850	99.4
#40	0.425	98.5
#60	0.250	93.4
#100	0.150	36.2
#140	0.106	17.2
#200	0.075	10.2
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.1
% Sand	89.7
% Fines	10.2

D_{85}	0.232
D_{60}	0.186
D_{50}	0.170
D_{30}	0.134
D_{15}	0.095
D_{10}	0.075
C_u	2.5
C_c	1.3

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB09	Sands	NA	●	NA	NA	NA	NA	**Gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

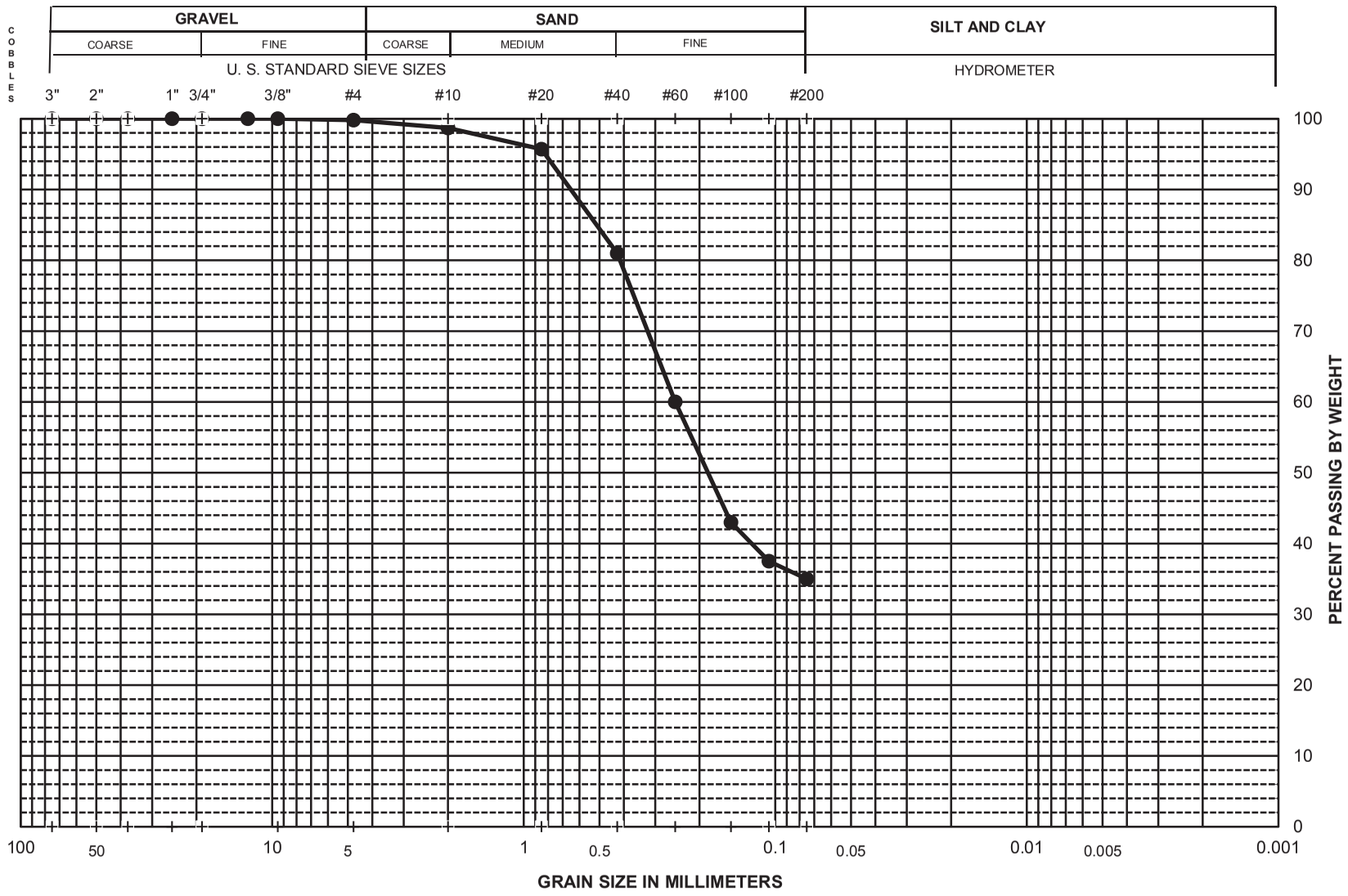
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB09 sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.8
#10	2.00	98.7
#20	0.850	95.7
#40	0.425	81.0
#60	0.250	60.0
#100	0.150	43.0
#140	0.106	37.5
#200	0.075	35.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.2
% Sand	64.8
% Fines	35.0

D_{85}	0.513
D_{60}	0.250
D_{50}	0.185
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB10	Fines	NA	●	NA	NA	NA	NA	**Very dark gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

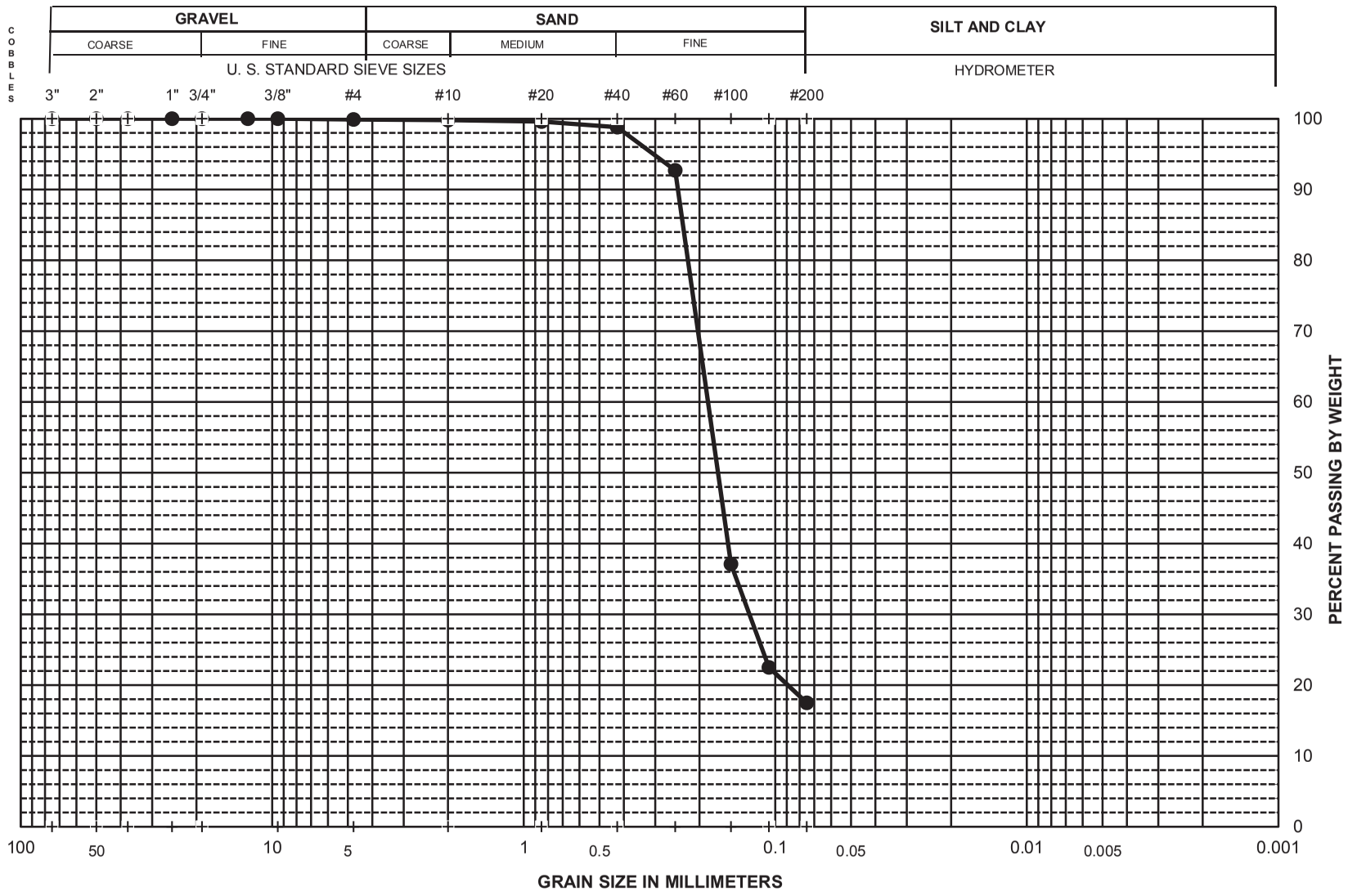
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB10 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.9
#10	2.00	99.8
#20	0.850	99.6
#40	0.425	98.8
#60	0.250	92.7
#100	0.150	37.1
#140	0.106	22.5
#200	0.075	17.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.1
% Sand	82.4
% Fines	17.5

D_{85}	0.233
D_{60}	0.185
D_{50}	0.169
D_{30}	0.127
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB10	Sands	NA	●	NA	NA	NA	NA	**Dark gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

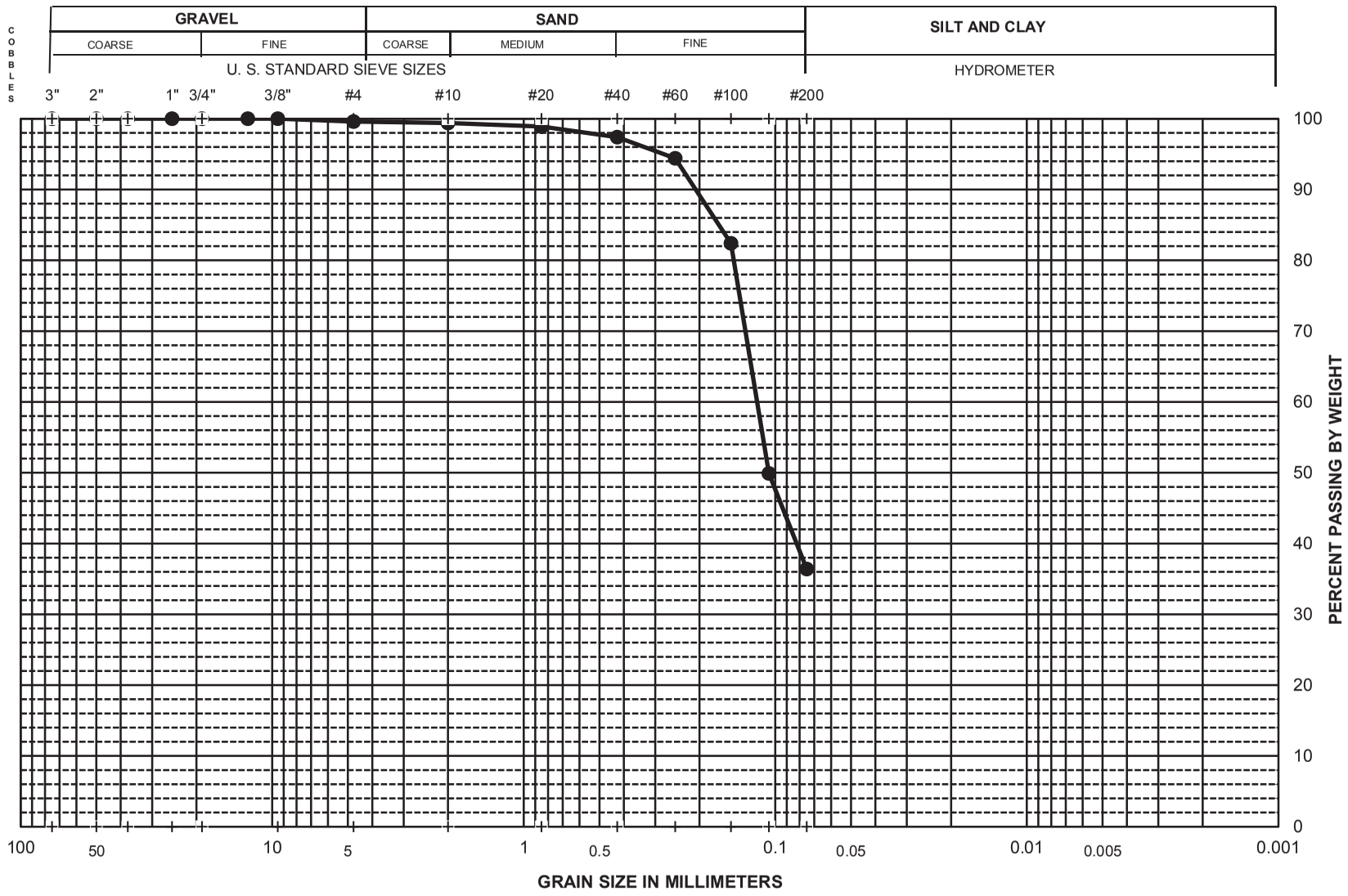
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB10 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.6
#10	2.00	99.4
#20	0.850	98.9
#40	0.425	97.4
#60	0.250	94.4
#100	0.150	82.4
#140	0.106	49.9
#200	0.075	36.4

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.4
% Sand	63.2
% Fines	36.4

D_{85}	0.168
D_{60}	0.118
D_{50}	0.106
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB11	Fines	NA	●	NA	NA	NA	NA	**Very dark gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

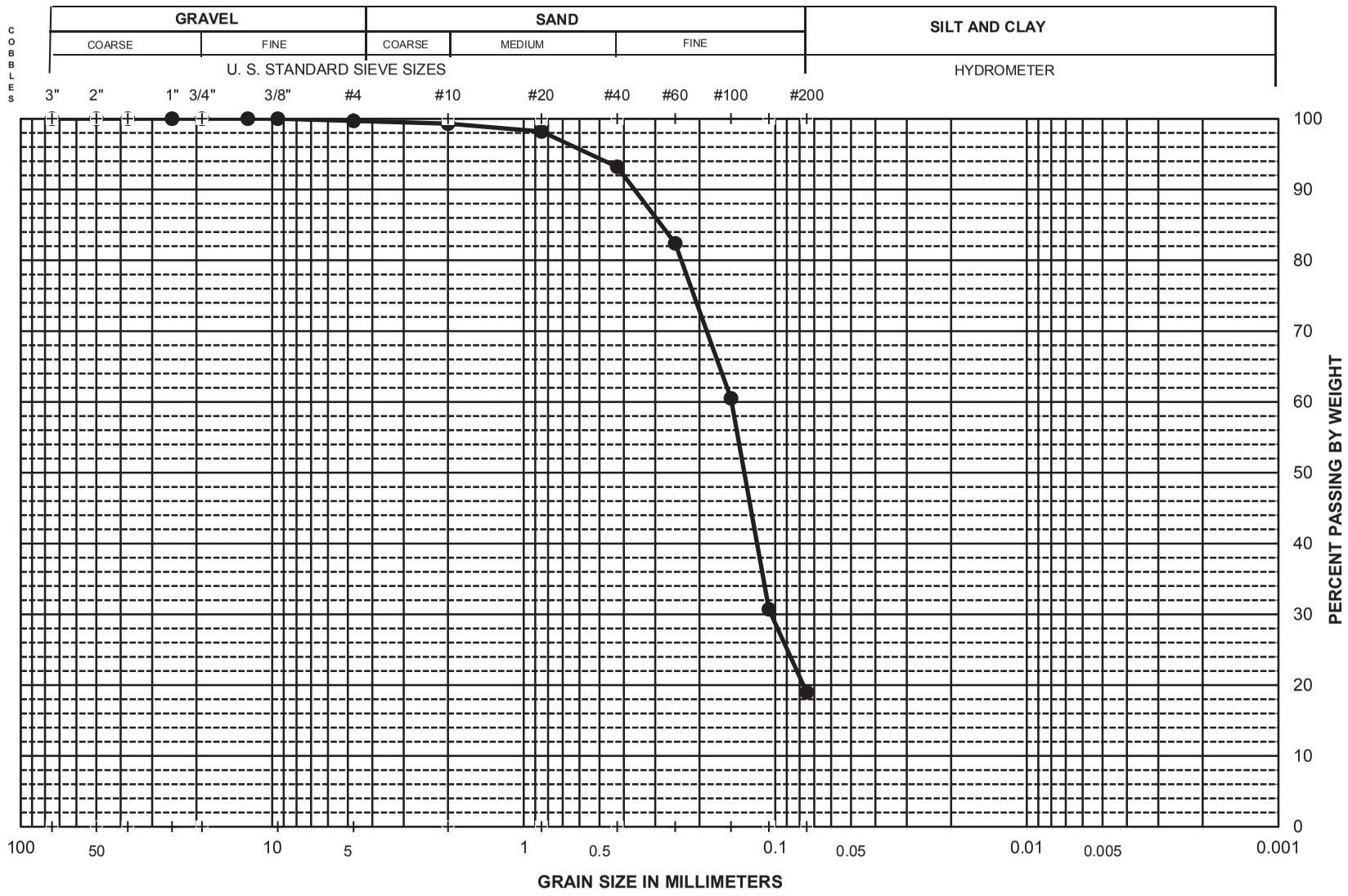
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB11 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.7
#10	2.00	99.3
#20	0.850	98.2
#40	0.425	93.2
#60	0.250	82.4
#100	0.150	60.5
#140	0.106	30.7
#200	0.075	19.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.3
% Sand	80.7
% Fines	19.0

D_{85}	0.284
D_{60}	0.149
D_{50}	0.133
D_{30}	0.104
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB11	Sands	NA	●	NA	NA	NA	NA	**Dark gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

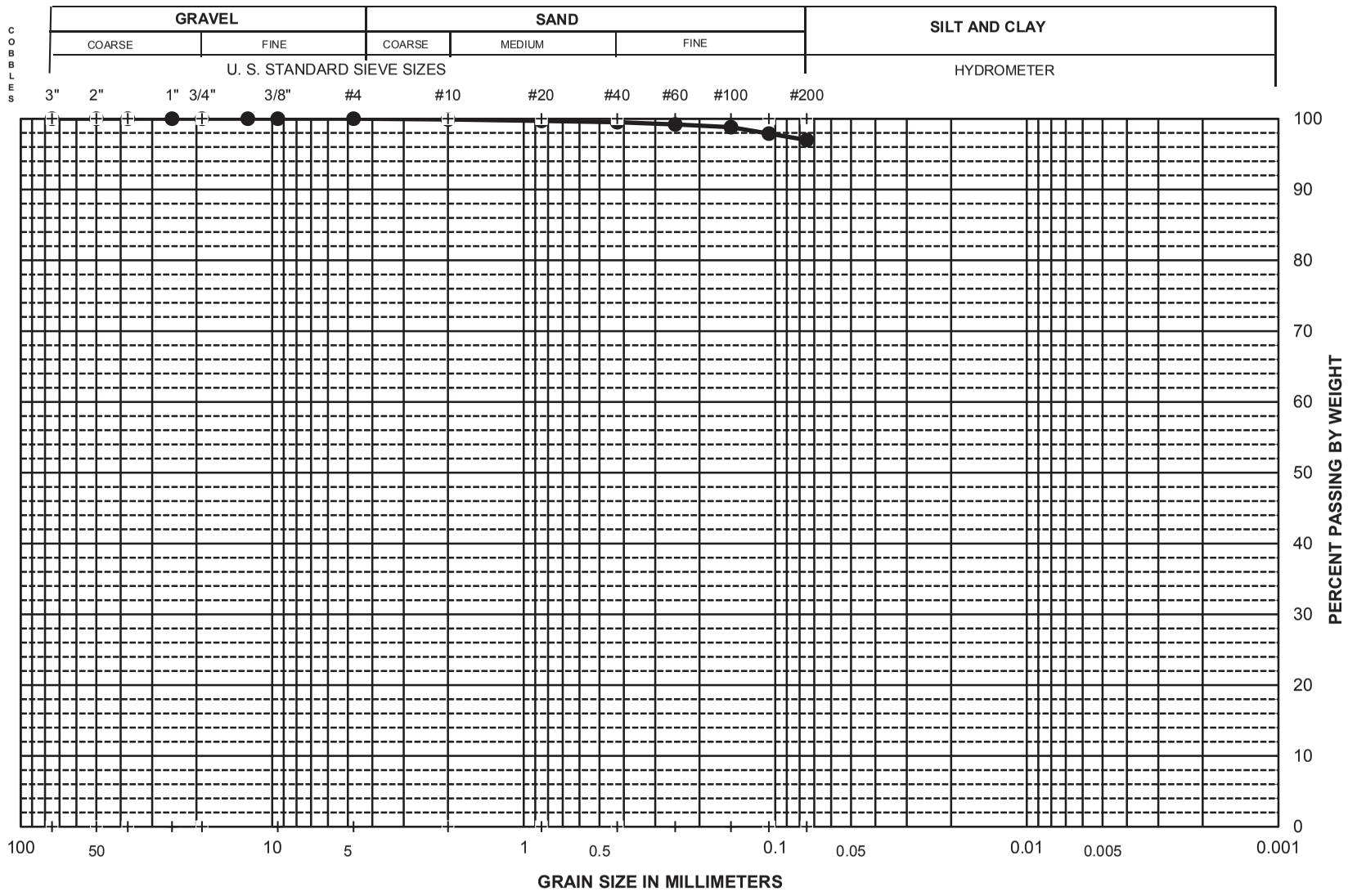
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB11 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.7
#40	0.425	99.5
#60	0.250	99.2
#100	0.150	98.8
#140	0.106	97.9
#200	0.075	97.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	3.0
% Fines	97.0

D_{85}	#N/A
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB12	Fines	NA	●	NA	NA	NA	NA	**Very dark gray Clay (CH)**

PROJECT NAME: **San Elijo Lagoon**

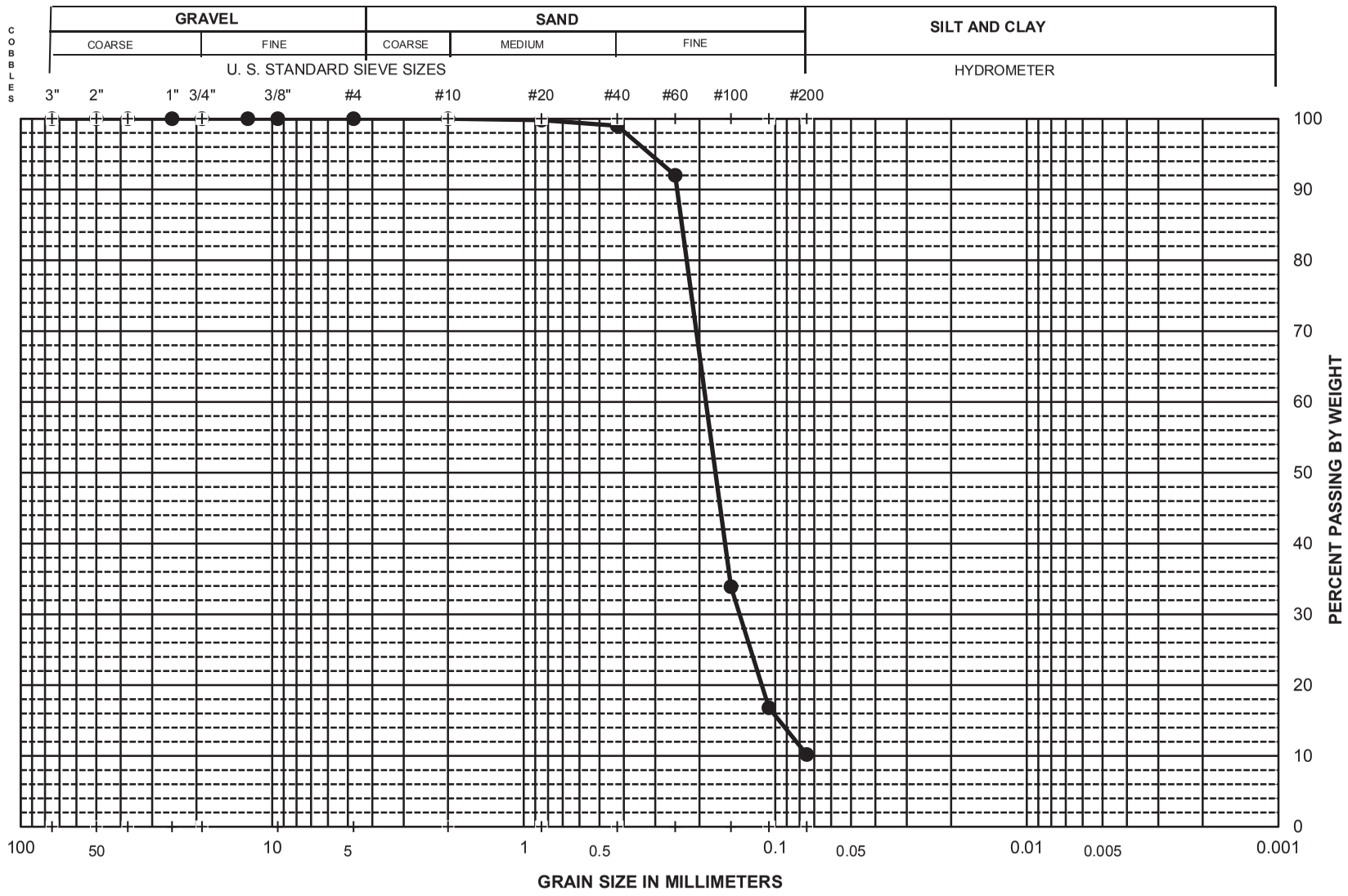
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB12 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	99.0
#60	0.250	92.0
#100	0.150	33.9
#140	0.106	16.8
#200	0.075	10.2
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	89.8
% Fines	10.2

D_{85}	0.235
D_{60}	0.189
D_{50}	0.173
D_{30}	0.139
D_{15}	0.096
D_{10}	0.075
C_u	2.5
C_c	1.4

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB12	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

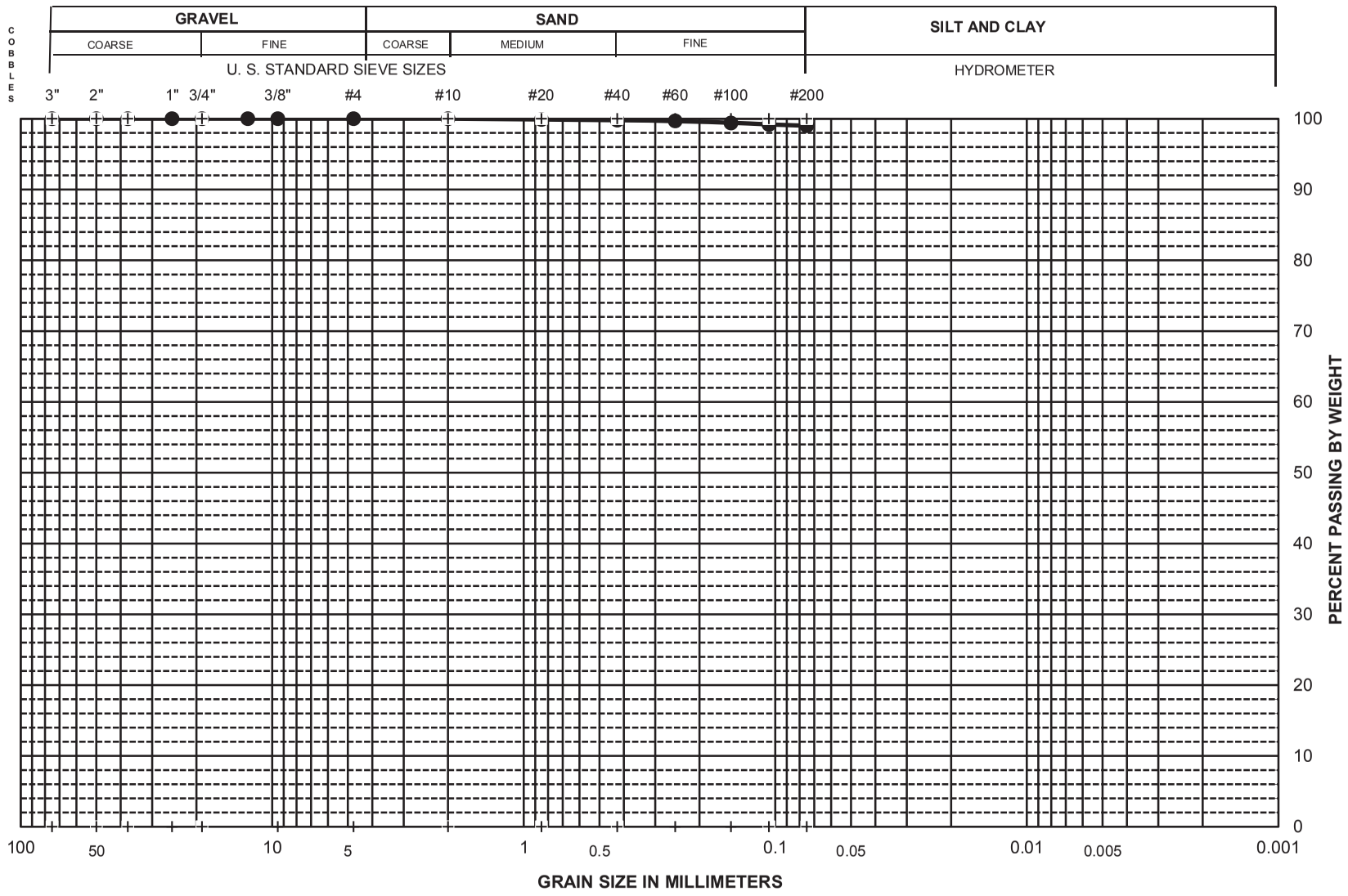
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB12 sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.8
#60	0.250	99.7
#100	0.150	99.4
#140	0.106	99.2
#200	0.075	99.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	1.0
% Fines	99.0

D_{85}	#N/A
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB13	Fines	NA	●	NA	NA	NA	NA	**Dark olive gray Clay (CH)**

PROJECT NAME: **San Elijo Lagoon**

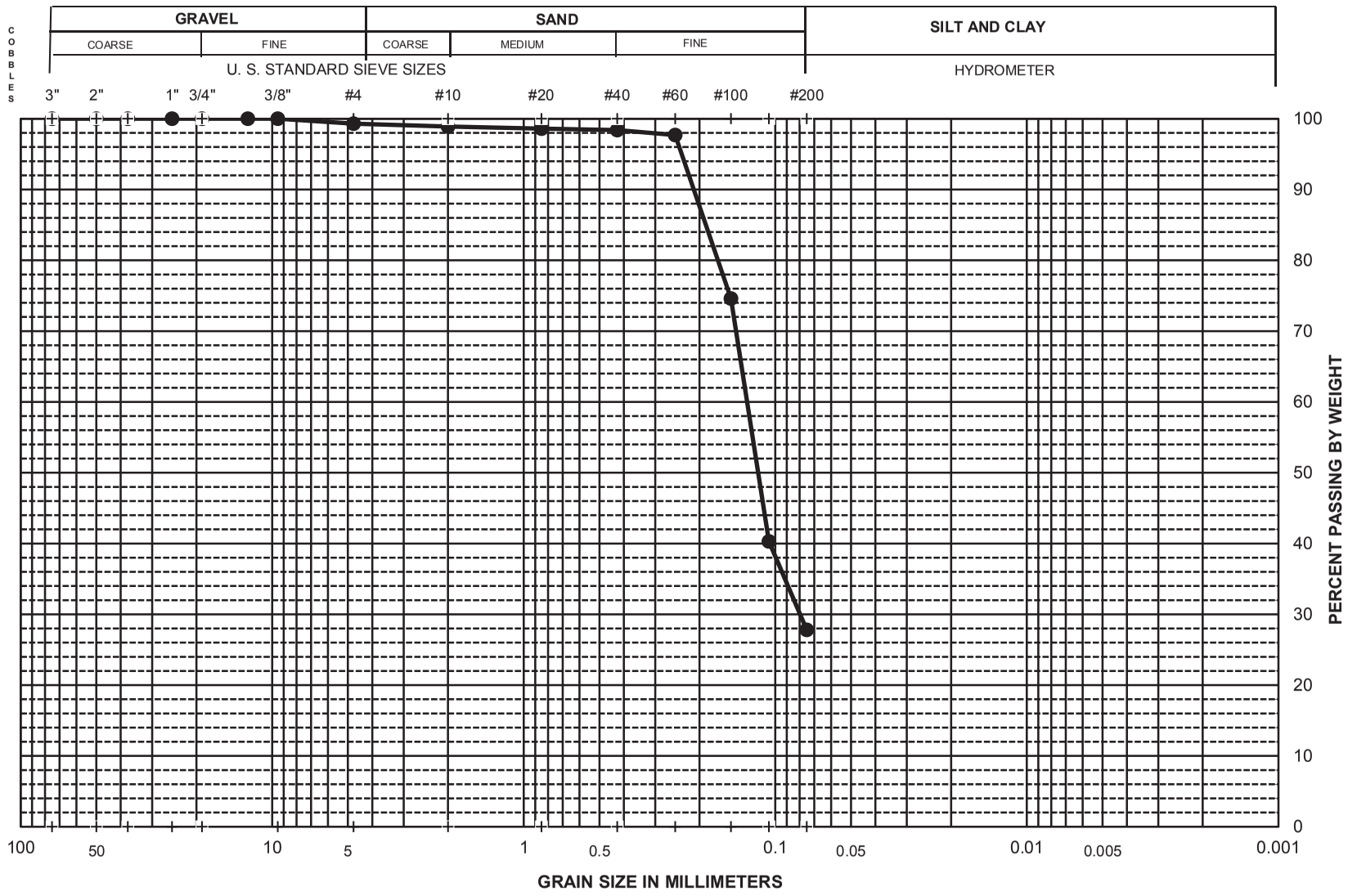
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB13 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.3
#10	2.00	98.9
#20	0.850	98.6
#40	0.425	98.4
#60	0.250	97.7
#100	0.150	74.6
#140	0.106	40.3
#200	0.075	27.8

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.7
% Sand	71.5
% Fines	27.8

D_{85}	0.189
D_{60}	0.129
D_{50}	0.117
D_{30}	0.080
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB13	Sands	NA	●	NA	NA	NA	NA	**Dark olive gray clayey Sand (SC)**

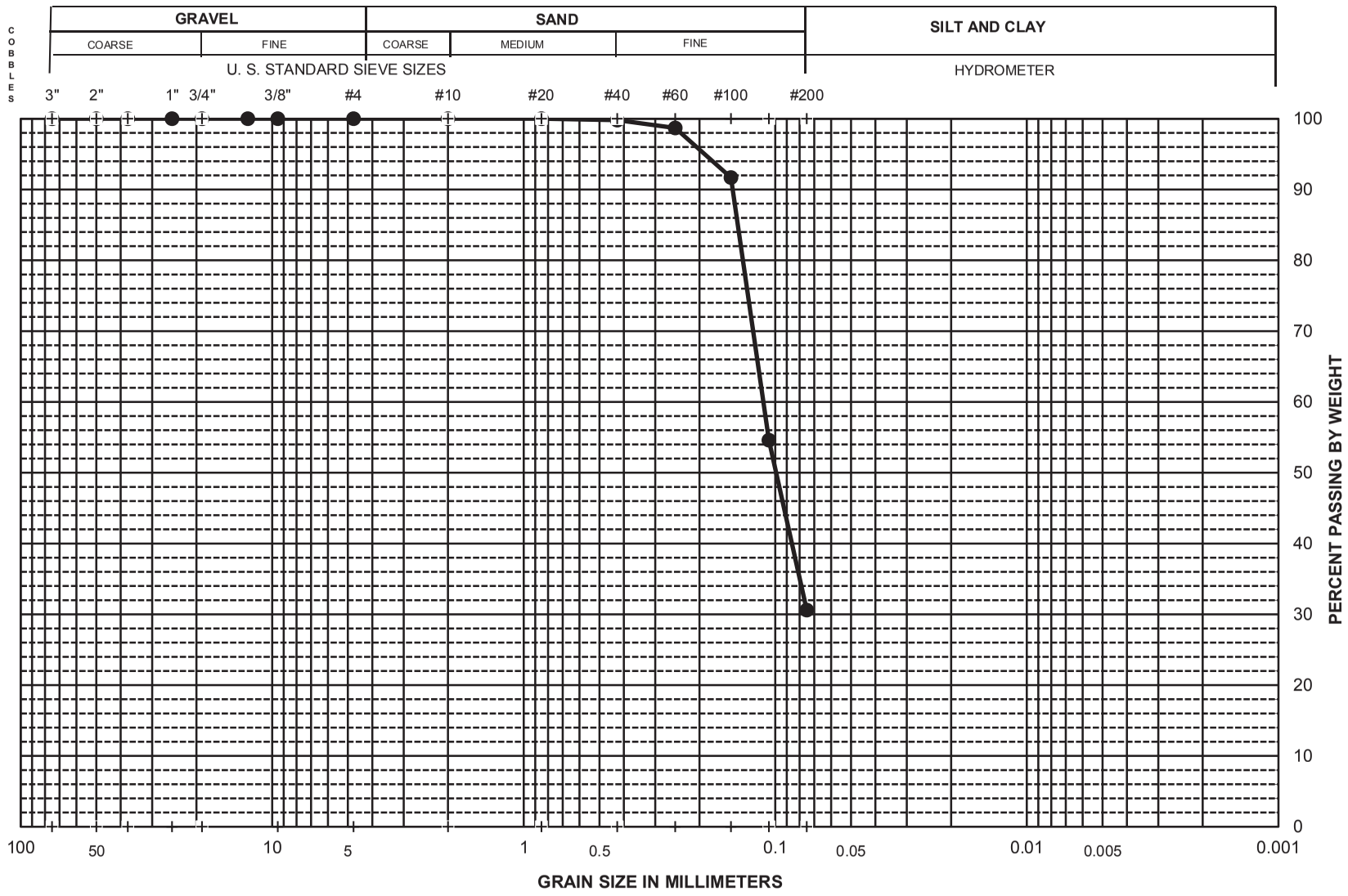
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	100.0
#40	0.425	99.8
#60	0.250	98.7
#100	0.150	91.7
#140	0.106	54.6
#200	0.075	30.6

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.0
% Sand	69.4
% Fines	30.6

D_{85}	0.141
D_{60}	0.111
D_{50}	0.099
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB08	Sands	NA	●	NA	NA	NA	NA	**Dark gray silty Sand (SM)**

PROJECT NAME: **San Elijo Lagoon**

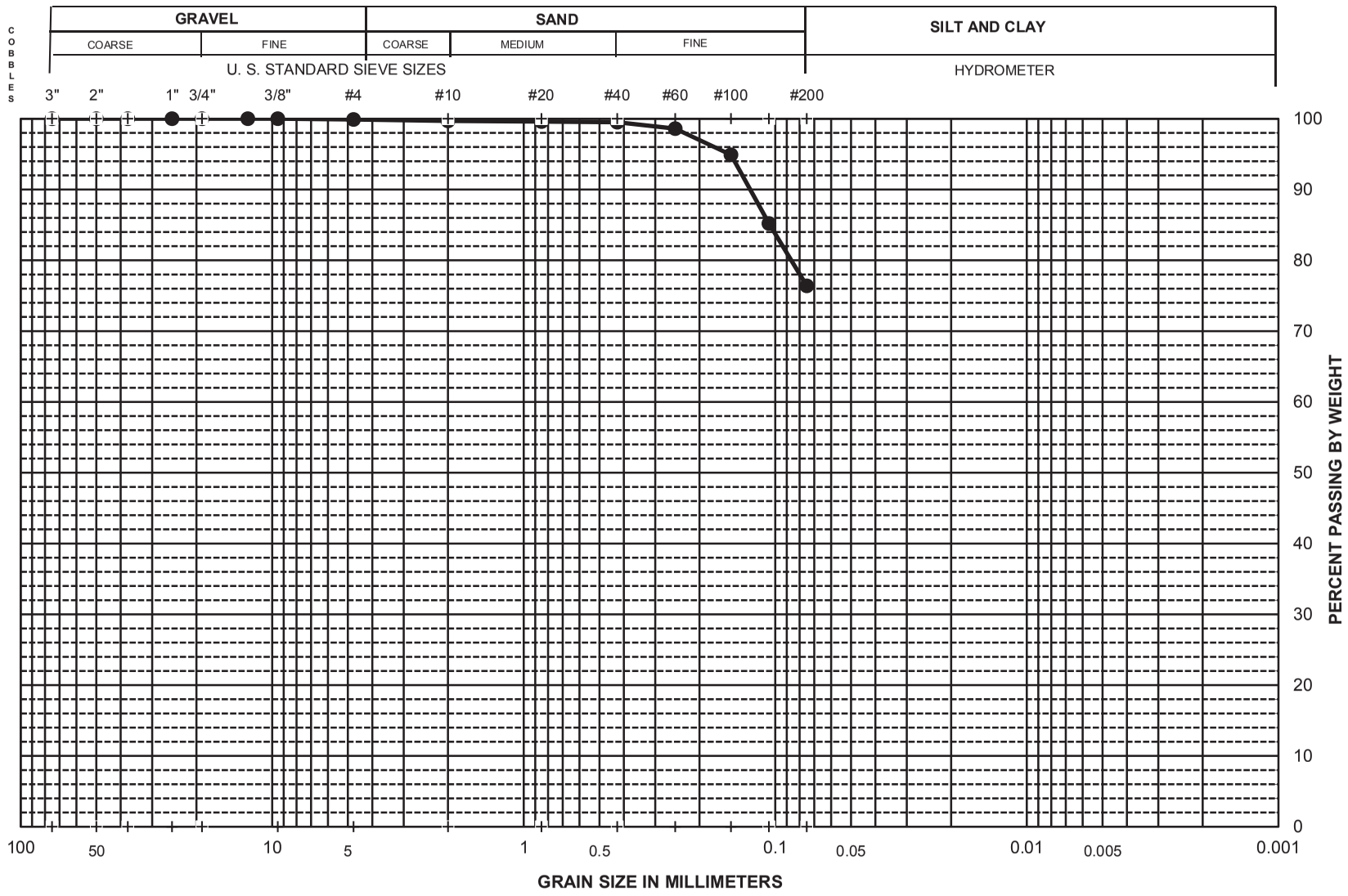
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB 8 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.9
#10	2.00	99.7
#20	0.850	99.6
#40	0.425	99.5
#60	0.250	98.6
#100	0.150	94.9
#140	0.106	85.2
#200	0.075	76.4
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.1
% Sand	23.5
% Fines	76.4

D_{85}	0.105
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB01	Fines	NA	●	NA	NA	NA	NA	**Dark gray Clay with sand (CH)**

PROJECT NAME: **San Elijo Lagoon**

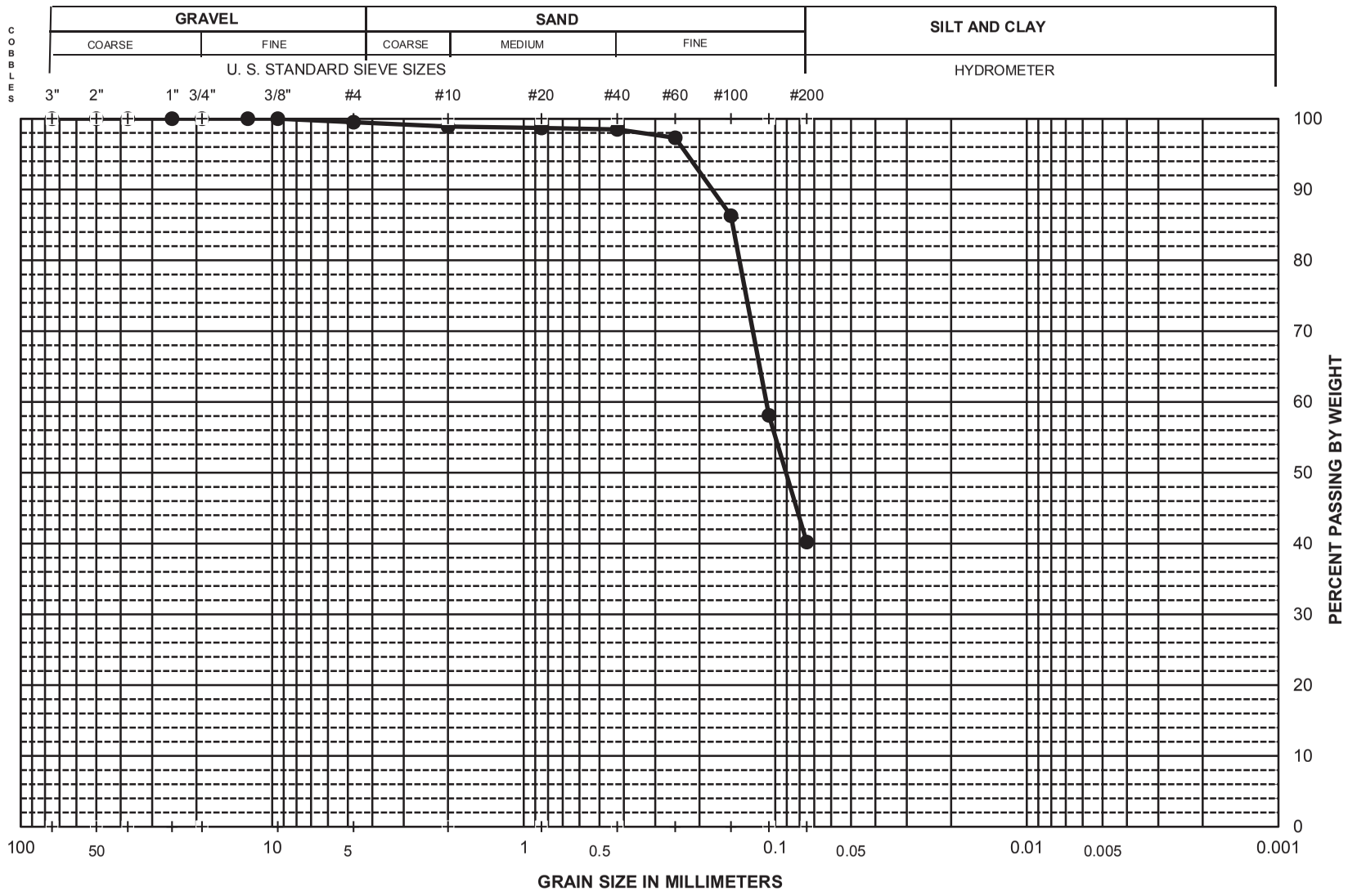
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB01 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.5
#10	2.00	98.9
#20	0.850	98.7
#40	0.425	98.5
#60	0.250	97.3
#100	0.150	86.3
#140	0.106	58.1
#200	0.075	40.2
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.5
% Sand	59.3
% Fines	40.2

D_{85}	0.148
D_{60}	0.109
D_{50}	0.091
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB01	Sands	NA	●	NA	NA	NA	NA	**Dark gray silty Sand (SM)**

PROJECT NAME: **San Elijo Lagoon**

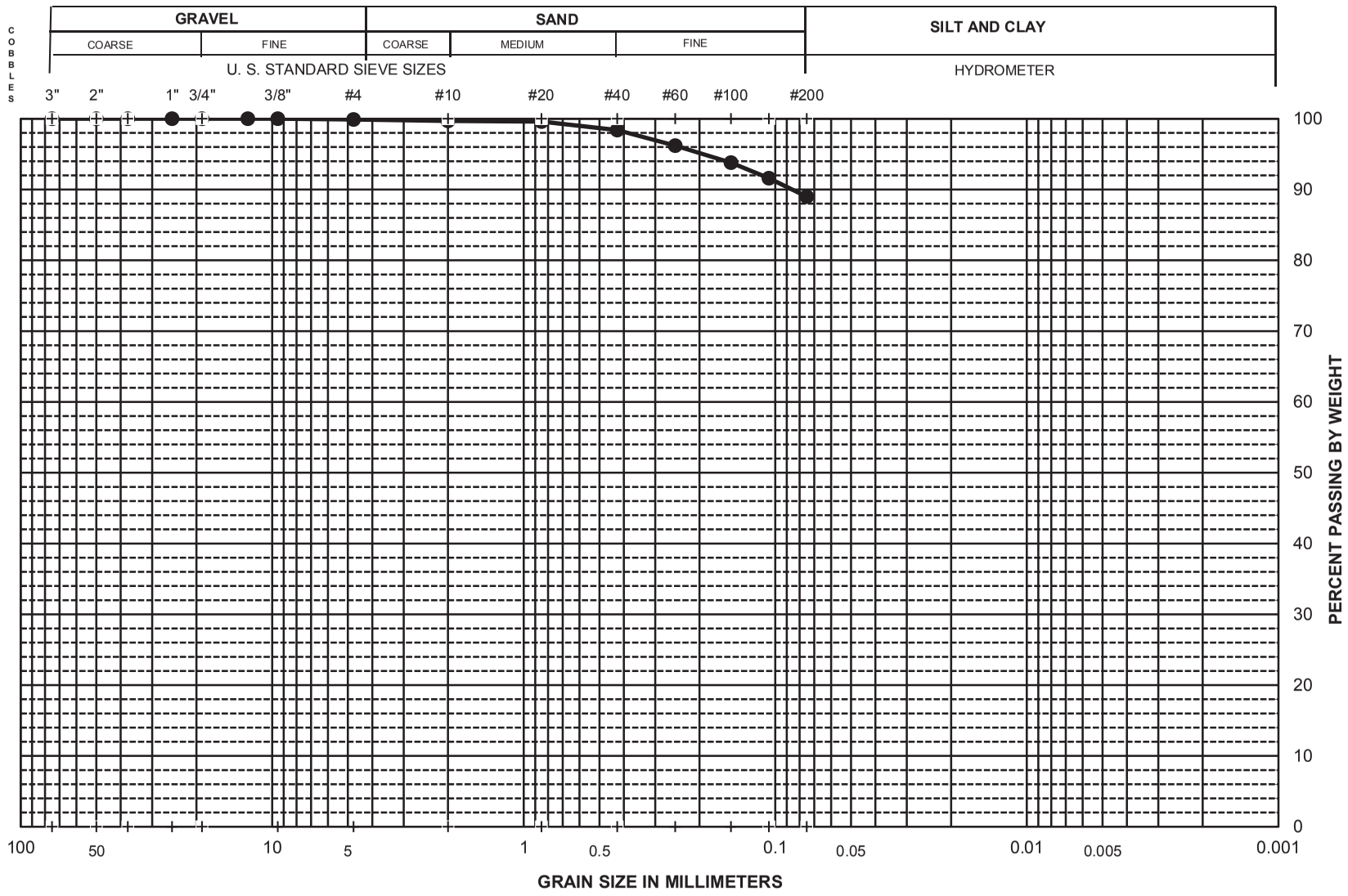
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB01 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.9
#10	2.00	99.7
#20	0.850	99.6
#40	0.425	98.4
#60	0.250	96.2
#100	0.150	93.8
#140	0.106	91.6
#200	0.075	89.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.1
% Sand	10.9
% Fines	89.0

D_{85}	#N/A
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB02	Fines	NA	●	NA	NA	NA	NA	**Olive gray Clay (CH)**

PROJECT NAME: **San Elijo Lagoon**

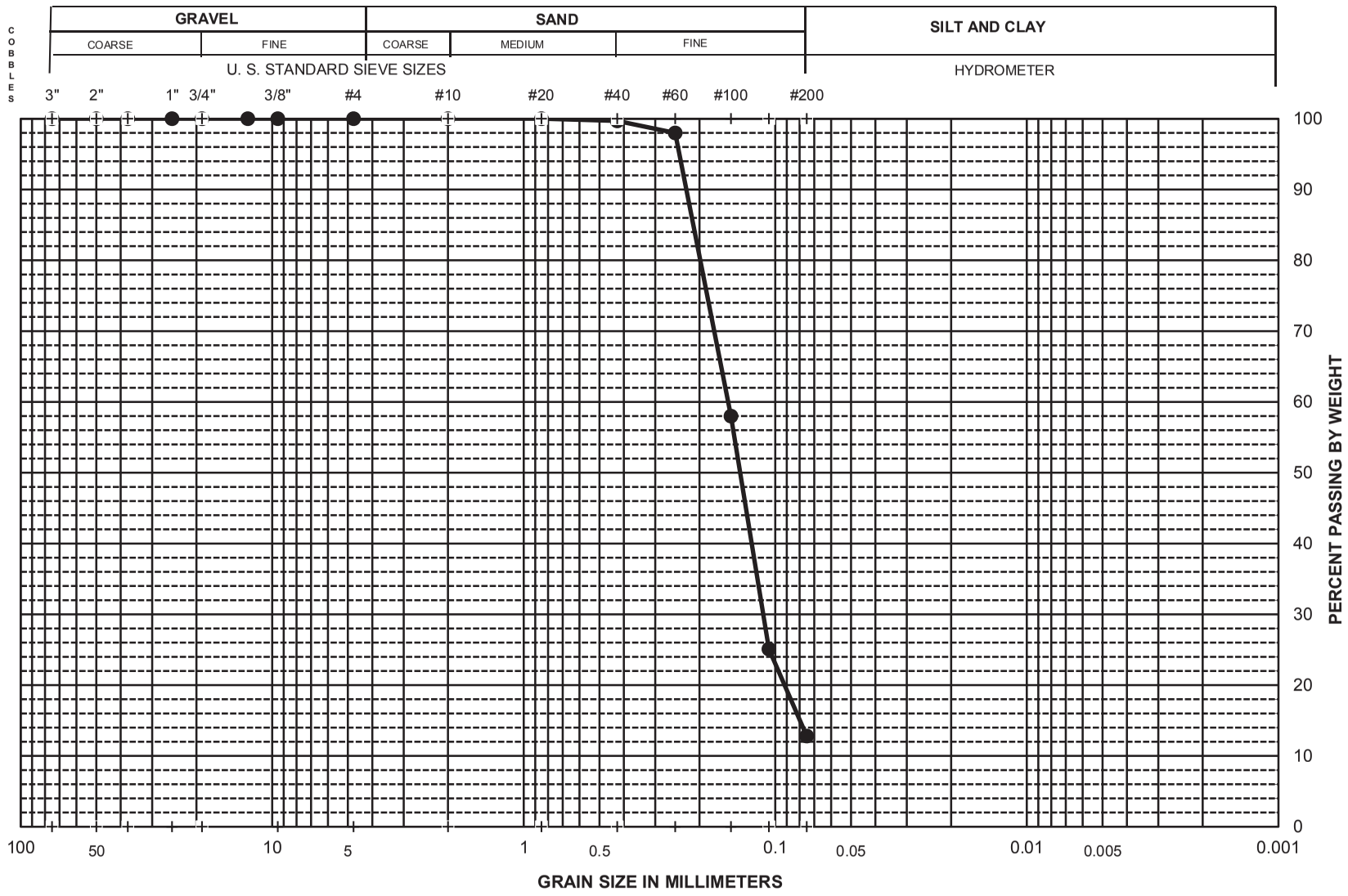
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB02 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	100.0
#40	0.425	99.7
#60	0.250	98.0
#100	0.150	58.0
#140	0.106	25.1
#200	0.075	12.8
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	87.2
% Fines	12.8

D_{85}	0.212
D_{60}	0.154
D_{50}	0.138
D_{30}	0.112
D_{15}	0.080
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB02	Sands	NA	●	NA	NA	NA	NA	**Dark gray silty Sand (SM)**

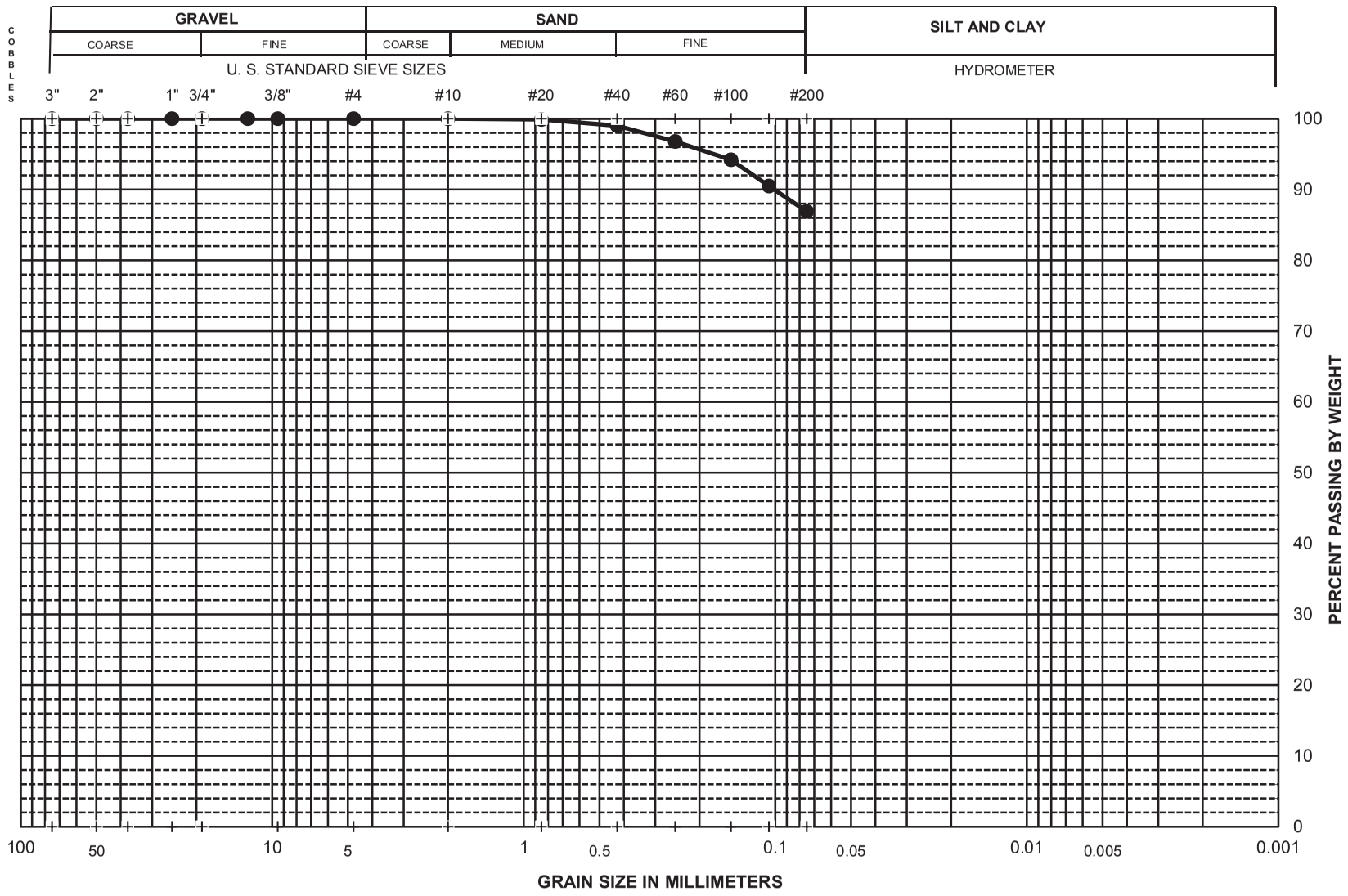
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.0
#60	0.250	96.8
#100	0.150	94.2
#140	0.106	90.5
#200	0.075	86.9
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	13.1
% Fines	86.9

D_{85}	#N/A
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB03	Fines	NA	●	NA	NA	NA	NA	**Olive gray Clay (CH)**

PROJECT NAME: **San Elijo Lagoon**

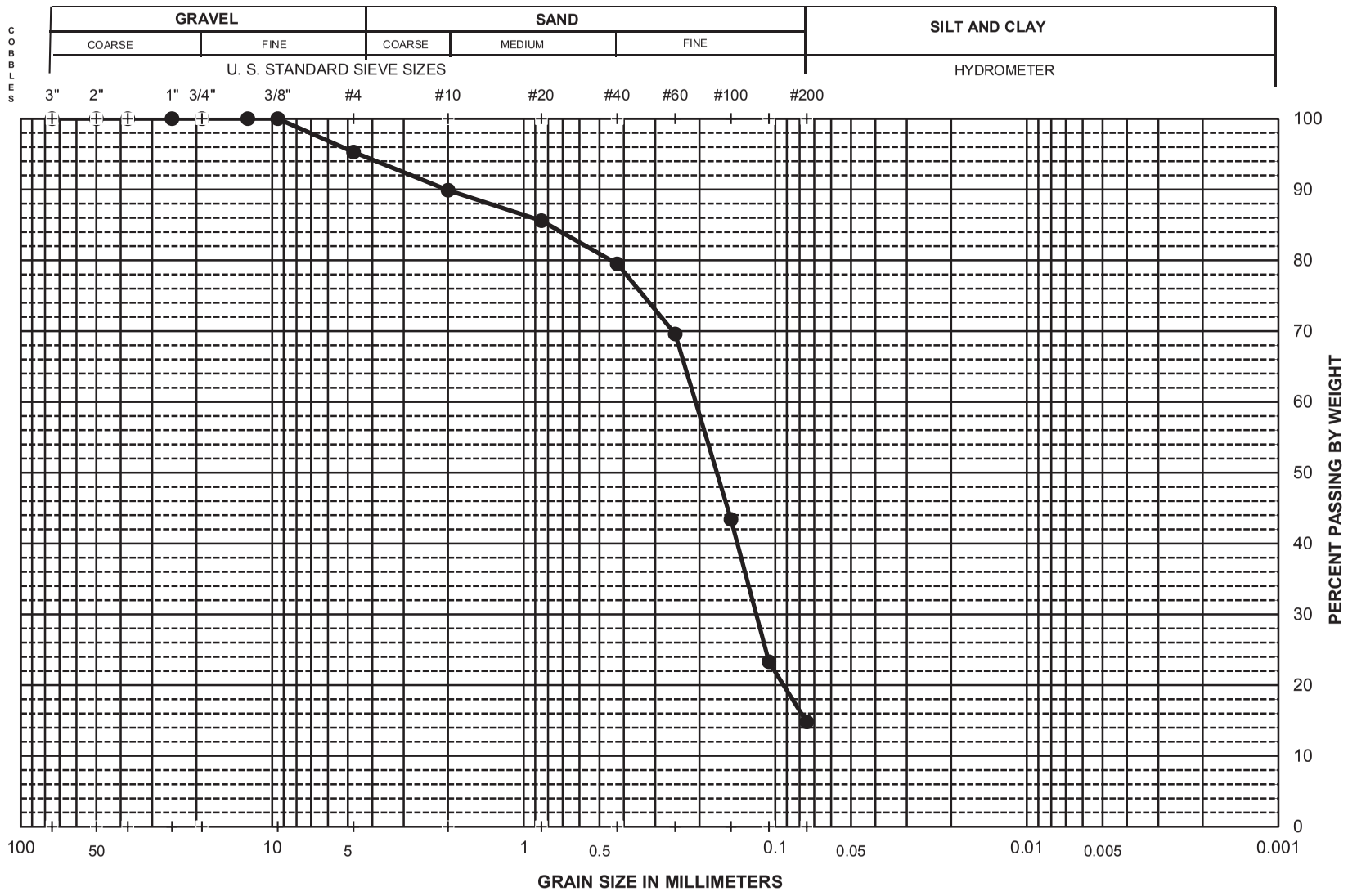
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB03 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	95.3
#10	2.00	89.9
#20	0.850	85.6
#40	0.425	79.5
#60	0.250	69.6
#100	0.150	43.4
#140	0.106	23.3
#200	0.075	14.8
Hydrometer Analysis		

% Cobbles	XX
% Gravel	4.7
% Sand	80.5
% Fines	14.8

D_{85}	0.794
D_{60}	0.207
D_{50}	0.171
D_{30}	0.119
D_{15}	0.076
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB03	Sands	NA	●	NA	NA	NA	NA	**Dark gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

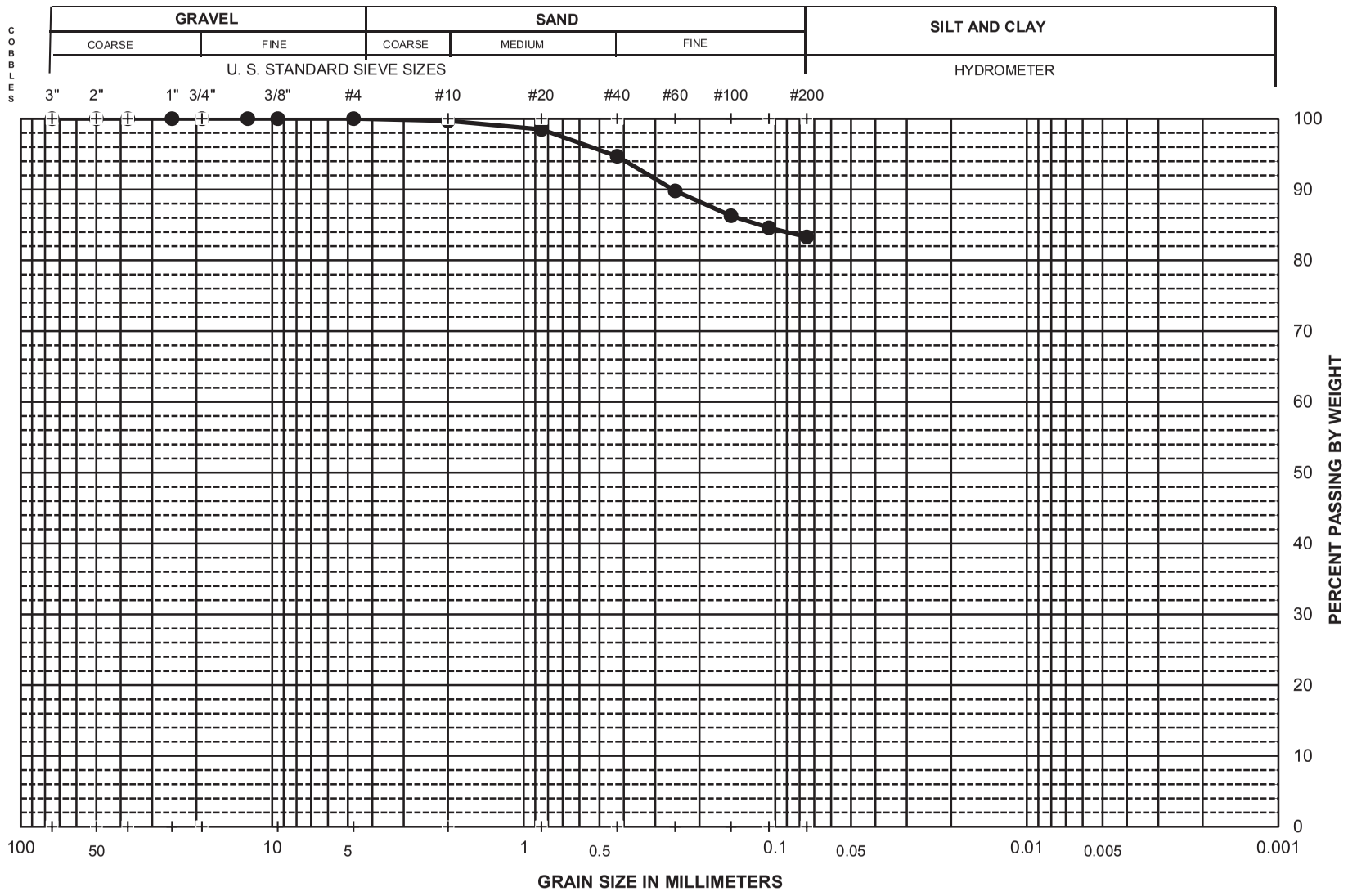
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB03 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.7
#20	0.850	98.5
#40	0.425	94.7
#60	0.250	89.8
#100	0.150	86.3
#140	0.106	84.6
#200	0.075	83.3
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	16.7
% Fines	83.3

D_{85}	0.115
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB04	Fines	NA	●	NA	NA	NA	NA	**Olive gray Clay with sand (CL)**

PROJECT NAME: **San Elijo Lagoon**

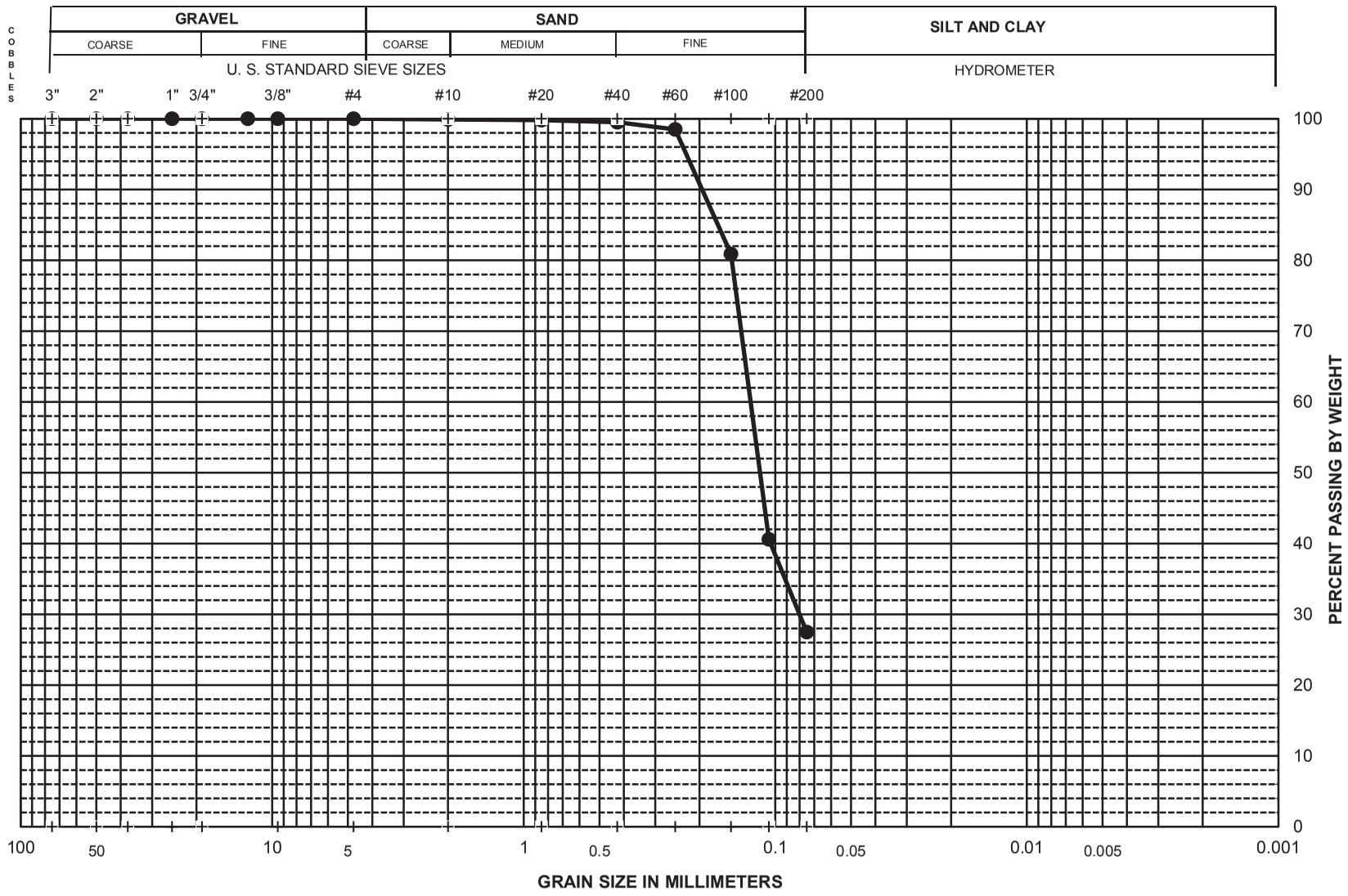
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB04 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.8
#40	0.425	99.5
#60	0.250	98.5
#100	0.150	80.9
#140	0.106	40.6
#200	0.075	27.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	72.5
% Fines	27.5

D_{85}	0.169
D_{60}	0.125
D_{50}	0.115
D_{30}	0.080
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB04	Sands	NA	●	NA	NA	NA	NA	**Olive gray clayey Sand (SC)**

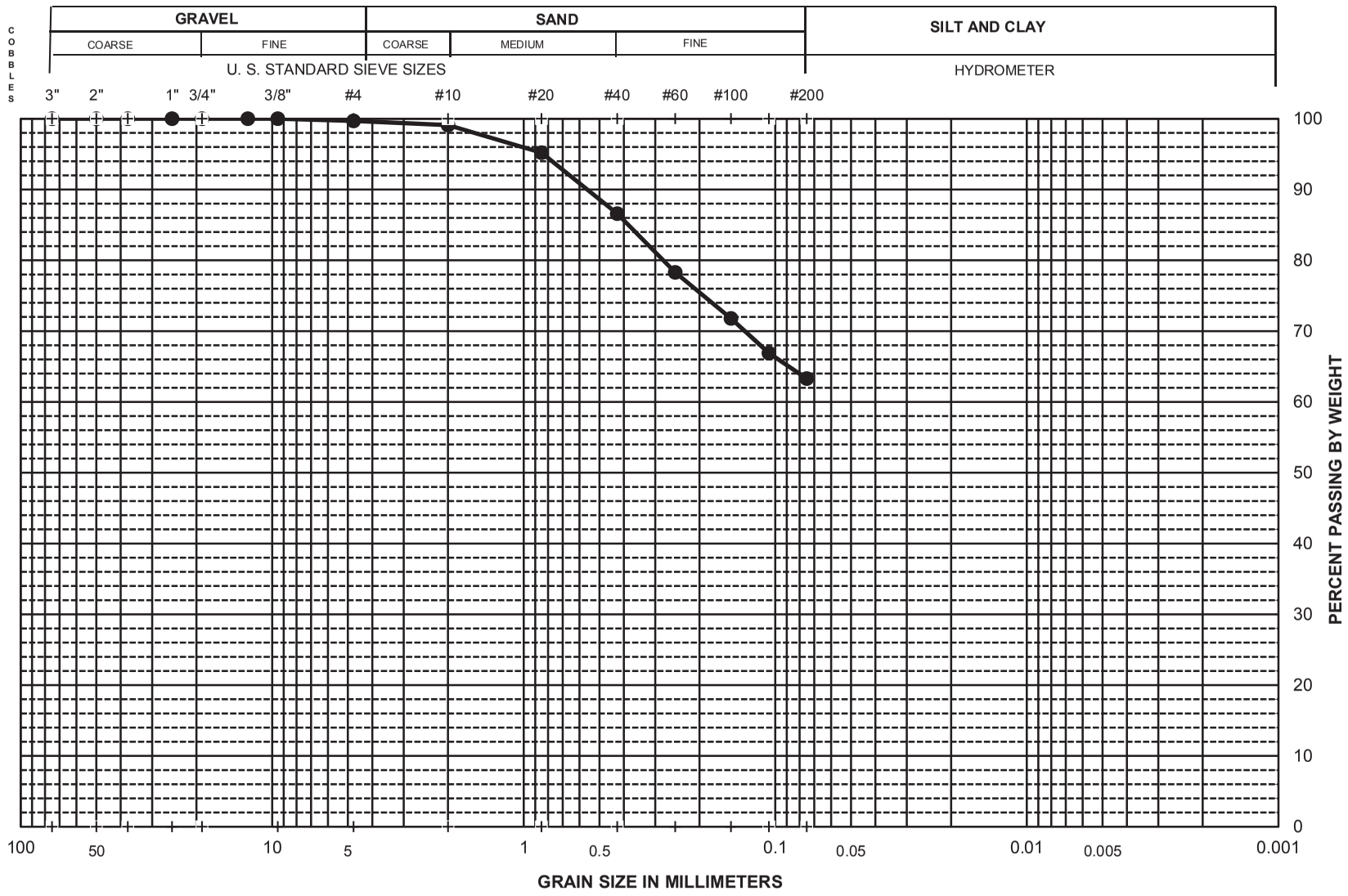
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.7
#10	2.00	99.1
#20	0.850	95.2
#40	0.425	86.6
#60	0.250	78.3
#100	0.150	71.8
#140	0.106	66.9
#200	0.075	63.3
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.3
% Sand	36.4
% Fines	63.3

D_{85}	0.384
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB05	Fines	NA	●	NA	NA	NA	NA	**Olive gray sandy Clay (CL)**

PROJECT NAME: **San Elijo Lagoon**

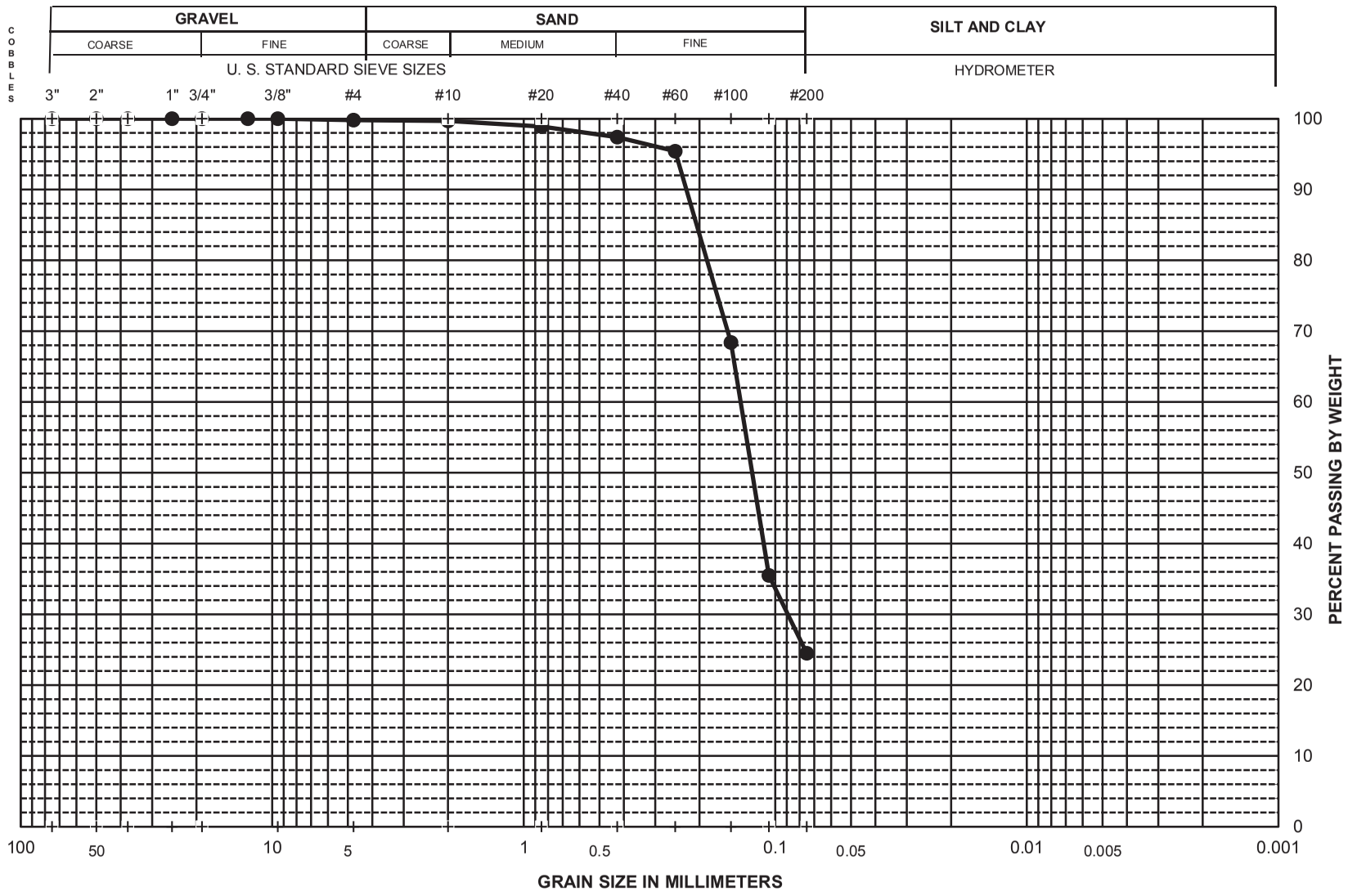
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB05 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.8
#10	2.00	99.7
#20	0.850	98.9
#40	0.425	97.4
#60	0.250	95.4
#100	0.150	68.4
#140	0.106	35.5
#200	0.075	24.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.2
% Sand	75.3
% Fines	24.5

D_{85}	0.205
D_{60}	0.137
D_{50}	0.124
D_{30}	0.089
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB05	Sands	NA	●	NA	NA	NA	NA	**Olive gray clayey Sand (SC)**

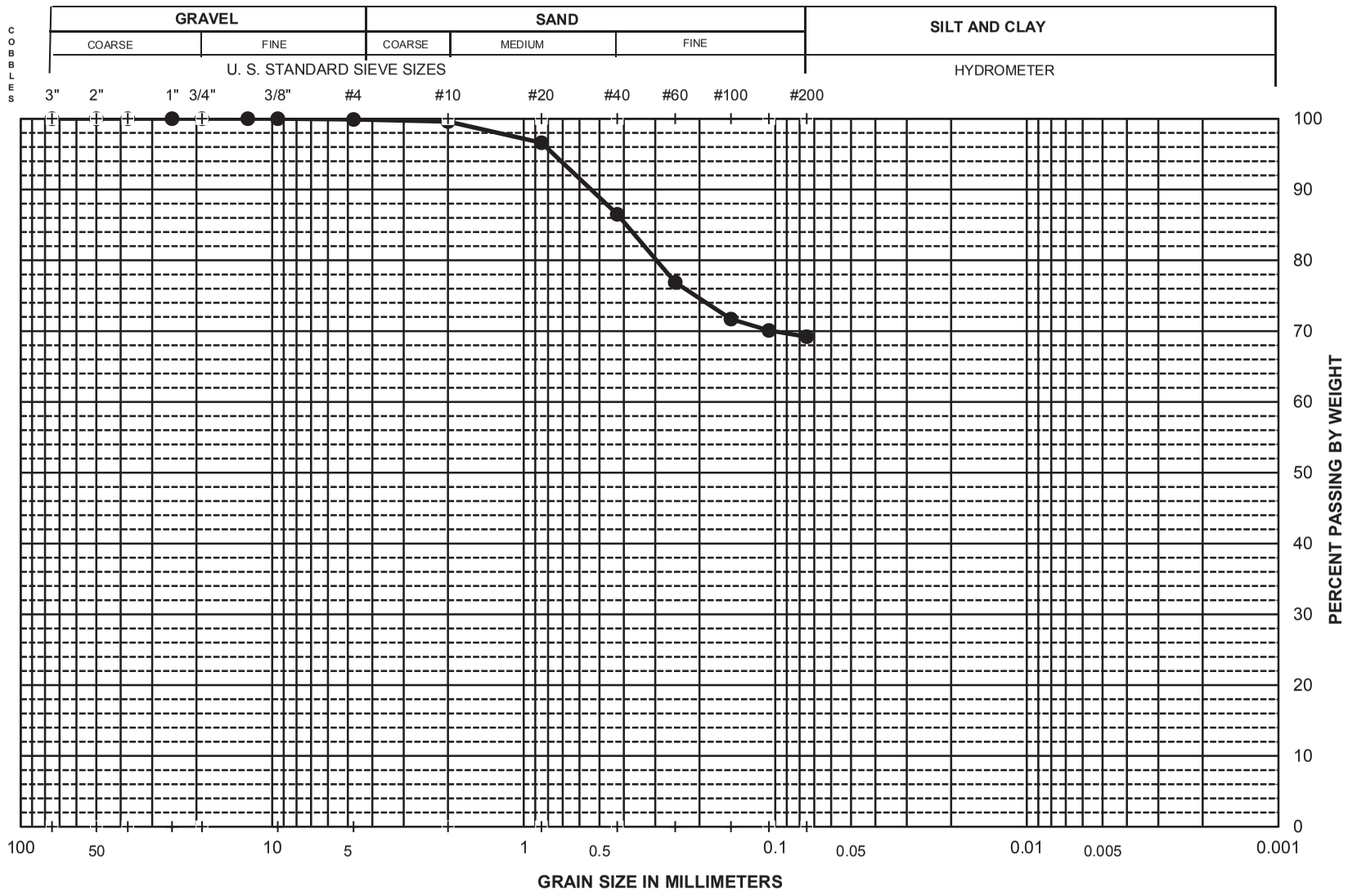
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.9
#10	2.00	99.6
#20	0.850	96.6
#40	0.425	86.5
#60	0.250	76.9
#100	0.150	71.7
#140	0.106	70.1
#200	0.075	69.2
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.1
% Sand	30.7
% Fines	69.2

D_{85}	0.391
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB06	Fines	NA	●	NA	NA	NA	NA	**Dark gray sandy Clay (CL)**

PROJECT NAME: **San Elijo Lagoon**

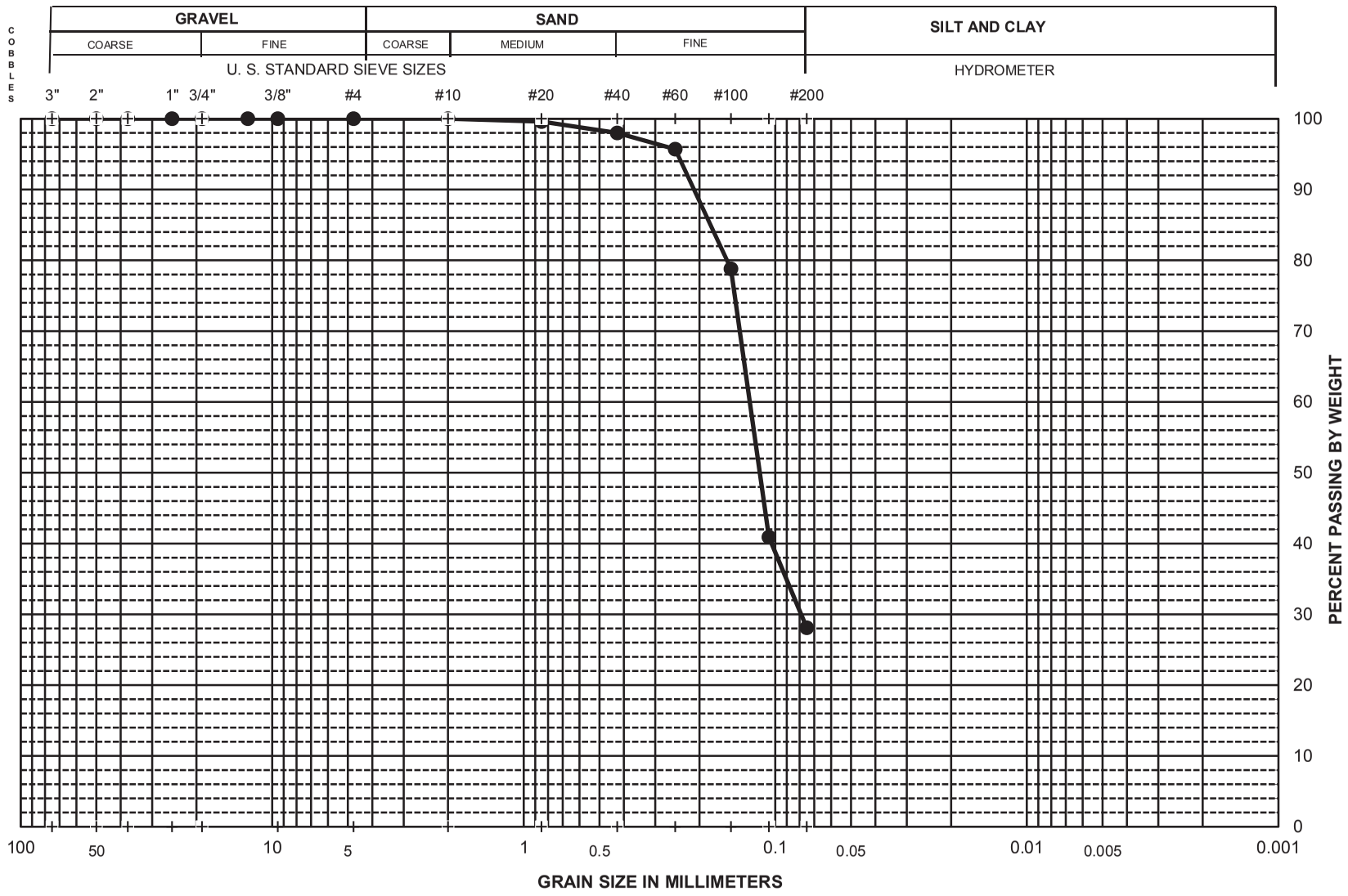
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB06 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.6
#40	0.425	98.0
#60	0.250	95.7
#100	0.150	78.8
#140	0.106	40.9
#200	0.075	28.1
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	71.9
% Fines	28.1

D_{85}	0.181
D_{60}	0.126
D_{50}	0.115
D_{30}	0.079
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB06	Sands	NA	●	NA	NA	NA	NA	**Dark gary clayey Sand (SC)**

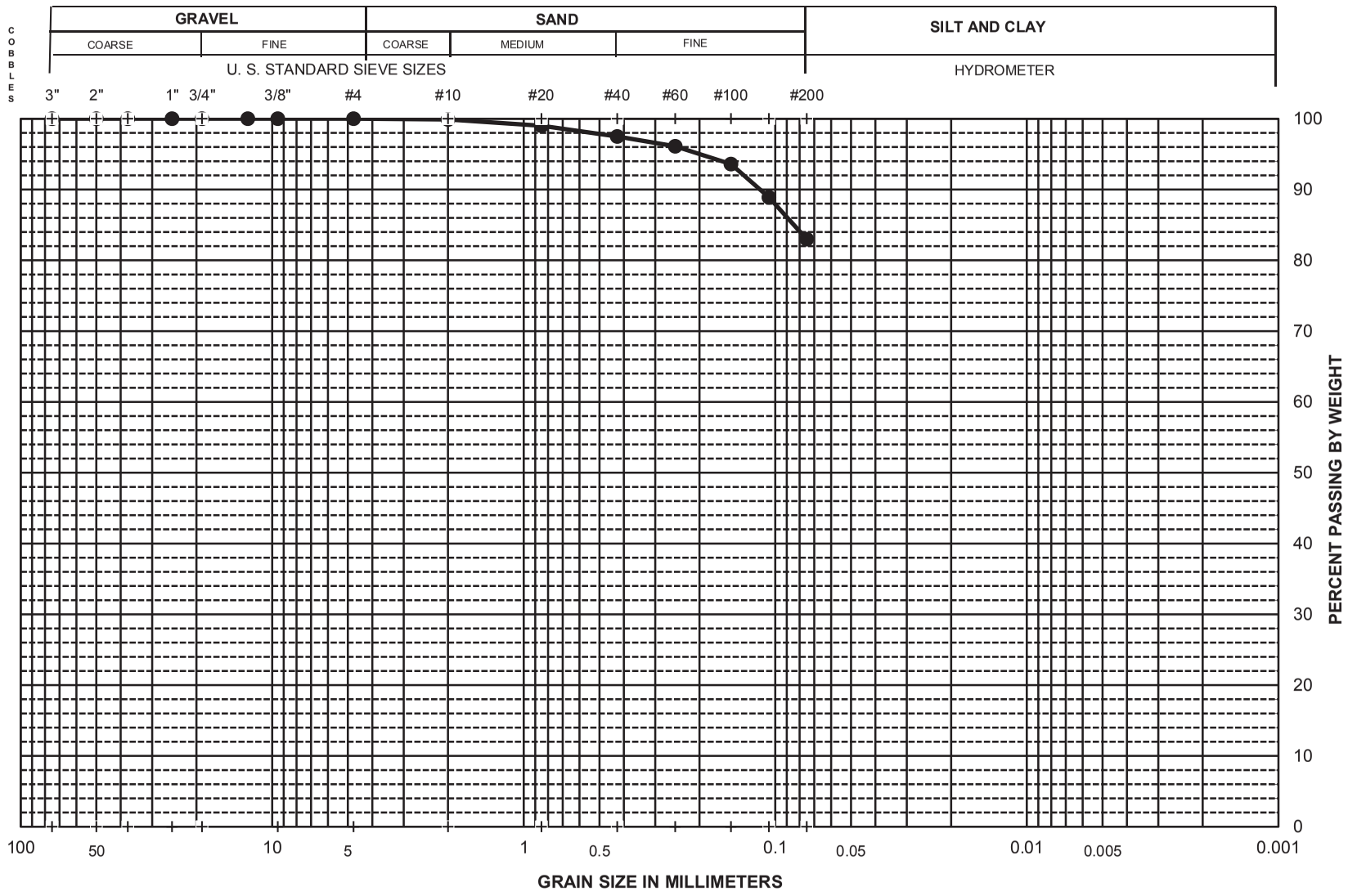
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.0
#40	0.425	97.5
#60	0.250	96.1
#100	0.150	93.6
#140	0.106	88.9
#200	0.075	83.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	17.0
% Fines	83.0

D_{85}	0.084
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB07	Fines	NA	●	NA	NA	NA	NA	**Olive gray Clay with sand (CH)**

PROJECT NAME: **San Elijo Lagoon**

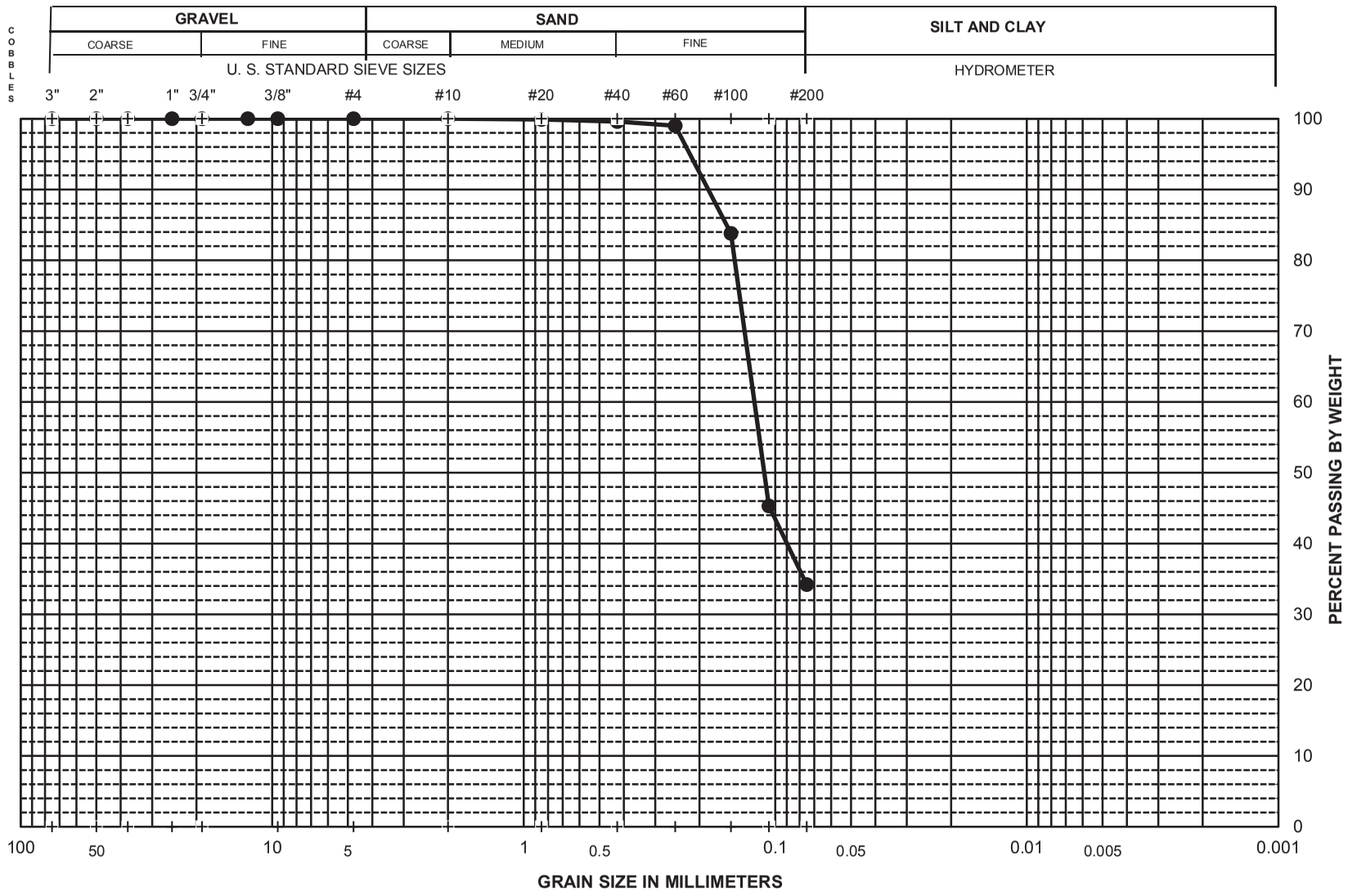
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB07 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.6
#60	0.250	99.0
#100	0.150	83.8
#140	0.106	45.3
#200	0.075	34.2
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	65.8
% Fines	34.2

D_{85}	0.156
D_{60}	0.121
D_{50}	0.111
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB07	Sands	NA	●	NA	NA	NA	NA	**Very dark greenish gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

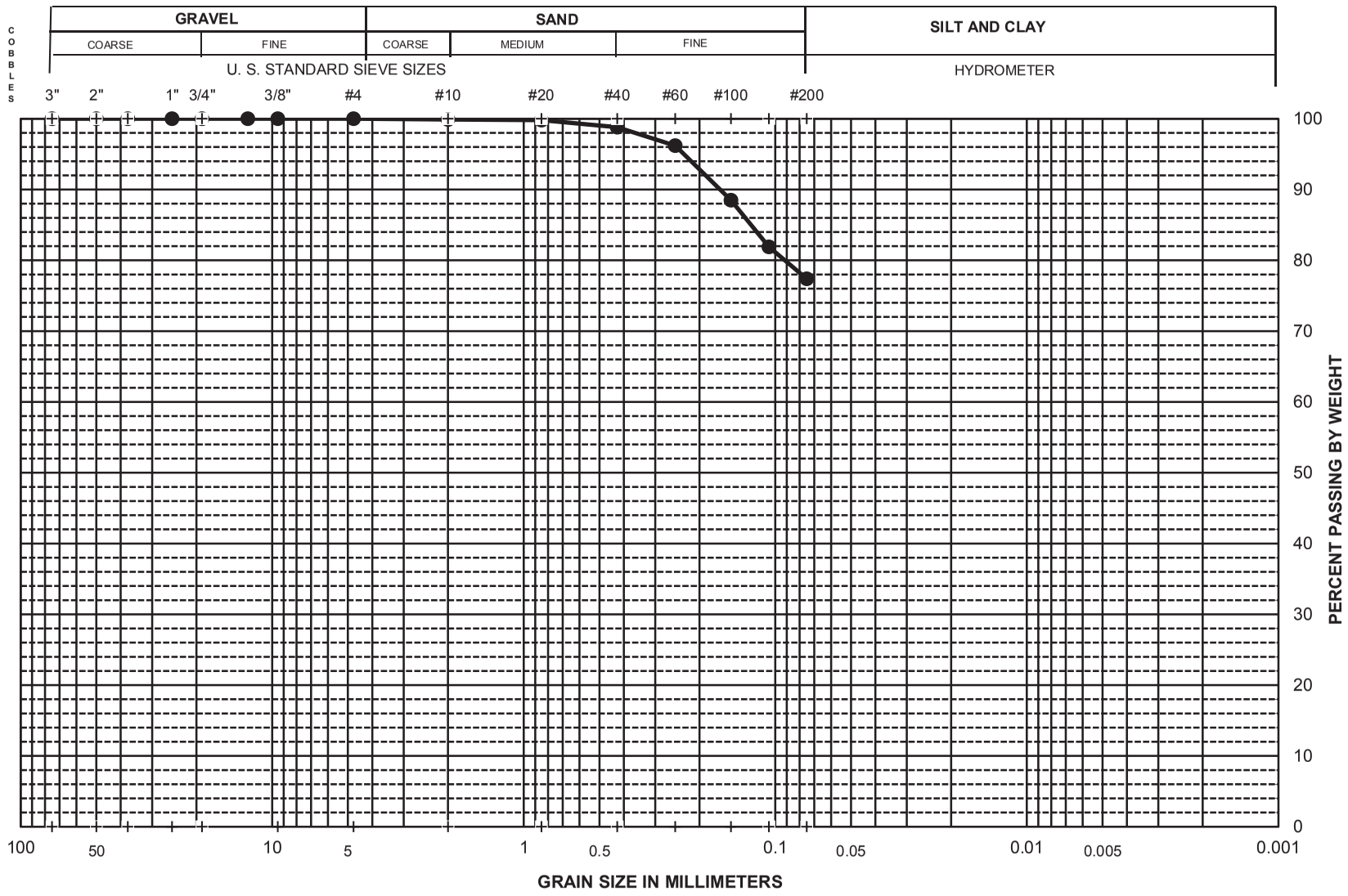
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB07 Sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.8
#40	0.425	98.8
#60	0.250	96.2
#100	0.150	88.5
#140	0.106	81.9
#200	0.075	77.4
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	22.6
% Fines	77.4

D_{85}	0.125
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
EB08	Fines	NA	●	NA	NA	NA	NA	**Gray Clay with sand (CL)**

PROJECT NAME: **San Elijo Lagoon**

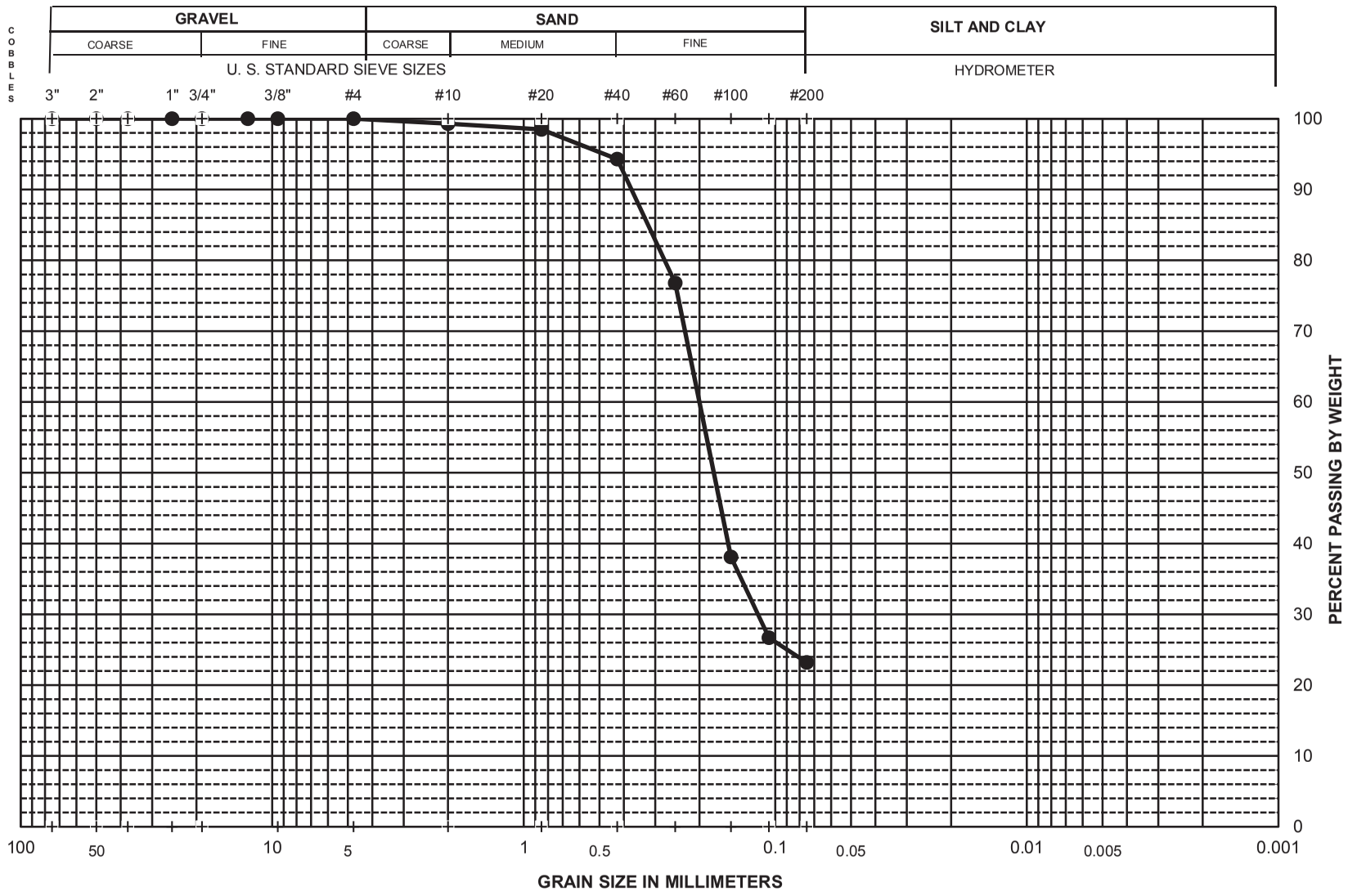
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo EB08 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.3
#20	0.850	98.5
#40	0.425	94.3
#60	0.250	76.8
#100	0.150	38.1
#140	0.106	26.7
#200	0.075	23.2
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	76.8
% Fines	23.2

D_{85}	0.321
D_{60}	0.200
D_{50}	0.176
D_{30}	0.117
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
OD / WB01		NA	●	NA	NA	NA	NA	**Dark gray clayey Sand (SC)**

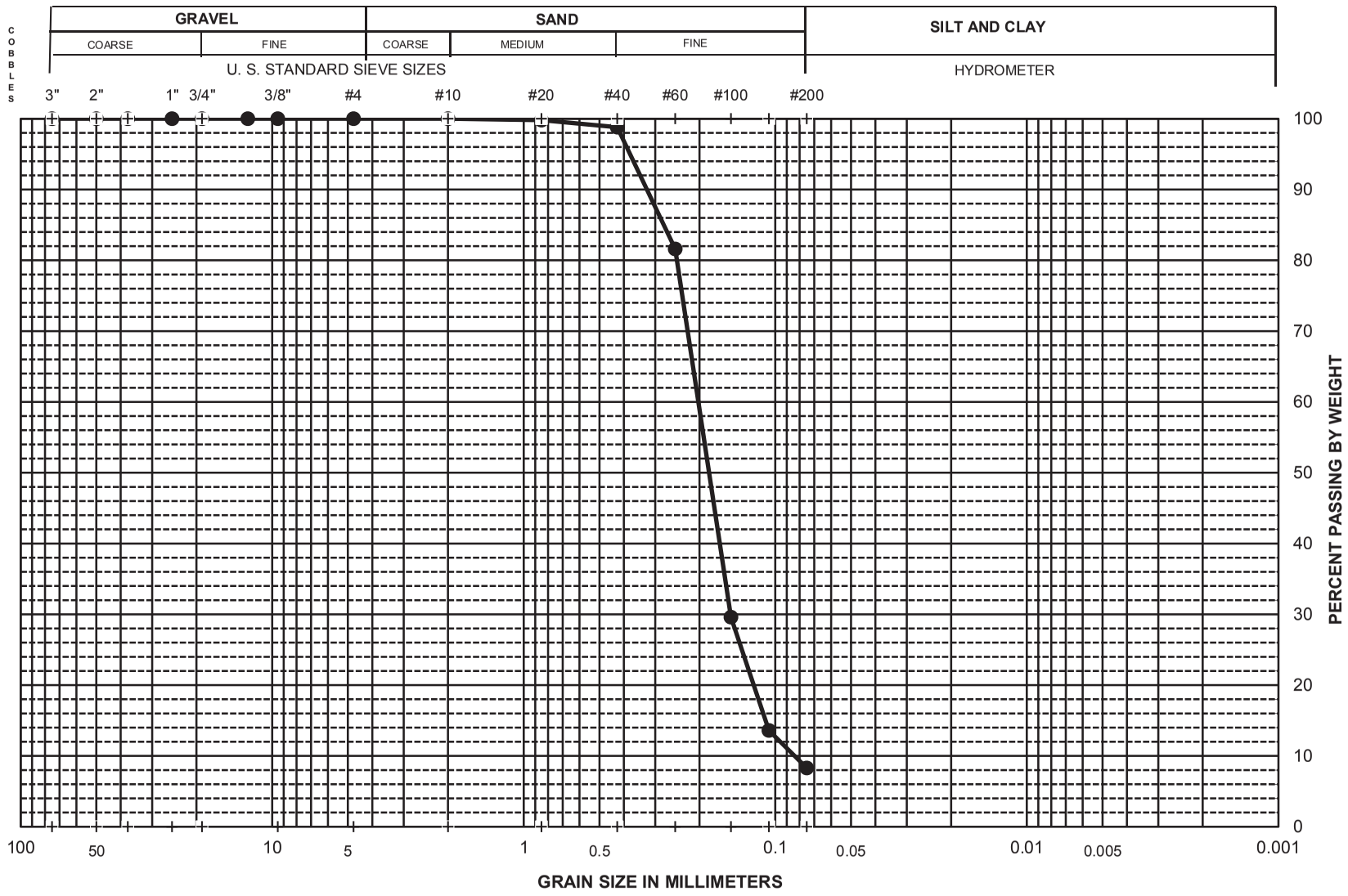
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	98.8
#60	0.250	81.6
#100	0.150	29.6
#140	0.106	13.6
#200	0.075	8.3
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	91.7
% Fines	8.3

D_{85}	0.278
D_{60}	0.202
D_{50}	0.183
D_{30}	0.151
D_{15}	0.109
D_{10}	0.084
C_u	2.4
C_c	1.3

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
OD01	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

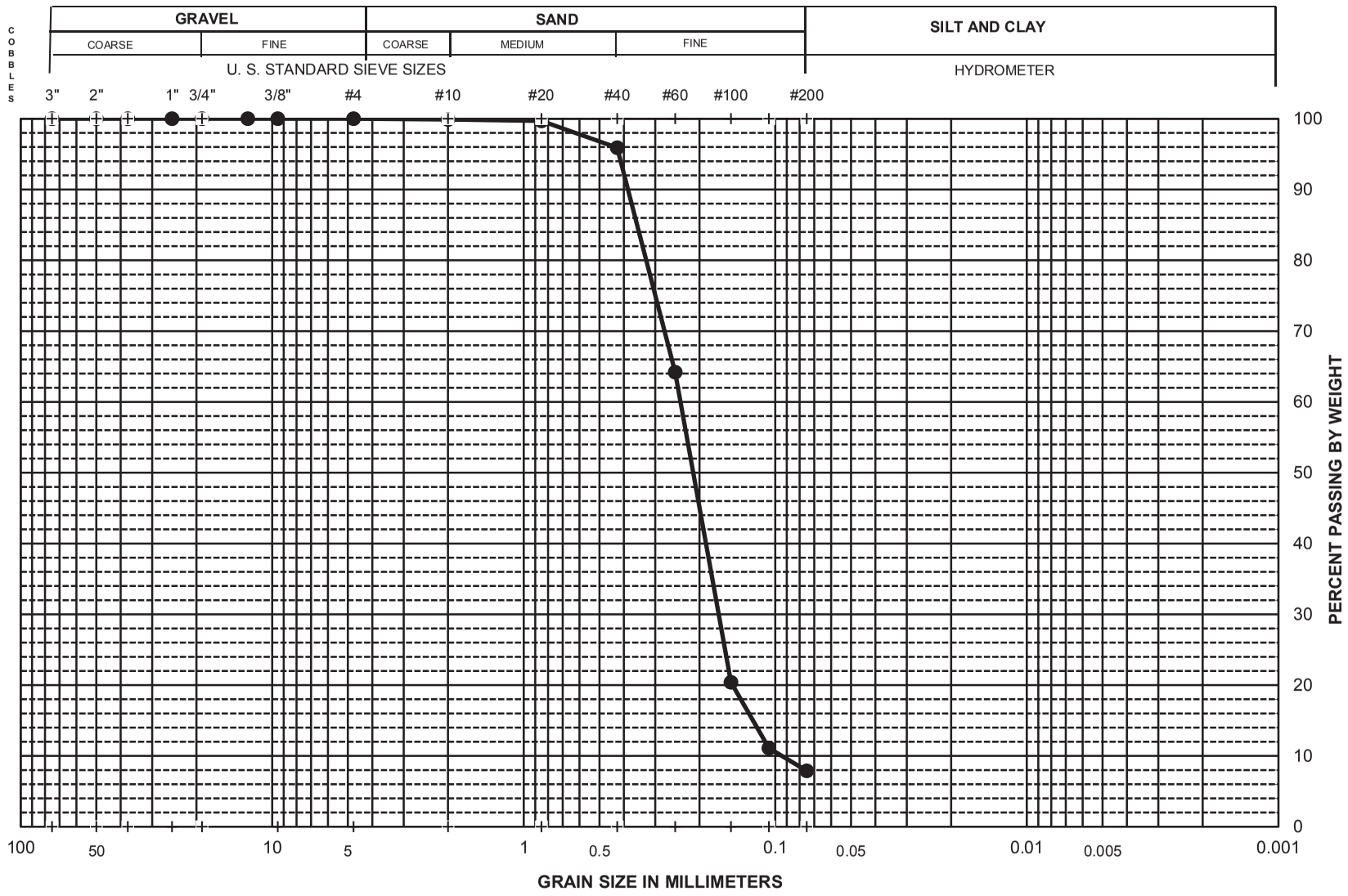
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo OD01 sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.7
#40	0.425	95.9
#60	0.250	64.2
#100	0.150	20.4
#140	0.106	11.1
#200	0.075	7.9

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.0
% Sand	92.1
% Fines	7.9

D_{85}	0.354
D_{60}	0.238
D_{50}	0.212
D_{30}	0.168
D_{15}	0.123
D_{10}	0.094
C_u	2.5
C_c	1.3

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
OD01-A	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

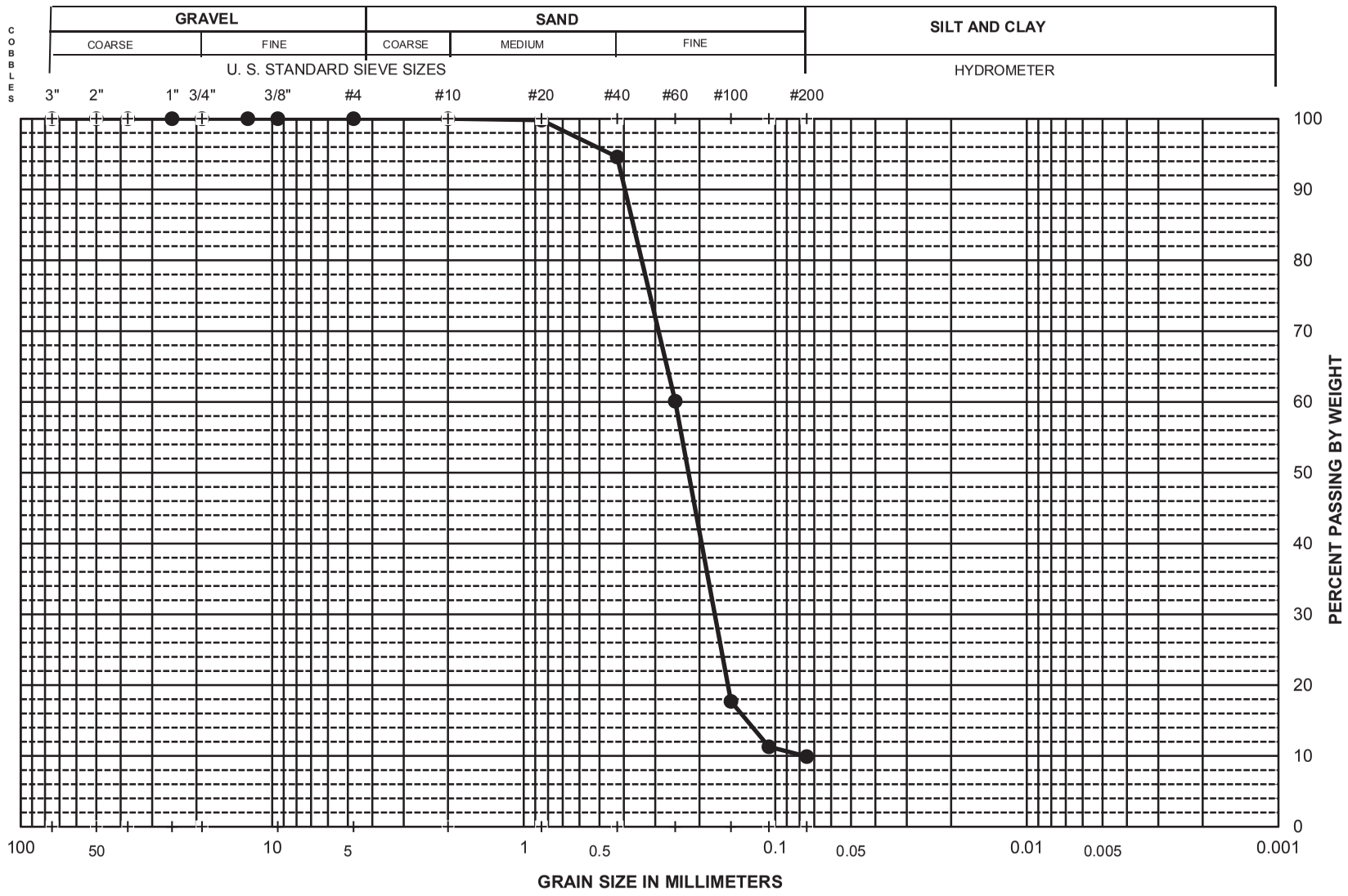
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo OD01-A sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	94.6
#60	0.250	60.1
#100	0.150	17.7
#140	0.106	11.3
#200	0.075	9.9
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	90.1
% Fines	9.9

D_{85}	0.367
D_{60}	0.250
D_{50}	0.221
D_{30}	0.174
D_{15}	0.130
D_{10}	0.077
C_u	3.2
C_c	1.6

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
OD02	Fines	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

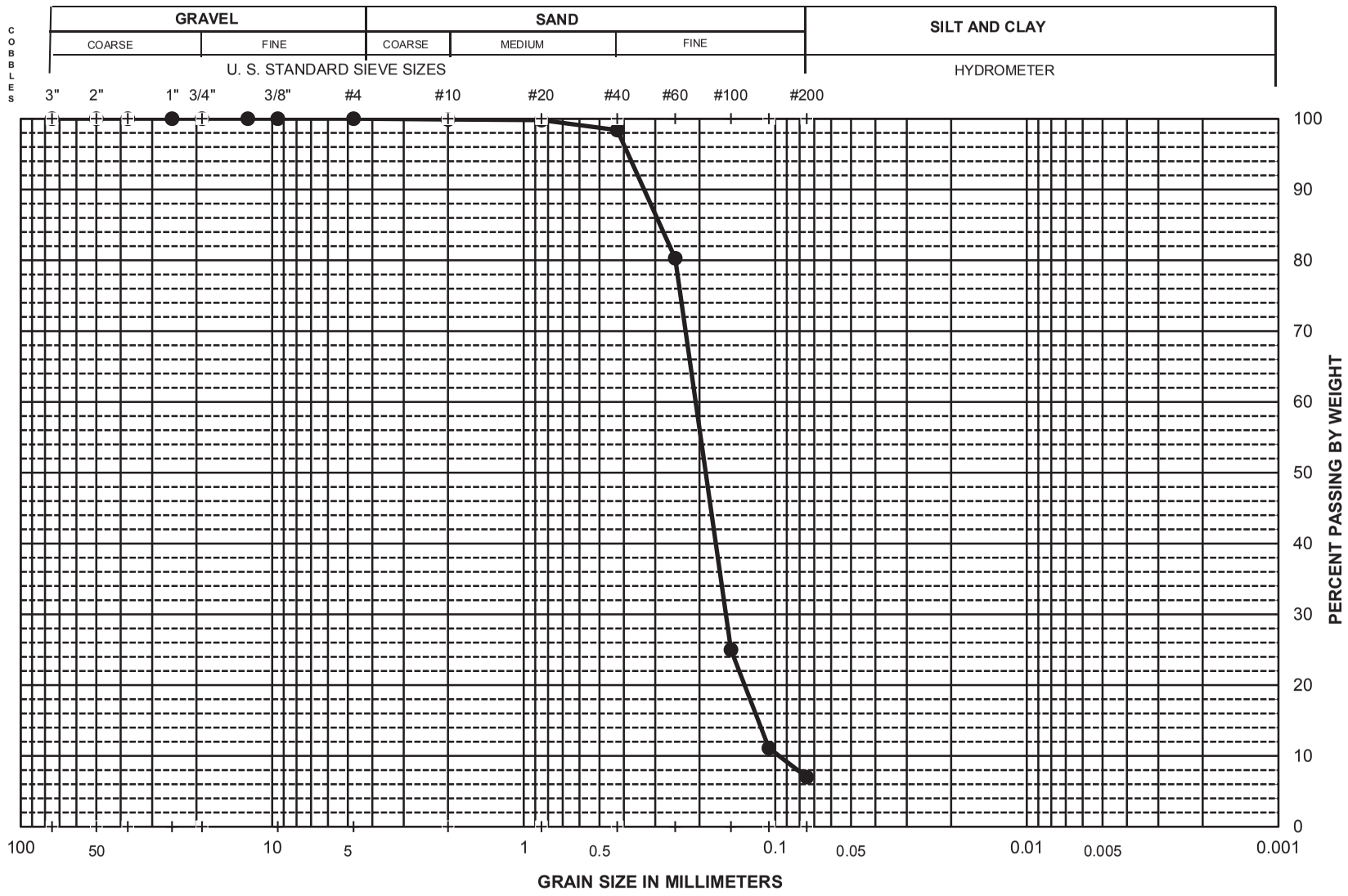
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo OD02 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.8
#40	0.425	98.4
#60	0.250	80.3
#100	0.150	25.0
#140	0.106	11.1
#200	0.075	7.0
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	93.0
% Fines	7.0

D_{85}	0.287
D_{60}	0.207
D_{50}	0.189
D_{30}	0.157
D_{15}	0.117
D_{10}	0.097
C_u	2.1
C_c	1.2

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
OD02	Sands	NA	●	NA	NA	NA	NA	**Gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

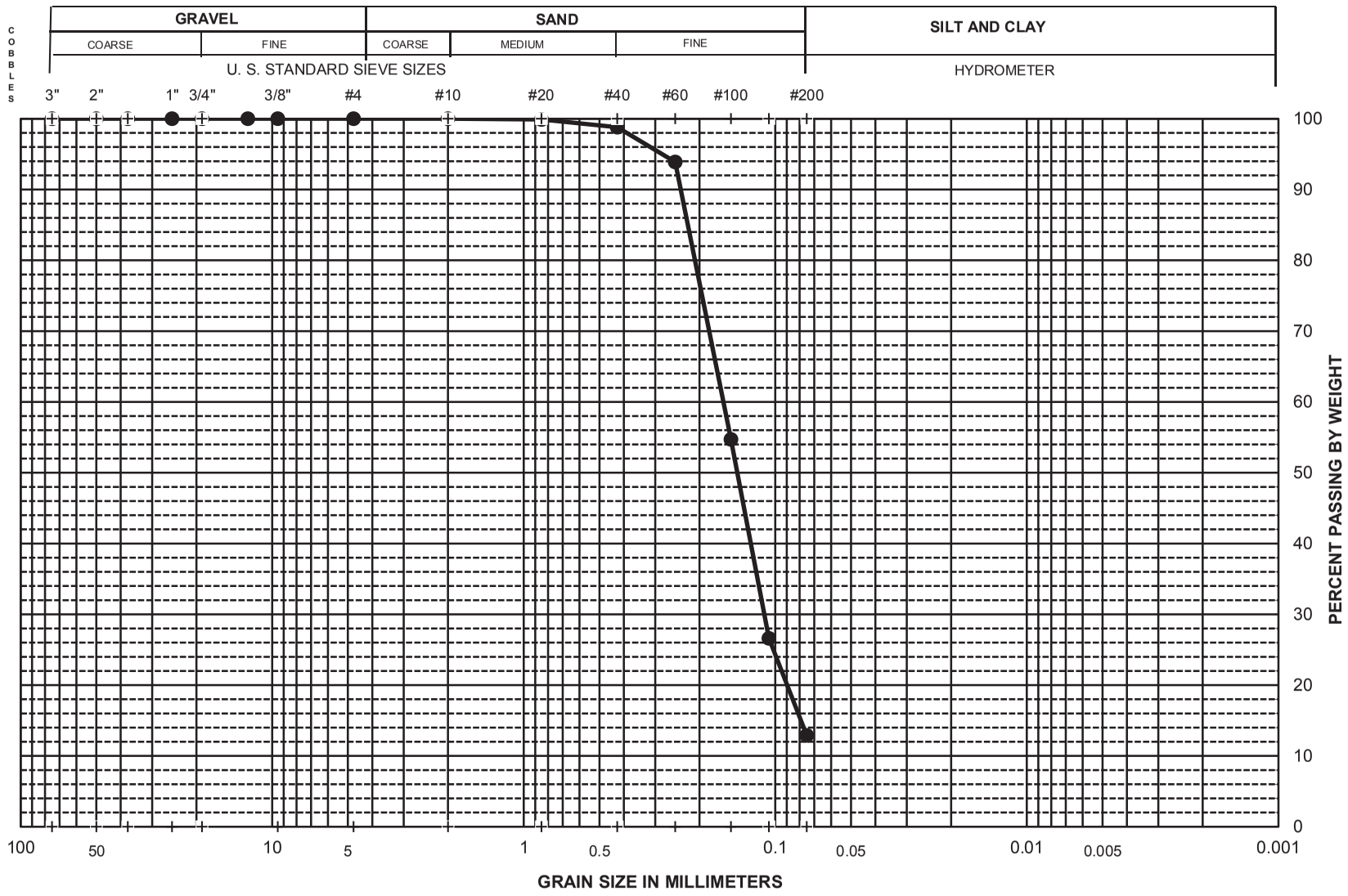
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo OD02 sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	98.8
#60	0.250	93.9
#100	0.150	54.7
#140	0.106	26.6
#200	0.075	12.9
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	87.1
% Fines	12.9

D_{85}	0.223
D_{60}	0.161
D_{50}	0.142
D_{30}	0.111
D_{15}	0.079
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
OD03	Fines	NA	●	NA	NA	NA	NA	**Dark gray silty Sand (SM)**

PROJECT NAME: **San Elijo Lagoon**

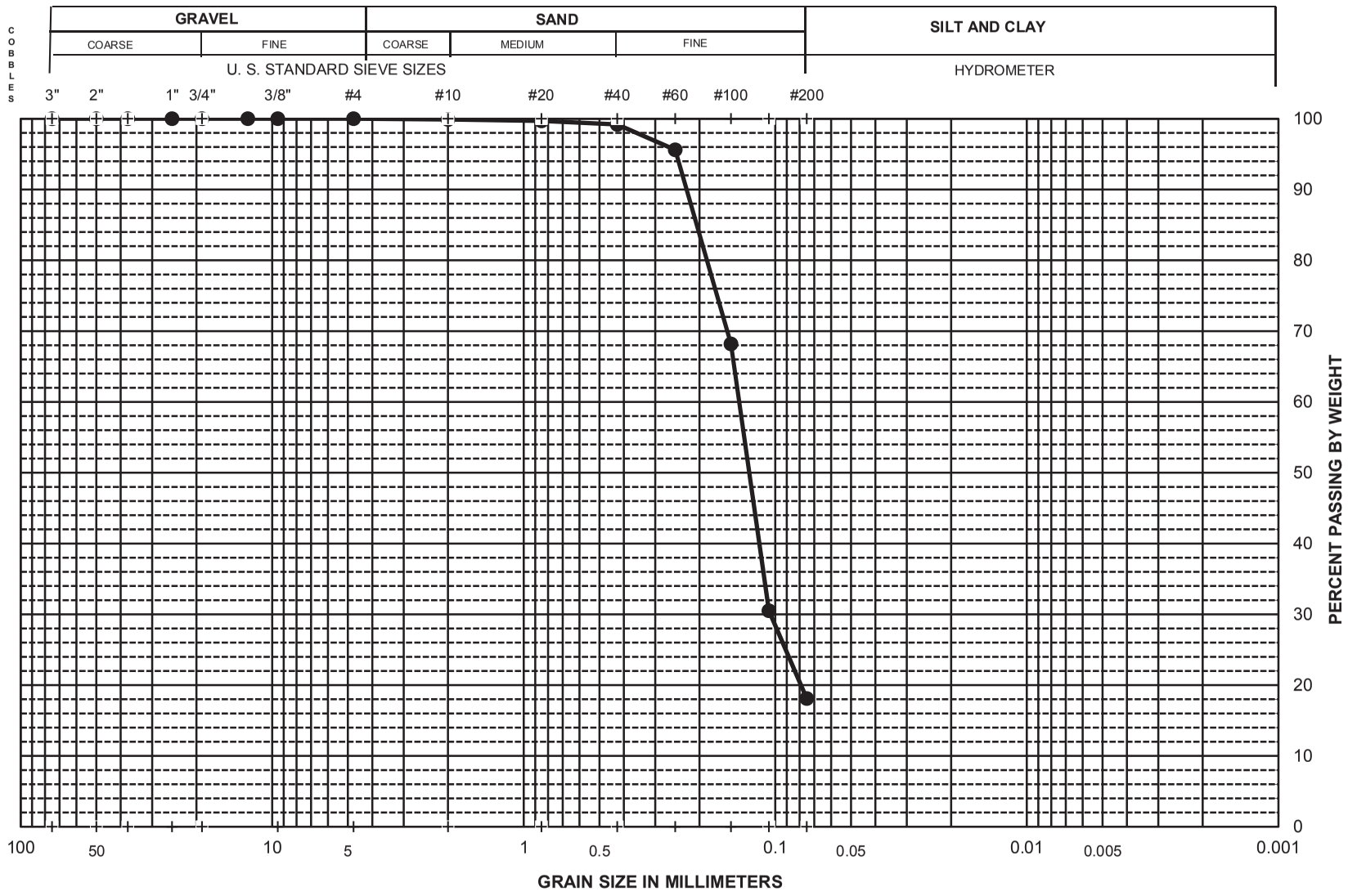
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo OD03 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.7
#40	0.425	99.2
#60	0.250	95.6
#100	0.150	68.2
#140	0.106	30.5
#200	0.075	18.1
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	81.9
% Fines	18.1

D_{85}	0.205
D_{60}	0.139
D_{50}	0.127
D_{30}	0.105
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
OD03	Sands	NA	●	NA	NA	NA	NA	**Dark gray clayey Sand (SC)**

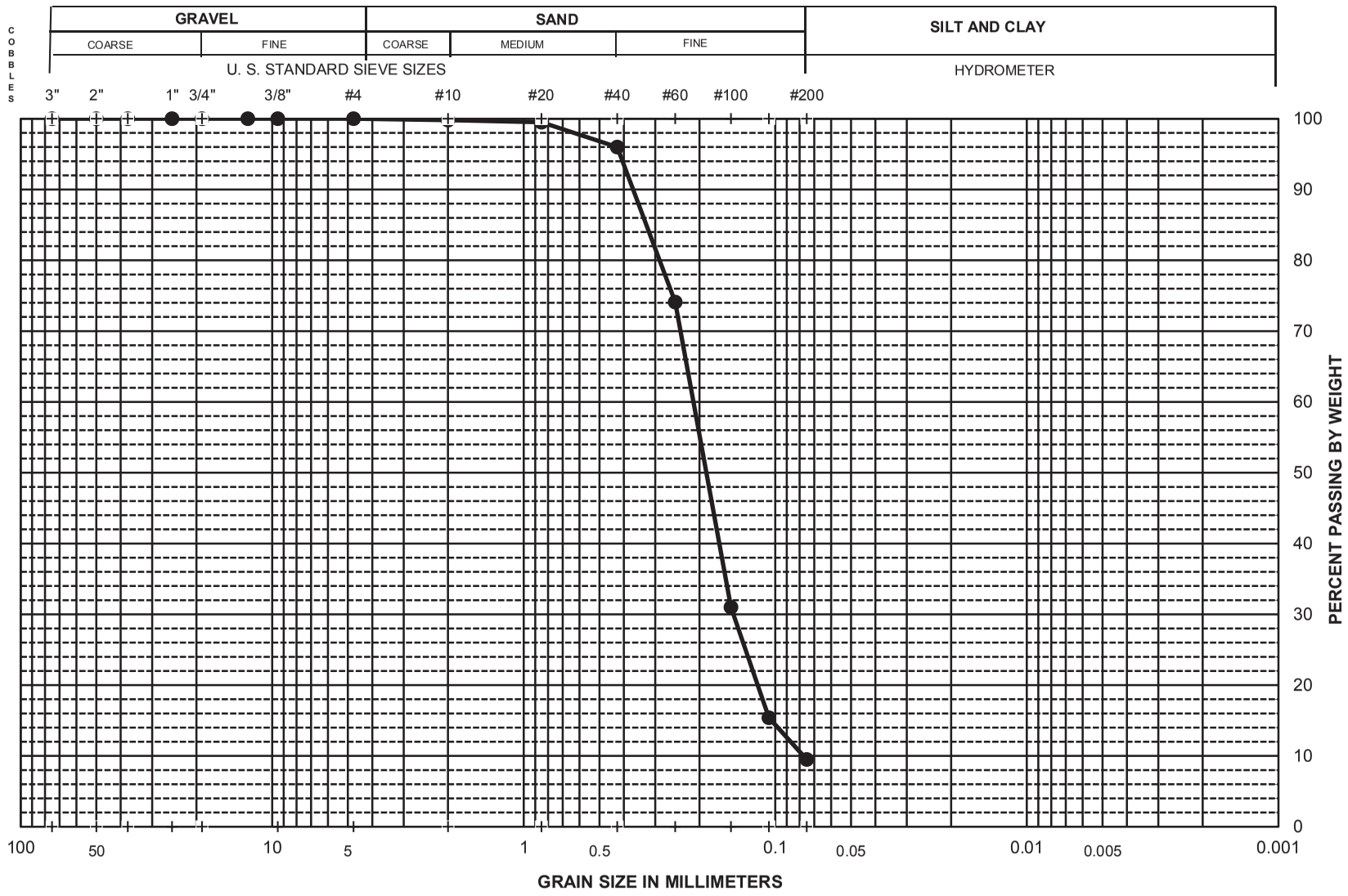
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.8
#20	0.850	99.5
#40	0.425	96.0
#60	0.250	74.1
#100	0.150	31.0
#140	0.106	15.4
#200	0.075	9.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	90.5
% Fines	9.5

D_{85}	0.326
D_{60}	0.212
D_{50}	0.188
D_{30}	0.147
D_{15}	0.104
D_{10}	0.077
C_u	2.7
C_c	1.3

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL -WB02	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

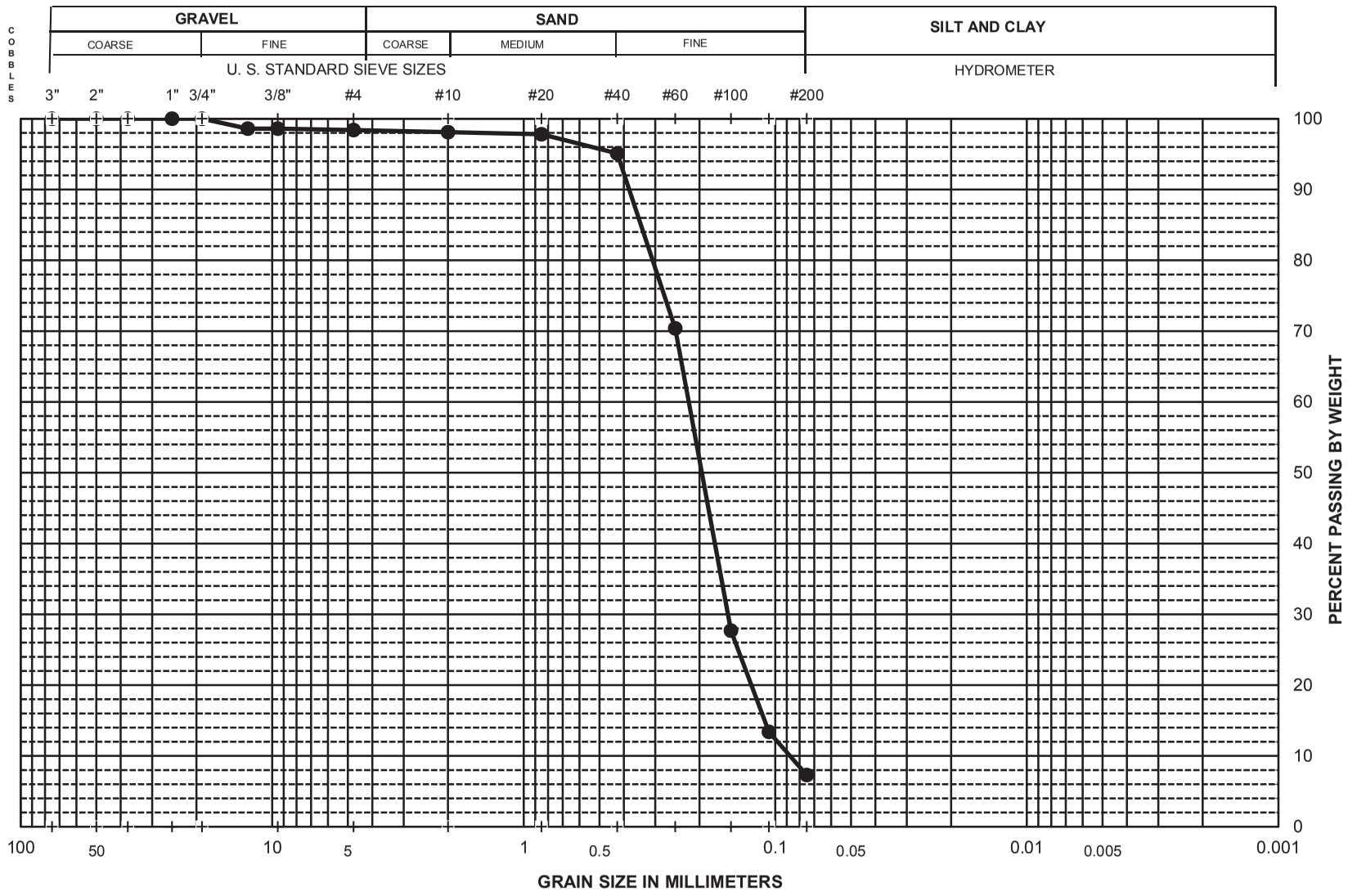
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo SEL WB02 sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	98.6
3/8"	9.50	98.6
#4	4.75	98.4
#10	2.00	98.1
#20	0.850	97.8
#40	0.425	95.1
#60	0.250	70.4
#100	0.150	27.7
#140	0.106	13.4
#200	0.075	7.3
Hydrometer Analysis		

% Cobbles	XX
% Gravel	1.6
% Sand	91.1
% Fines	7.3

D_{85}	0.342
D_{60}	0.221
D_{50}	0.196
D_{30}	0.154
D_{15}	0.110
D_{10}	0.087
C_u	2.5
C_c	1.2

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL -WB04	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

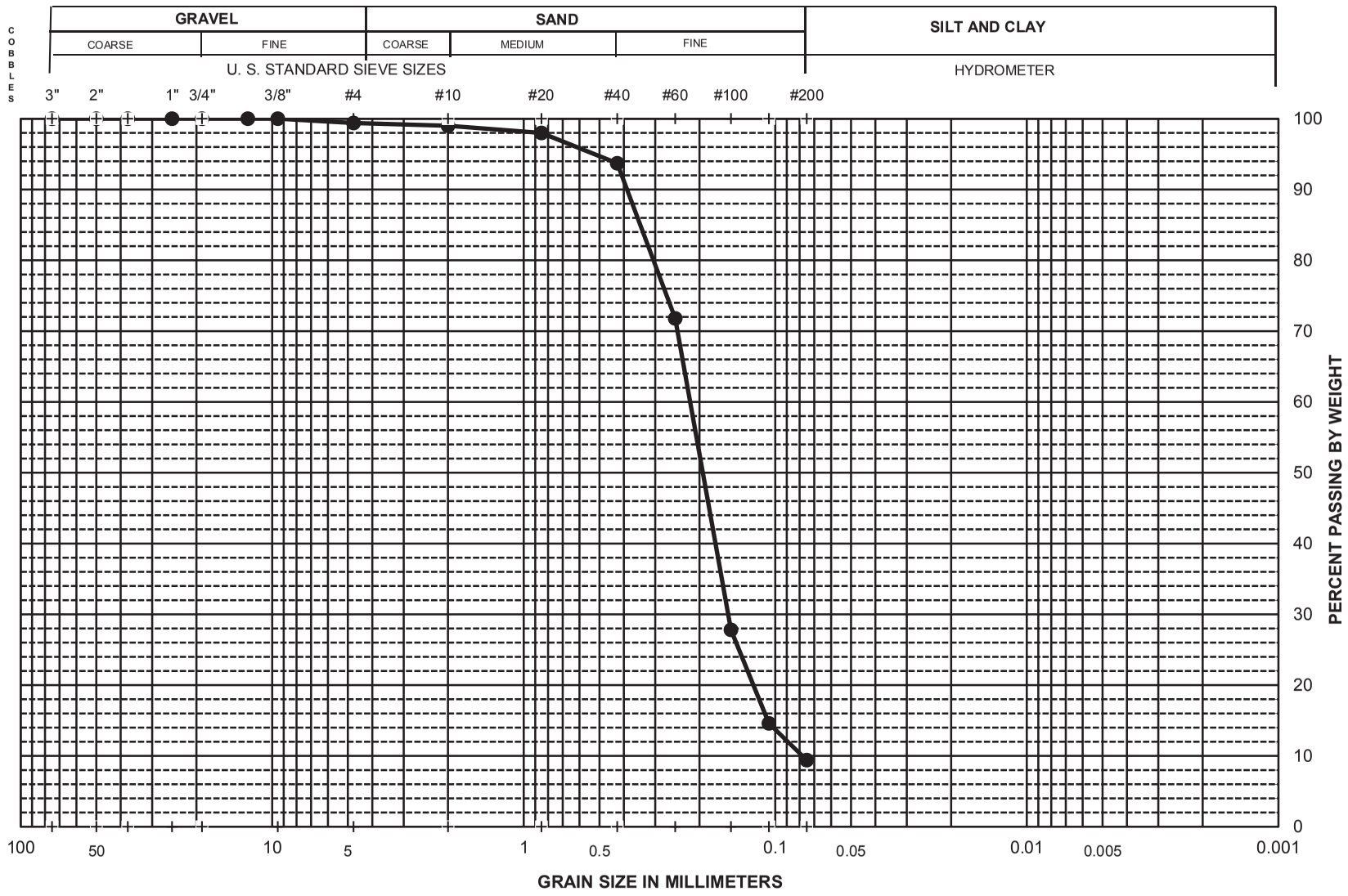
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.4
#10	2.00	99.0
#20	0.850	98.0
#40	0.425	93.7
#60	0.250	71.8
#100	0.150	27.8
#140	0.106	14.6
#200	0.075	9.4

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.6
% Sand	90.0
% Fines	9.4

D_{85}	0.344
D_{60}	0.218
D_{50}	0.194
D_{30}	0.154
D_{15}	0.107
D_{10}	0.078
C_u	2.8
C_c	1.4

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL -WB05	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand with silt (SP-SM)**

PROJECT NAME: **San Elijo Lagoon**

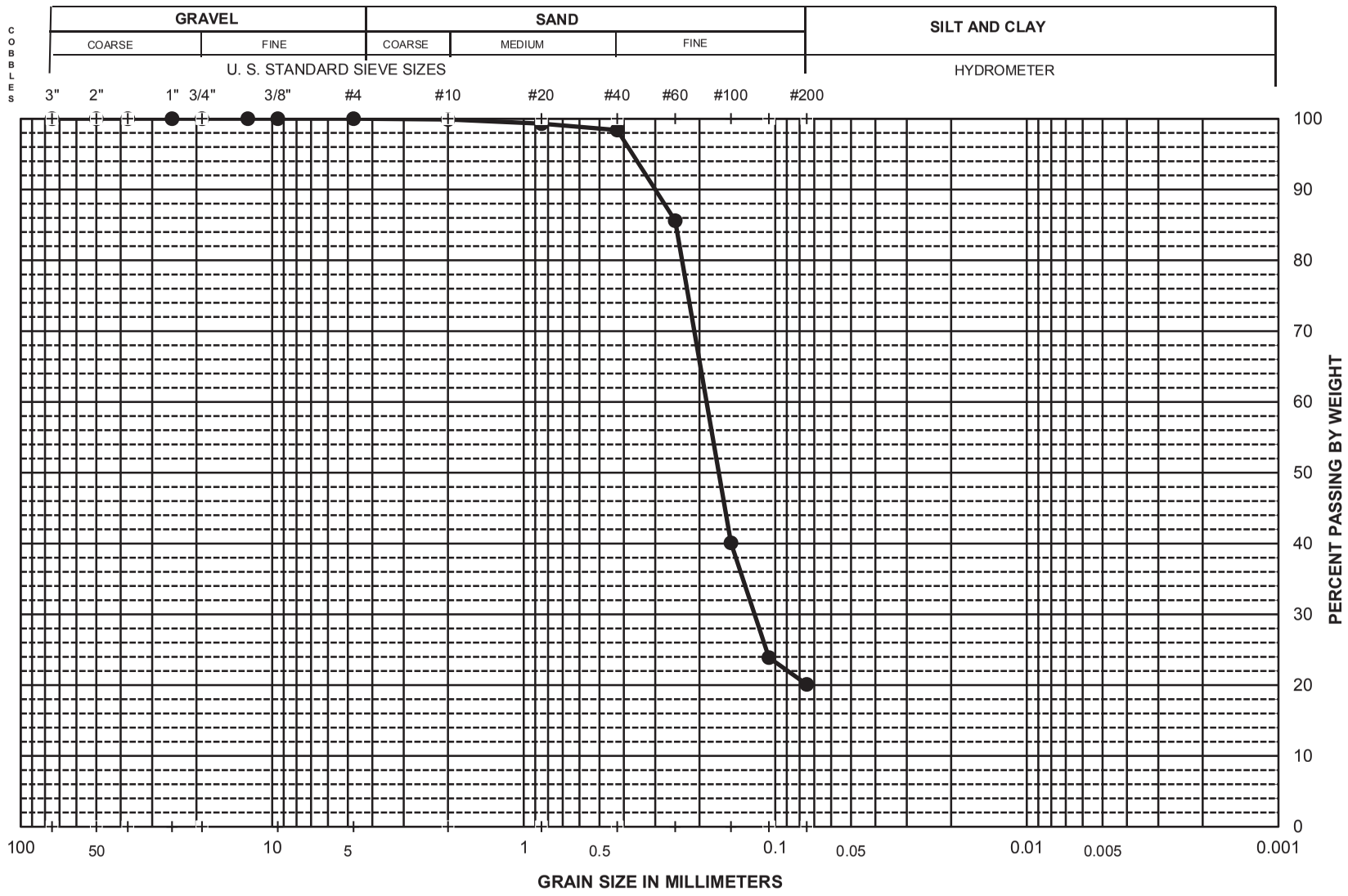
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo SEL WB05 sands

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.3
#40	0.425	98.4
#60	0.250	85.6
#100	0.150	40.1
#140	0.106	23.9
#200	0.075	20.1
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	79.9
% Fines	20.1

D_{85}	0.248
D_{60}	0.188
D_{50}	0.168
D_{30}	0.121
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL-WB02	Fines	NA	●	NA	NA	NA	NA	**Dark gary clayey Sand (SC)**

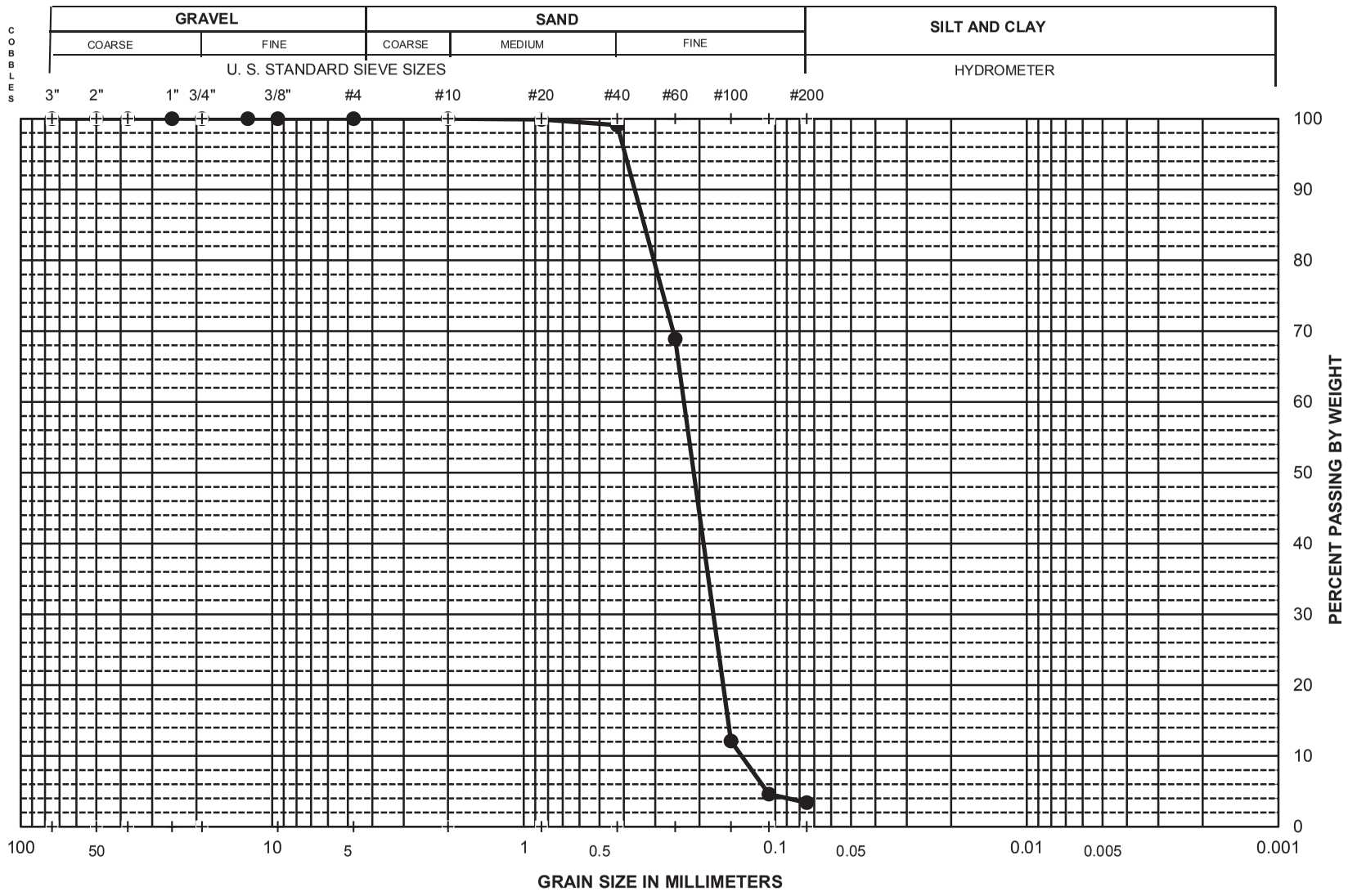
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.1
#60	0.250	68.9
#100	0.150	12.1
#140	0.106	4.6
#200	0.075	3.4
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.0
% Sand	96.6
% Fines	3.4

D_{85}	0.332
D_{60}	0.231
D_{50}	0.211
D_{30}	0.176
D_{15}	0.154
D_{10}	0.136
C_u	1.7
C_c	1.0

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL-WB03	Fines	NA	●	NA	NA	NA	NA	**Very dark gray poorly graded Sand (SP)**

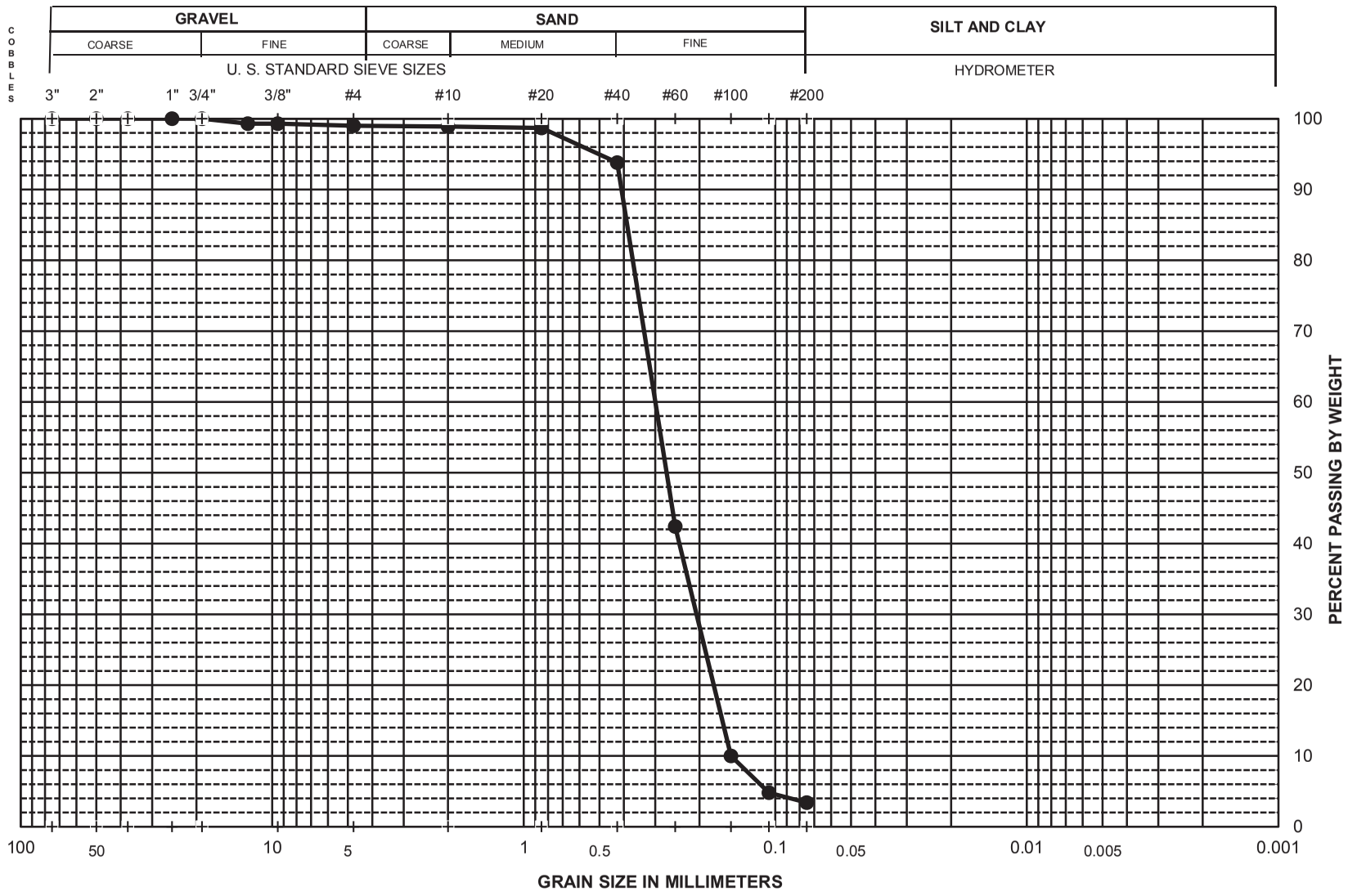
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	99.3
3/8"	9.50	99.3
#4	4.75	99.0
#10	2.00	98.9
#20	0.850	98.7
#40	0.425	93.8
#60	0.250	42.4
#100	0.150	10.0
#140	0.106	4.8
#200	0.075	3.4
Hydrometer Analysis		

% Cobbles	XX
% Gravel	1.0
% Sand	95.6
% Fines	3.4

D_{85}	0.388
D_{60}	0.300
D_{50}	0.270
D_{30}	0.206
D_{15}	0.162
D_{10}	0.150
C_u	2.0
C_c	0.9

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL-WB03	Sands	NA	●	NA	NA	NA	NA	**Dark gray poorly graded Sand (SP)**

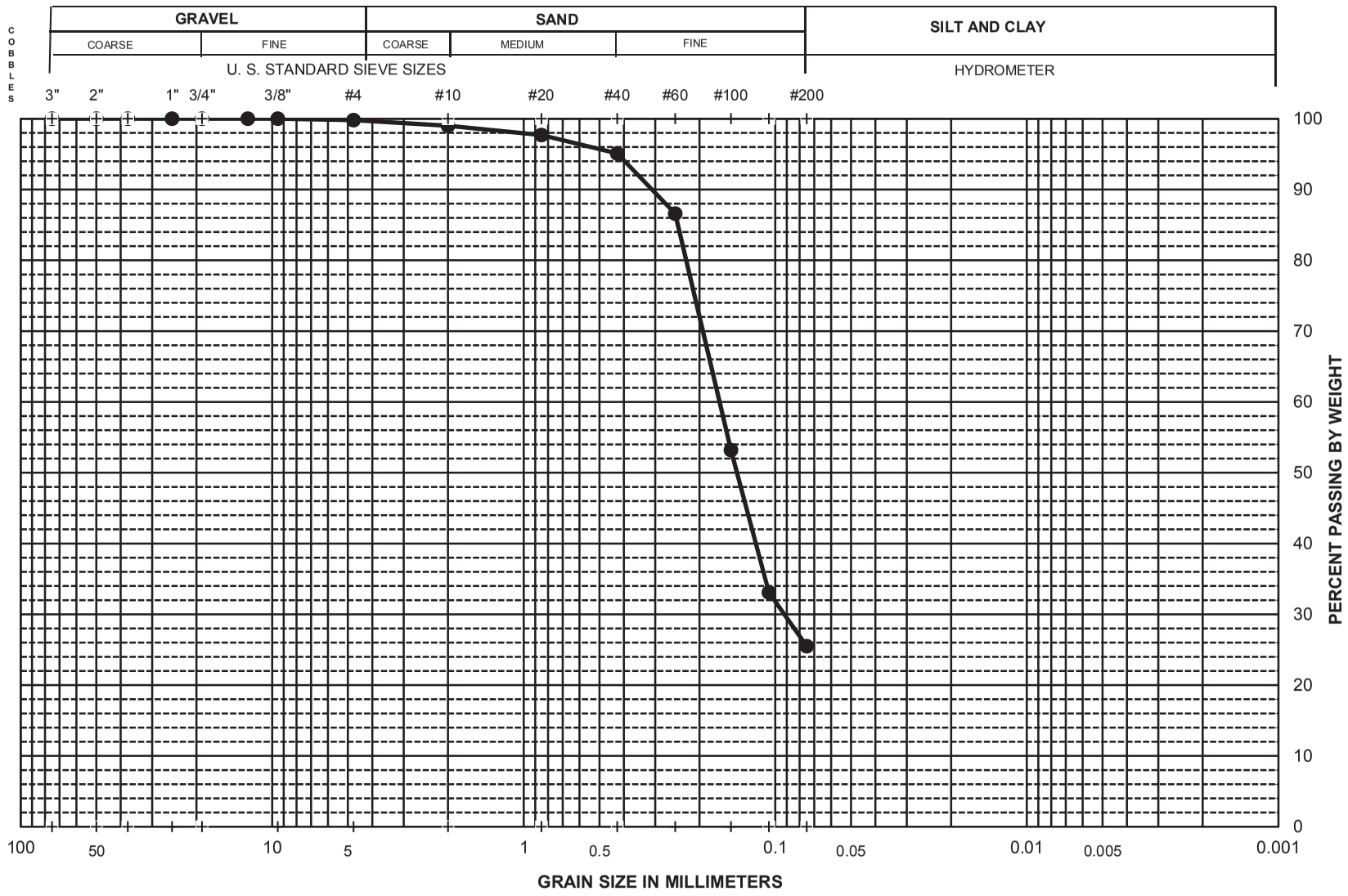
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.8
#10	2.00	99.0
#20	0.850	97.7
#40	0.425	95.1
#60	0.250	86.6
#100	0.150	53.2
#140	0.106	33.1
#200	0.075	25.5
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.2
% Sand	74.3
% Fines	25.5

D_{85}	0.244
D_{60}	0.166
D_{50}	0.142
D_{30}	0.092
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL-WB04	Fines	NA	●	NA	NA	NA	NA	**Dark gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

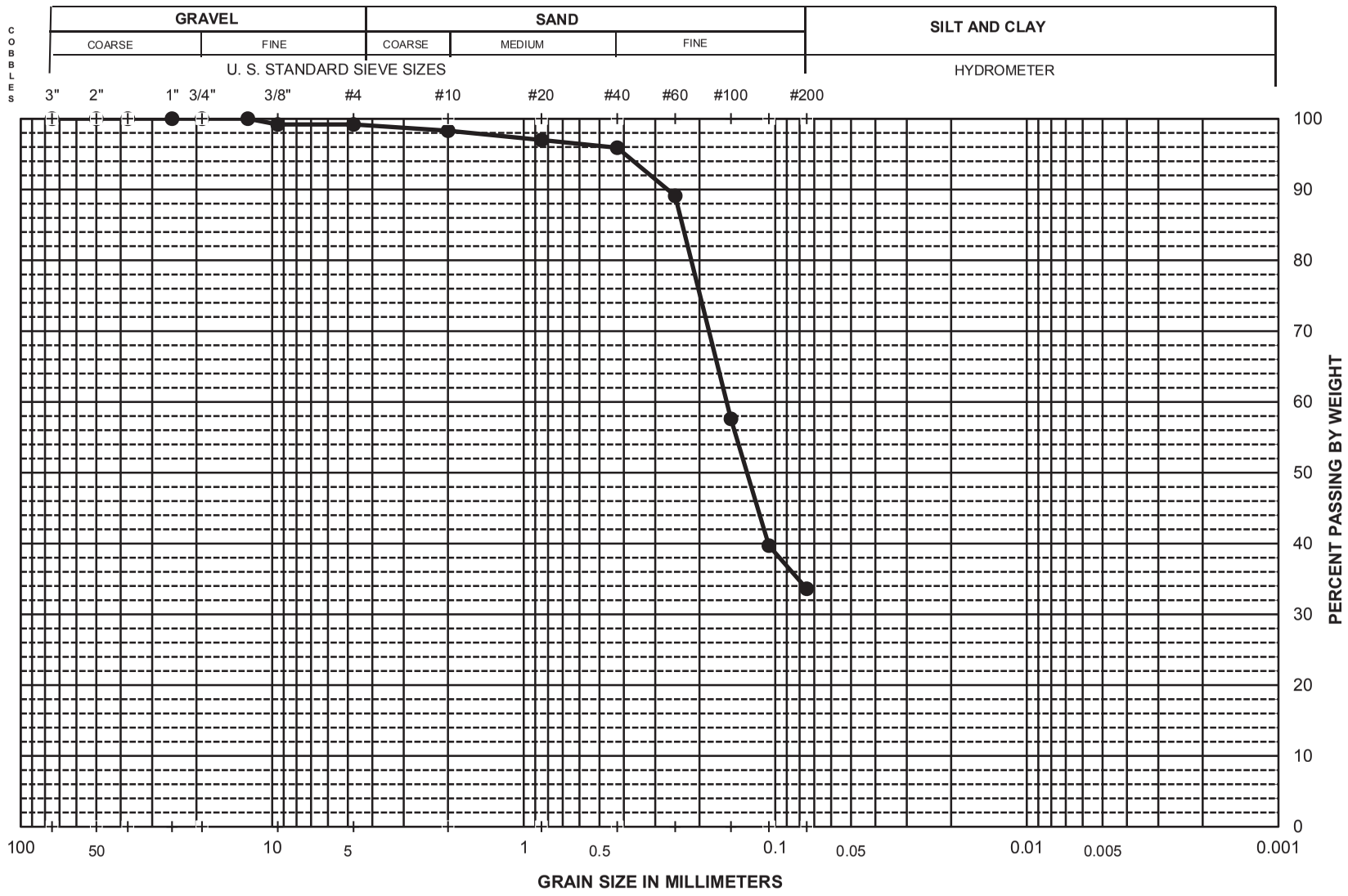
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo SEL-WB04 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	99.2
#4	4.75	99.2
#10	2.00	98.3
#20	0.850	97.0
#40	0.425	95.9
#60	0.250	89.1
#100	0.150	57.6
#140	0.106	39.7
#200	0.075	33.6
Hydrometer Analysis		

% Cobbles	XX
% Gravel	0.8
% Sand	65.6
% Fines	33.6

D_{85}	0.234
D_{60}	0.156
D_{50}	0.129
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	Sample	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
SEL-WB05	Fines	NA	●	NA	NA	NA	NA	**Dark gray clayey Sand (SC)**

PROJECT NAME: **San Elijo Lagoon**

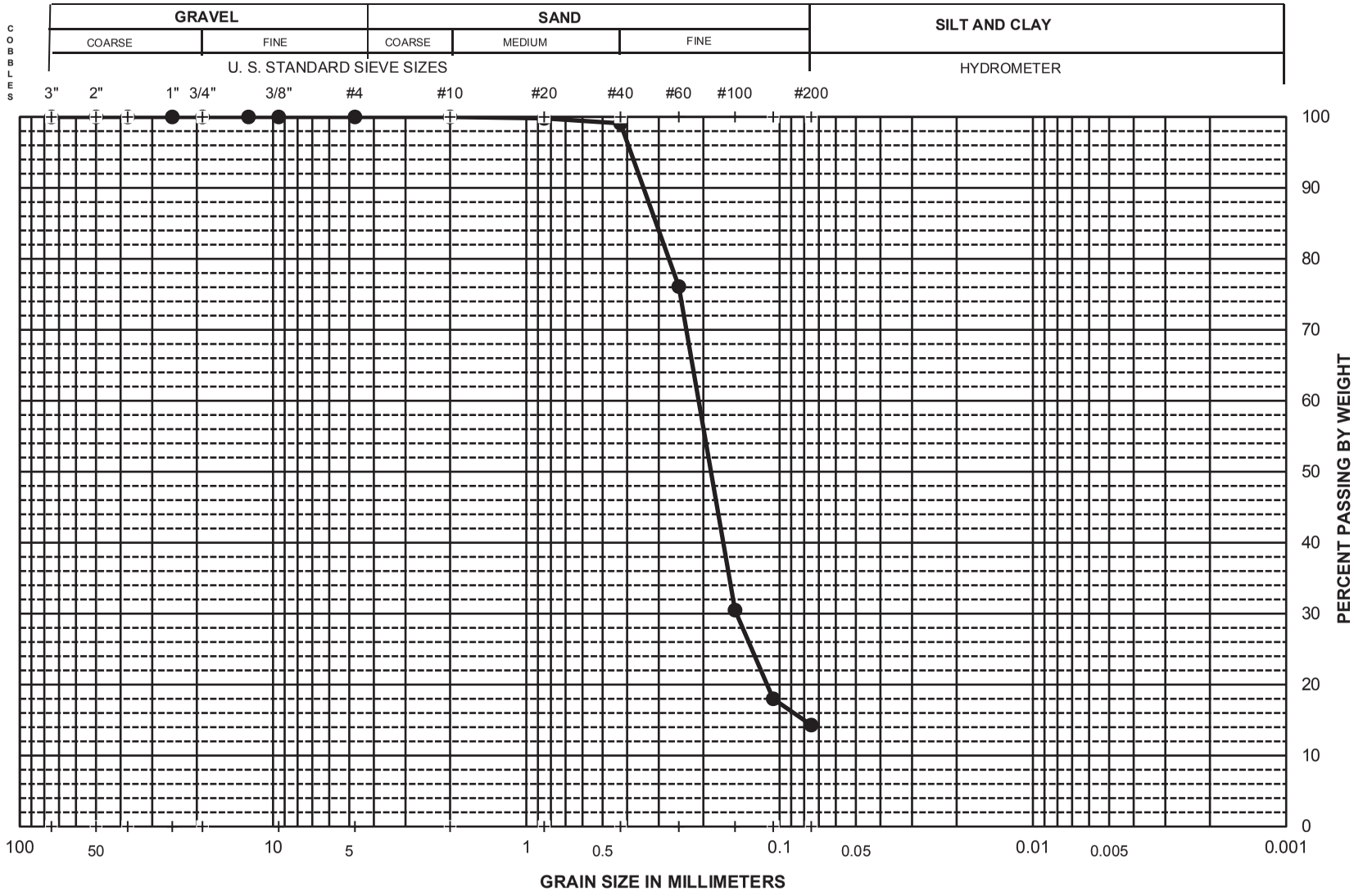
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo SEL-WB05 Fines

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	99.1
#60	0.250	76.1
#100	0.150	30.5
#140	0.106	18.0
#200	0.075	14.3

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.0
% Sand	85.7
% Fines	14.3
D_{85}	0.307
D_{60}	0.209
D_{50}	0.187
D_{30}	0.148
D_{15}	0.080
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB-Comp-SB-Lower	●	NA	NA	NA	NA	**Dark gray silty Sand (SM)**

PROJECT NAME: **San Elijo Lagoon**

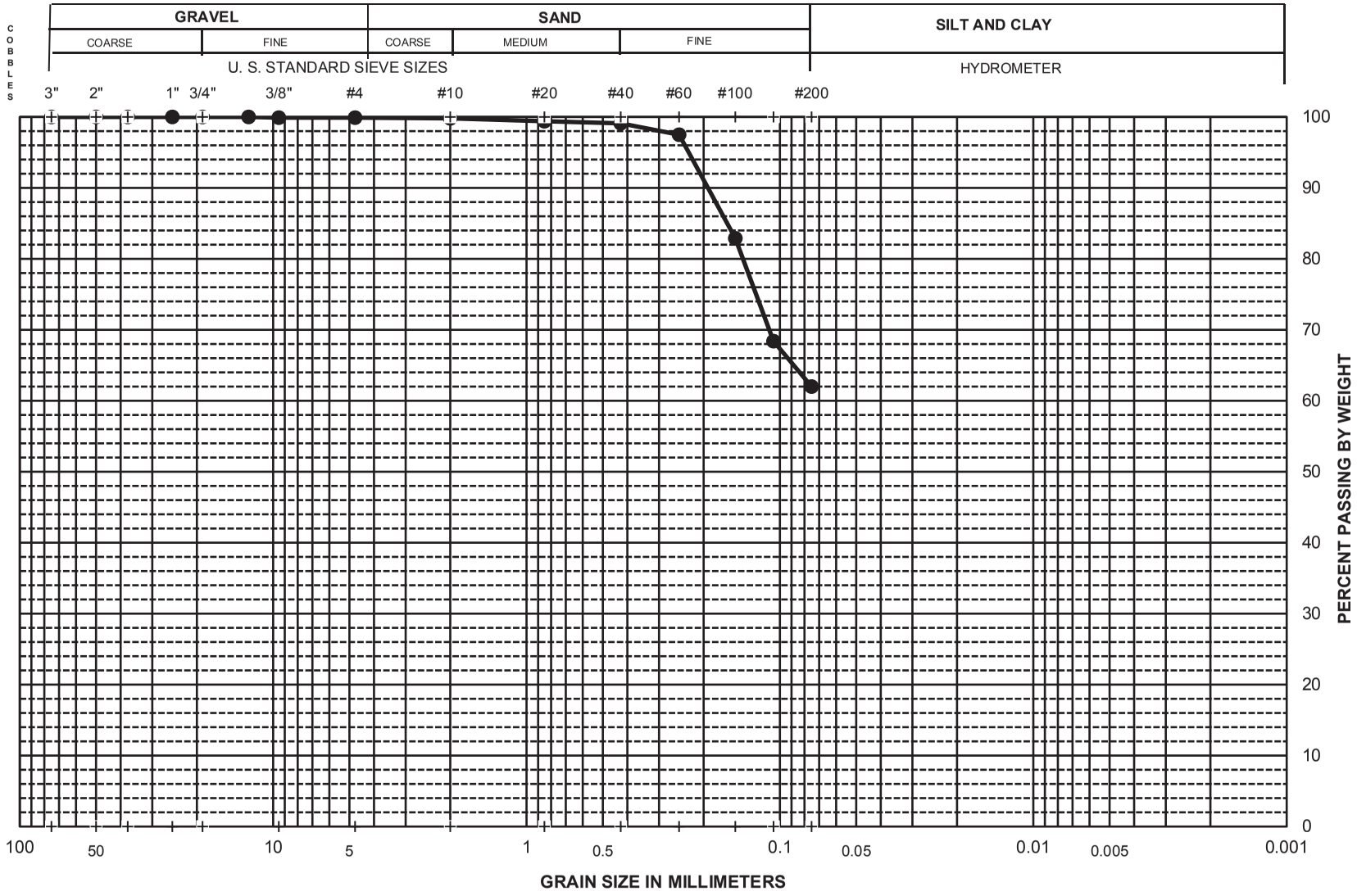
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo CB Comp SB Lower

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	99.9
#4	4.75	99.9
#10	2.00	99.8
#20	0.850	99.4
#40	0.425	99.1
#60	0.250	97.5
#100	0.150	82.9
#140	0.106	68.4
#200	0.075	62.0

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.1
% Sand	37.9
% Fines	62.0
D_{85}	0.161
D_{60}	#N/A
D_{50}	#N/A
D_{30}	#N/A
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
CB-Comp-SB-Upper	●	NA	NA	NA	NA	**Gray sandy Clay (CL)**

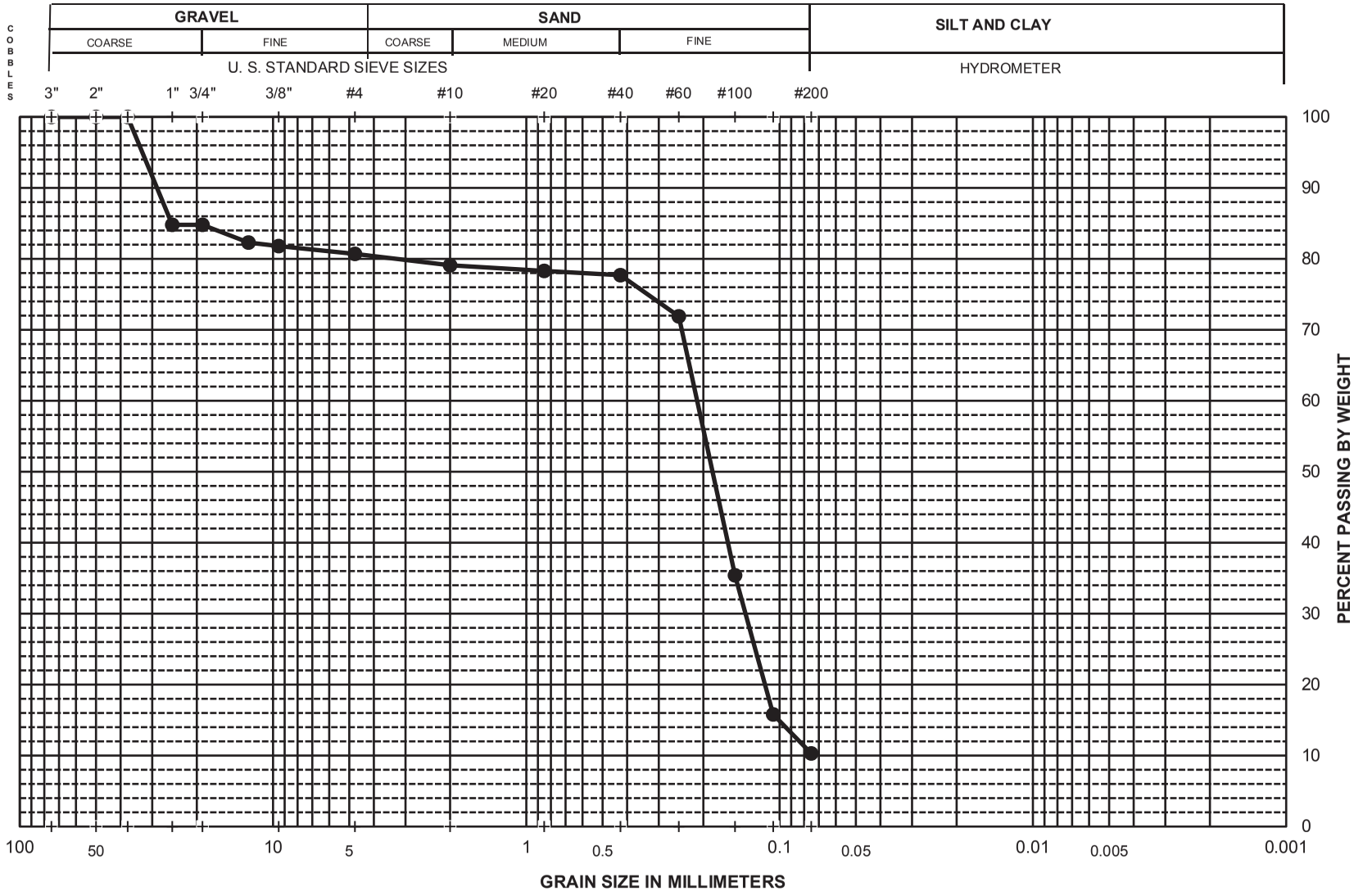
PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	84.8
3/4"	19.00	84.8
1/2"	12.50	82.3
3/8"	9.50	81.8
#4	4.75	80.7
#10	2.00	79.1
#20	0.850	78.3
#40	0.425	77.7
#60	0.250	71.9
#100	0.150	35.4
#140	0.106	15.8
#200	0.075	10.3

Hydrometer Analysis

% Cobbles	XX
% Gravel	19.3
% Sand	70.4
% Fines	10.3
D_{85}	25.000
D_{60}	0.212
D_{50}	0.184
D_{30}	0.136
D_{15}	0.101
D_{10}	0.075
C_u	2.8
C_c	1.2

Boring No.	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
WB-Comp-SB-Lower	●	NA	NA	NA	NA	**Dark gray poorly grded Sand with clay and gravel (SP-SC)**

PROJECT NAME: **San Elijo Lagoon**

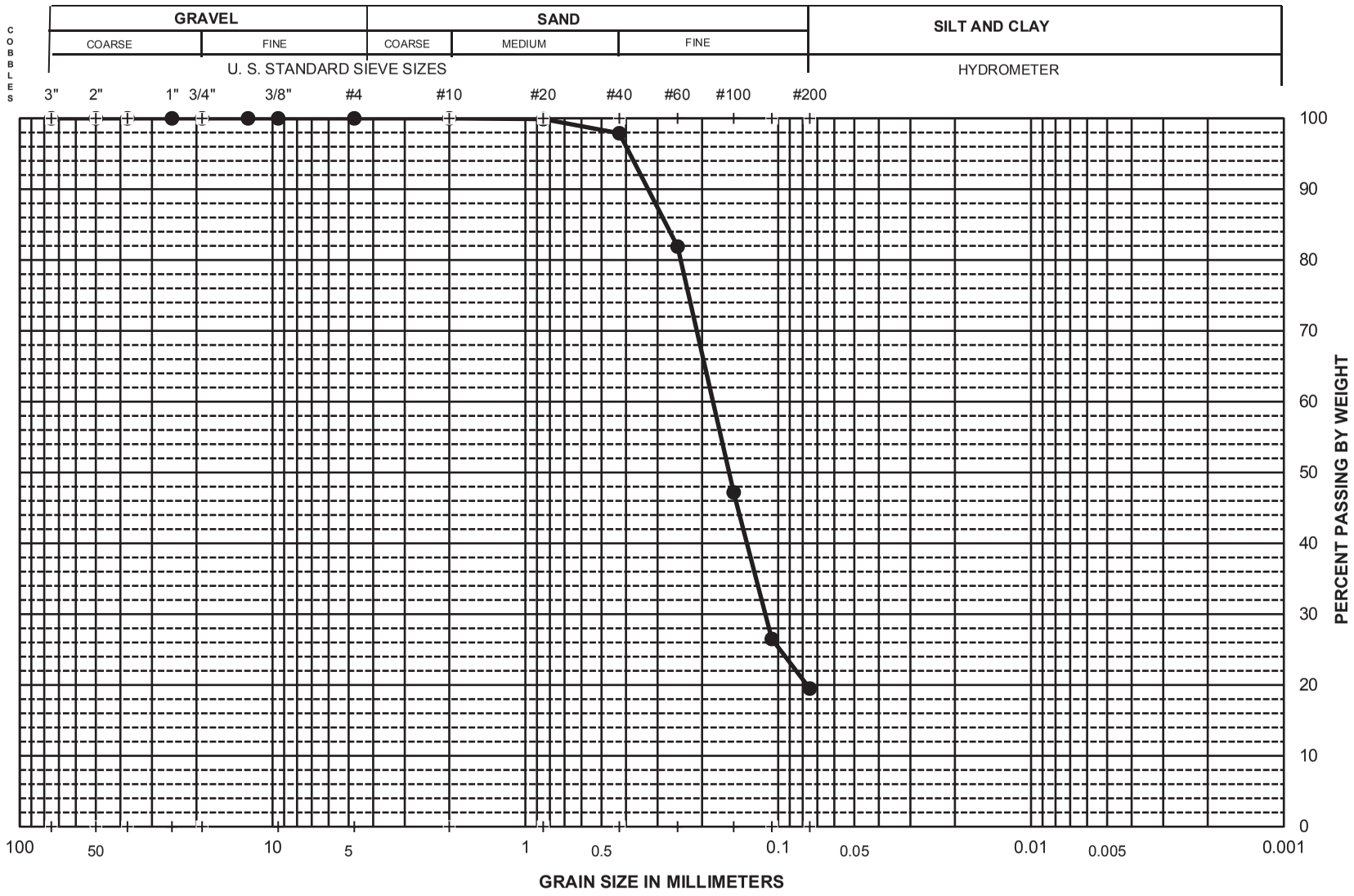
PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

Sieve San Elijo WB Comp SB Lower

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	97.9
#60	0.250	81.9
#100	0.150	47.2
#140	0.106	26.5
#200	0.075	19.5

Hydrometer Analysis

% Cobbles	XX
% Gravel	0.0
% Sand	80.5
% Fines	19.5
D_{85}	0.277
D_{60}	0.181
D_{50}	0.156
D_{30}	0.112
D_{15}	#N/A
D_{10}	#N/A
C_u	XXX
C_c	XXX

Boring No.	SYMBOL	Wn (%)	LL	PI	% 2 μm	Description and Classification
WB-Comp-SB-Upper	●	NA	NA	NA	NA	**Very dark greenish gray silty Sand (SM)**

PROJECT NAME: **San Elijo Lagoon**

PROJECT NUMBER: **27661119**

PARTICLE-SIZE DISTRIBUTION CURVES

URS

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 11-11-1200

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: URS Corporation

Client Project Name: SEL / 27661119.10000

Attention: David Schug
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Vikas Patel

Approved for release on 01/19/2012 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: SEL / 27661119.10000
Work Order Number: 11-11-1200

1 Detections Summary 3

2 Client Sample Data 4
2.1 EPA 376.2 (M) Total Sulfide (Solid) 4
2.2 EPA 376.2 (M) Dissolved Sulfide (Solid) 5
2.3 EPA 9060A Total Organic Carbon (Solid) 6
2.4 EPA 160.4 (M) Volatile Solids (Solid) 7
2.5 SM 2540 B Total Solids (Solid) 8
2.6 EPA 413.2 (M) Oil and Grease (Solid) 9
2.7 EPA 418.1 (M) TRPH (Solid) 10
2.8 8270DM/TQ/EI Pyrethroids (Sediment) 11
2.9 EPA 8081A Organochlorine Pesticides (Solid) 12
2.10 EPA 8082 PCB Aroclors (Solid) 14
2.11 EPA 8270C SIM (Solid) 15
2.12 EPA 8270C SIM PCB Congeners (Solid) 18
2.13 Krone et al. Organotins (Solid) 21
2.14 EPA 6020 ICP/MS Metals (Solid) 22
2.15 EPA 7471A Mercury (Solid) 23

3 Quality Control Sample Data 24
3.1 MS/MSD and/or Duplicate 24
3.2 LCS/LCSD 40

4 Glossary of Terms and Qualifiers 51

5 Chain of Custody/Sample Receipt Form 52

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation	Work Order:	11-11-1200
	4225 Executive Square, Suite 1600	Project name:	SEL / 27661119.10000
	La Jolla, CA 92037-1487	Received:	11/14/11 18:15
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID / Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
CB-COMP-North-Upper						
Arsenic	**2.99**		0.100	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.130**		0.100	mg/kg	EPA 6020	EPA 3050B
Chromium	**10.0**		0.100	mg/kg	EPA 6020	EPA 3050B
Copper	**15.8**		0.100	mg/kg	EPA 6020	EPA 3050B
Lead	**6.50**		0.100	mg/kg	EPA 6020	EPA 3050B
Nickel	**4.85**		0.100	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.206**		0.100	mg/kg	EPA 6020	EPA 3050B
Zinc	**33.8**		1.00	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**85**		5.0	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**13000**		840	mg/kg	EPA 9060A	N/A
Solids, Volatile	**1.5**		0.17	%	EPA 160.4M	N/A
Solids, Total	**59.3**		0.100	%	SM 2540 B	N/A
Perylene	**0.050**		0.017	mg/kg	EPA 8270C SIM	EPA 3545
Bis(2-Ethylhexyl) Phthalate	**0.028**		0.017	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.030**		0.017	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.47**		0.017	mg/kg	EPA 8270C SIM	EPA 3545
CB-COMP-North-Lower						
Arsenic	**1.90**		0.100	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.169**		0.100	mg/kg	EPA 6020	EPA 3050B
Chromium	**5.87**		0.100	mg/kg	EPA 6020	EPA 3050B
Copper	**2.79**		0.100	mg/kg	EPA 6020	EPA 3050B
Lead	**0.921**		0.100	mg/kg	EPA 6020	EPA 3050B
Nickel	**2.91**		0.100	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.139**		0.100	mg/kg	EPA 6020	EPA 3050B
Zinc	**15.7**		1.00	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**0.70**		0.10	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**1100**		670	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.46**		0.13	%	EPA 160.4M	N/A
Solids, Total	**74.4**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.018**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.017**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.44**		0.013	mg/kg	EPA 8270C SIM	EPA 3545

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-B**	**11/14/11 16:15**	**Sediment**	**N/A**	**11/17/11**	**11/17/11 15:48**	**B1117SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	85	5.0	50		mg/kg

CB-COMP-North-Lower	11-11-1200-2-B	11/14/11 16:25	Sediment	N/A	11/17/11	11/17/11 15:48	B1117SB1

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	0.70	0.10	1		mg/kg

Method Blank	099-10-035-28	N/A	Solid	N/A	11/17/11	11/17/11 15:48	B1117SB1

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-B**	**11/14/11 16:15**	**Sediment**	**N/A**	**11/15/11**	**11/15/11 15:00**	**B1115DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.17	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-B**	**11/14/11 16:25**	**Sediment**	**N/A**	**11/15/11**	**11/15/11 15:00**	**B1115DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-095-21**	**N/A**	**Solid**	**N/A**	**11/15/11**	**11/15/11 15:00**	**B1115DSB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 9060A

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-B**	**11/14/11 16:15**	**Sediment**	**TOC 5**	**N/A**	**11/17/11 18:00**	**B1117TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	13000	840	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-B**	**11/14/11 16:25**	**Sediment**	**TOC 5**	**N/A**	**11/17/11 18:00**	**B1117TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	1100	670	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-653**	**N/A**	**Solid**	**TOC 5**	**N/A**	**11/17/11 18:00**	**B1117TOCL1**

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	ND	500	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 160.4M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-A**	**11/14/11 16:15**	**Sediment**	**N/A**	**11/21/11**	**11/21/11 21:00**	**B1121VSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	1.5	0.17	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-A**	**11/14/11 16:25**	**Sediment**	**N/A**	**11/21/11**	**11/21/11 21:00**	**B1121VSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.46	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-020-1,001**	**N/A**	**Solid**	**N/A**	**11/21/11**	**11/21/11 21:00**	**B1121VSB2**

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	ND	0.10	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: SM 2540 B

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-A**	**11/14/11 16:15**	**Sediment**	**N/A**	**11/19/11**	**11/19/11 15:00**	**B1119TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	59.3	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-A**	**11/14/11 16:25**	**Sediment**	**N/A**	**11/19/11**	**11/19/11 15:00**	**B1119TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	74.4	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-1,767**	**N/A**	**Solid**	**N/A**	**11/19/11**	**11/19/11 15:00**	**B1119TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	ND	0.100	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: Extraction
Method: EPA 413.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-D**	**11/14/11 16:15**	**Sediment**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116LO2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	17	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-D**	**11/14/11 16:25**	**Sediment**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116LO2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-019-107**	**N/A**	**Solid**	**IR 2**	**11/16/11**	**11/16/11 01:00**	**111116LO2**

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: Extraction
Method: EPA 418.1M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-A**	**11/14/11 16:15**	**Sediment**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	17	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-A**	**11/14/11 16:25**	**Sediment**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1,811**	**N/A**	**Solid**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L01**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-A**	**11/14/11 16:15**	**Sediment**	**GCTQ 2**	**11/18/11**	**11/22/11 17:03**	**111118L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.85	1.01		Fluvalinate	ND	0.85	1.01	
Bifenthrin	ND	0.85	1.01		Permethrin (cis/trans)	ND	1.7	1.01	
Cyfluthrin	ND	0.85	1.01		Phenothrin	ND	0.85	1.01	
Cypermethrin	ND	0.85	1.01		Resmethrin/Bioresmethrin	ND	0.85	1.01	
Deltamethrin/Tralomethrin	ND	0.85	1.01		Tetramethrin	ND	0.85	1.01	
Fenpropathrin	ND	0.85	1.01		lambda-Cyhalothrin	ND	0.85	1.01	
Fenvalerate/Esfenvalerate	ND	0.85	1.01						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	80	25-200	

CB-COMP-North-Lower	11-11-1200-2-A	11/14/11 16:25	Sediment	GCTQ 2	11/18/11	11/22/11 17:39	111118L01

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.67	1		Fluvalinate	ND	0.67	1	
Bifenthrin	ND	0.67	1		Permethrin (cis/trans)	ND	1.3	1	
Cyfluthrin	ND	0.67	1		Phenothrin	ND	0.67	1	
Cypermethrin	ND	0.67	1		Resmethrin/Bioresmethrin	ND	0.67	1	
Deltamethrin/Tralomethrin	ND	0.67	1		Tetramethrin	ND	0.67	1	
Fenpropathrin	ND	0.67	1		lambda-Cyhalothrin	ND	0.67	1	
Fenvalerate/Esfenvalerate	ND	0.67	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	83	25-200	

Method Blank	099-14-403-8	N/A	Sediment	GCTQ 2	11/18/11	11/22/11 15:13	111118L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.50	1		Fluvalinate	ND	0.50	1	
Bifenthrin	ND	0.50	1		Permethrin (cis/trans)	ND	1.0	1	
Cyfluthrin	ND	0.50	1		Phenothrin	ND	0.50	1	
Cypermethrin	ND	0.50	1		Resmethrin/Bioresmethrin	ND	0.50	1	
Deltamethrin/Tralomethrin	ND	0.50	1		Tetramethrin	ND	0.50	1	
Fenpropathrin	ND	0.50	1		lambda-Cyhalothrin	ND	0.50	1	
Fenvalerate/Esfenvalerate	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	69	25-200	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-D**	**11/14/11 16:15**	**Sediment**	**GC 51**	**11/16/11**	**11/21/11 14:03**	**111116L18**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	42	1		Endosulfan I	ND	1.7	1	
Aldrin	ND	1.7	1		Endosulfan II	ND	1.7	1	
Alpha-BHC	ND	1.7	1		Endosulfan Sulfate	ND	1.7	1	
Beta-BHC	ND	1.7	1		Endrin	ND	1.7	1	
Delta-BHC	ND	1.7	1		Endrin Aldehyde	ND	1.7	1	
Gamma-BHC	ND	1.7	1		Endrin Ketone	ND	1.7	1	
Chlordane	ND	17	1		Heptachlor	ND	1.7	1	
Dieldrin	ND	1.7	1		Heptachlor Epoxide	ND	1.7	1	
Trans-nonachlor	ND	1.7	1		Methoxychlor	ND	1.7	1	
2,4'-DDD	ND	1.7	1		Toxaphene	ND	34	1	
2,4'-DDE	ND	1.7	1		Alpha Chlordane	ND	1.7	1	
2,4'-DDT	ND	1.7	1		Gamma Chlordane	ND	1.7	1	
4,4'-DDD	ND	1.7	1		Cis-nonachlor	ND	1.7	1	
4,4'-DDE	ND	1.7	1		Mirex	ND	8.4	1	
4,4'-DDT	ND	1.7	1		Oxychlordane	ND	1.7	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	147	50-130		2,7	Decachlorobiphenyl	70	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-D**	**11/14/11 16:25**	**Sediment**	**GC 51**	**11/16/11**	**11/21/11 14:18**	**111116L18**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	34	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	27	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.7	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	109	50-130			Decachlorobiphenyl	72	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-117**	**N/A**	**Solid**	**GC 51**	**11/16/11**	**11/21/11 12:08**	**111116L18**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	25	1		Endosulfan I	ND	1.0	1	
Aldrin	ND	1.0	1		Endosulfan II	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endosulfan Sulfate	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin	ND	1.0	1	
Delta-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Chlordane	ND	10	1		Heptachlor	ND	1.0	1	
Dieldrin	ND	1.0	1		Heptachlor Epoxide	ND	1.0	1	
Trans-nonachlor	ND	1.0	1		Methoxychlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDE	ND	1.0	1		Alpha Chlordane	ND	1.0	1	
2,4'-DDT	ND	1.0	1		Gamma Chlordane	ND	1.0	1	
4,4'-DDD	ND	1.0	1		Cis-nonachlor	ND	1.0	1	
4,4'-DDE	ND	1.0	1		Mirex	ND	5.0	1	
4,4'-DDT	ND	1.0	1		Oxychlordane	ND	1.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	88	50-130			Decachlorobiphenyl	61	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	11/14/11
4225 Executive Square, Suite 1600		Work Order No:	11-11-1200
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082
		Units:	ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-D**	**11/14/11 16:15**	**Sediment**	**GC 58**	**11/16/11**	**11/22/11 16:43**	**111116L19**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	17	1		Aroclor-1248	ND	17	1	
Aroclor-1221	ND	17	1		Aroclor-1254	ND	17	1	
Aroclor-1232	ND	17	1		Aroclor-1260	ND	17	1	
Aroclor-1242	ND	17	1		Aroclor-1262	ND	17	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	96	50-130			Decachlorobiphenyl	113	50-130		

CB-COMP-North-Lower	**11-11-1200-2-D**	**11/14/11 16:25**	**Sediment**	**GC 58**	**11/16/11**	**11/22/11 17:01**	**111116L19**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	ND	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	99	50-130			Decachlorobiphenyl	107	50-130		

Method Blank	**099-12-565-207**	**N/A**	**Solid**	**GC 58**	**11/16/11**	**11/22/11 15:49**	**111116L19**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	10	1		Aroclor-1248	ND	10	1	
Aroclor-1221	ND	10	1		Aroclor-1254	ND	10	1	
Aroclor-1232	ND	10	1		Aroclor-1260	ND	10	1	
Aroclor-1242	ND	10	1		Aroclor-1262	ND	10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	125	50-130			Decachlorobiphenyl	128	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-D**	**11/14/11 16:15**	**Sediment**	**GC/MS MM**	**11/16/11**	**11/22/11 18:59**	**111116L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.017	1		Benzo (k) Fluoranthene	ND	0.017	1	
Biphenyl	ND	0.017	1		Bis(2-Ethylhexyl) Phthalate	0.028	0.017	1	
Benzo (e) Pyrene	ND	0.017	1		Butyl Benzyl Phthalate	0.030	0.017	1	
Perylene	0.050	0.017	1		Chrysene	ND	0.017	1	
1-Methylnaphthalene	ND	0.017	1		Di-n-Butyl Phthalate	ND	0.017	1	
2,4,5-Trichlorophenol	ND	0.017	1		Di-n-Octyl Phthalate	ND	0.017	1	
2,4,6-Trichlorophenol	ND	0.017	1		Dibenz (a,h) Anthracene	ND	0.017	1	
2,4-Dichlorophenol	ND	0.017	1		Diethyl Phthalate	ND	0.017	1	
2,4-Dimethylphenol	ND	0.017	1		Dimethyl Phthalate	0.47	0.017	1	
2,4-Dinitrophenol	ND	0.84	1		Fluoranthene	ND	0.017	1	
2-Chlorophenol	ND	0.017	1		Fluorene	ND	0.017	1	
2-Methylnaphthalene	ND	0.017	1		Indeno (1,2,3-c,d) Pyrene	ND	0.017	1	
2-Methylphenol	ND	0.017	1		Naphthalene	ND	0.017	1	
2-Nitrophenol	ND	0.017	1		Pentachlorophenol	ND	0.84	1	
3/4-Methylphenol	ND	0.017	1		Phenanthrene	ND	0.017	1	
4,6-Dinitro-2-Methylphenol	ND	0.84	1		Phenol	ND	0.017	1	
4-Chloro-3-Methylphenol	ND	0.017	1		Pyrene	ND	0.017	1	
4-Nitrophenol	ND	0.84	1		1,6,7-Trimethylnaphthalene	ND	0.017	1	
Acenaphthene	ND	0.017	1		2,3,4,6-Tetrachlorophenol	ND	0.017	1	
Acenaphthylene	ND	0.017	1		2,6-Dichlorophenol	ND	0.017	1	
Anthracene	ND	0.017	1		Benzoic Acid	ND	0.17	1	
Benzo (a) Anthracene	ND	0.017	1		1-Methylphenanthrene	ND	0.017	1	
Benzo (a) Pyrene	ND	0.017	1		DCPA	ND	0.017	1	
Benzo (b) Fluoranthene	ND	0.017	1		Dibenzothiophene	ND	0.017	1	
Benzo (g,h,i) Perylene	ND	0.017	1		Perthane	ND	0.017	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	79	32-143		2-Fluorobiphenyl	99	14-146	
2-Fluorophenol	75	15-138		Nitrobenzene-d5	70	18-162	
p-Terphenyl-d14	77	34-148		Phenol-d6	80	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-D**	**11/14/11 16:25**	**Sediment**	**GC/MS MM**	**11/16/11**	**11/22/11 18:33**	**111116L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzo (e) Pyrene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Perylene	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.018	0.013	1	
Biphenyl	ND	0.013	1		Butyl Benzyl Phthalate	0.017	0.013	1	
2,6-Dimethylnaphthalene	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	ND	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	0.44	0.013	1	
2,4-Dinitrophenol	ND	0.67	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.67	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.67	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.67	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	64	32-143		2-Fluorobiphenyl	77	14-146	
2-Fluorophenol	69	15-138		Nitrobenzene-d5	62	18-162	
p-Terphenyl-d14	79	34-148		Phenol-d6	70	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-413-346**	**N/A**	**Solid**	**GC/MS MM**	**11/16/11**	**11/22/11 17:16**	**111116L16**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Perylene	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.010	1	
2,6-Dimethylnaphthalene	ND	0.010	1		Bis(2-Ethylhexyl) Phthalate	ND	0.010	1	
Biphenyl	ND	0.010	1		Butyl Benzyl Phthalate	ND	0.010	1	
Benzo (e) Pyrene	ND	0.010	1		Chrysene	ND	0.010	1	
1-Methylnaphthalene	ND	0.010	1		Di-n-Butyl Phthalate	ND	0.010	1	
2,4,5-Trichlorophenol	ND	0.010	1		Di-n-Octyl Phthalate	ND	0.010	1	
2,4,6-Trichlorophenol	ND	0.010	1		Dibenz (a,h) Anthracene	ND	0.010	1	
2,4-Dichlorophenol	ND	0.010	1		Diethyl Phthalate	ND	0.010	1	
2,4-Dimethylphenol	ND	0.010	1		Dimethyl Phthalate	ND	0.010	1	
2,4-Dinitrophenol	ND	0.50	1		Fluoranthene	ND	0.010	1	
2-Chlorophenol	ND	0.010	1		Fluorene	ND	0.010	1	
2-Methylnaphthalene	ND	0.010	1		Indeno (1,2,3-c,d) Pyrene	ND	0.010	1	
2-Methylphenol	ND	0.010	1		Naphthalene	ND	0.010	1	
2-Nitrophenol	ND	0.010	1		Pentachlorophenol	ND	0.50	1	
3/4-Methylphenol	ND	0.010	1		Phenanthrene	ND	0.010	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Phenol	ND	0.010	1	
4-Chloro-3-Methylphenol	ND	0.010	1		Pyrene	ND	0.010	1	
4-Nitrophenol	ND	0.50	1		1,6,7-Trimethylnaphthalene	ND	0.010	1	
Acenaphthene	ND	0.010	1		2,3,4,6-Tetrachlorophenol	ND	0.010	1	
Acenaphthylene	ND	0.010	1		2,6-Dichlorophenol	ND	0.010	1	
Anthracene	ND	0.010	1		1-Methylphenanthrene	ND	0.010	1	
Benzo (a) Anthracene	ND	0.010	1		Benzoic Acid	ND	0.10	1	
Benzo (a) Pyrene	ND	0.010	1		DCPA	ND	0.010	1	
Benzo (b) Fluoranthene	ND	0.010	1		Dibenzothiophene	ND	0.010	1	
Benzo (g,h,i) Perylene	ND	0.010	1		Perthane	ND	0.010	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	79	32-143		2-Fluorobiphenyl	73	14-146	
2-Fluorophenol	71	15-138		Nitrobenzene-d5	63	18-162	
p-Terphenyl-d14	85	34-148		Phenol-d6	89	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	11/14/11
4225 Executive Square, Suite 1600		Work Order No:	11-11-1200
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-D**	**11/14/11 16:15**	**Sediment**	**GC/MS HHH**	**11/16/11**	**11/18/11 18:03**	**111116L15**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.84	1		PCB126	ND	0.84	1	
PCB008	ND	0.84	1		PCB128	ND	0.84	1	
PCB018	ND	0.84	1		PCB132	ND	0.84	1	
PCB028	ND	0.84	1		PCB138/158	ND	1.7	1	
PCB031	ND	0.84	1		PCB141	ND	0.84	1	
PCB033	ND	0.84	1		PCB149	ND	0.84	1	
PCB037	ND	0.84	1		PCB151	ND	0.84	1	
PCB044	ND	0.84	1		PCB153	ND	0.84	1	
PCB049	ND	0.84	1		PCB156	ND	0.84	1	
PCB052	ND	0.84	1		PCB157	ND	0.84	1	
PCB056	ND	0.84	1		PCB167	ND	0.84	1	
PCB060	ND	0.84	1		PCB168	ND	0.84	1	
PCB066	ND	0.84	1		PCB169	ND	0.84	1	
PCB070	ND	0.84	1		PCB170	ND	0.84	1	
PCB074	ND	0.84	1		PCB174	ND	0.84	1	
PCB077	ND	0.84	1		PCB177	ND	0.84	1	
PCB081	ND	0.84	1		PCB180	ND	0.84	1	
PCB087	ND	0.84	1		PCB183	ND	0.84	1	
PCB095	ND	0.84	1		PCB184	ND	0.84	1	
PCB097	ND	0.84	1		PCB187	ND	0.84	1	
PCB099	ND	0.84	1		PCB189	ND	0.84	1	
PCB101	ND	0.84	1		PCB194	ND	0.84	1	
PCB105	ND	0.84	1		PCB195	ND	0.84	1	
PCB110	ND	0.84	1		PCB200	ND	0.84	1	
PCB114	ND	0.84	1		PCB201	ND	0.84	1	
PCB118	ND	0.84	1		PCB203	ND	0.84	1	
PCB119	ND	0.84	1		PCB206	ND	0.84	1	
PCB123	ND	0.84	1		PCB209	ND	0.84	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	198	50-125	1,2,7	p-Terphenyl-d14	71	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-D**	**11/14/11 16:25**	**Sediment**	**GC/MS HHH**	**11/16/11**	**11/18/11 18:30**	**111116L15**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.67	1		PCB126	ND	0.67	1	
PCB008	ND	0.67	1		PCB128	ND	0.67	1	
PCB018	ND	0.67	1		PCB132	ND	0.67	1	
PCB028	ND	0.67	1		PCB138/158	ND	1.3	1	
PCB031	ND	0.67	1		PCB141	ND	0.67	1	
PCB033	ND	0.67	1		PCB149	ND	0.67	1	
PCB037	ND	0.67	1		PCB151	ND	0.67	1	
PCB044	ND	0.67	1		PCB153	ND	0.67	1	
PCB049	ND	0.67	1		PCB156	ND	0.67	1	
PCB052	ND	0.67	1		PCB157	ND	0.67	1	
PCB056	ND	0.67	1		PCB167	ND	0.67	1	
PCB060	ND	0.67	1		PCB168	ND	0.67	1	
PCB066	ND	0.67	1		PCB169	ND	0.67	1	
PCB070	ND	0.67	1		PCB170	ND	0.67	1	
PCB074	ND	0.67	1		PCB174	ND	0.67	1	
PCB077	ND	0.67	1		PCB177	ND	0.67	1	
PCB081	ND	0.67	1		PCB180	ND	0.67	1	
PCB087	ND	0.67	1		PCB183	ND	0.67	1	
PCB095	ND	0.67	1		PCB184	ND	0.67	1	
PCB097	ND	0.67	1		PCB187	ND	0.67	1	
PCB099	ND	0.67	1		PCB189	ND	0.67	1	
PCB101	ND	0.67	1		PCB194	ND	0.67	1	
PCB105	ND	0.67	1		PCB195	ND	0.67	1	
PCB110	ND	0.67	1		PCB200	ND	0.67	1	
PCB114	ND	0.67	1		PCB201	ND	0.67	1	
PCB118	ND	0.67	1		PCB203	ND	0.67	1	
PCB119	ND	0.67	1		PCB206	ND	0.67	1	
PCB123	ND	0.67	1		PCB209	ND	0.67	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	71	50-125		p-Terphenyl-d14	85	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-24**	**N/A**	**Solid**	**GC/MS HHH**	**11/16/11**	**11/18/11 17:37**	**111116L15**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.50	1		PCB126	ND	0.50	1	
PCB008	ND	0.50	1		PCB128	ND	0.50	1	
PCB018	ND	0.50	1		PCB132	ND	0.50	1	
PCB028	ND	0.50	1		PCB138/158	ND	1.0	1	
PCB031	ND	0.50	1		PCB141	ND	0.50	1	
PCB033	ND	0.50	1		PCB149	ND	0.50	1	
PCB037	ND	0.50	1		PCB151	ND	0.50	1	
PCB044	ND	0.50	1		PCB153	ND	0.50	1	
PCB049	ND	0.50	1		PCB156	ND	0.50	1	
PCB052	ND	0.50	1		PCB157	ND	0.50	1	
PCB056	ND	0.50	1		PCB167	ND	0.50	1	
PCB060	ND	0.50	1		PCB168	ND	0.50	1	
PCB066	ND	0.50	1		PCB169	ND	0.50	1	
PCB070	ND	0.50	1		PCB170	ND	0.50	1	
PCB074	ND	0.50	1		PCB174	ND	0.50	1	
PCB077	ND	0.50	1		PCB177	ND	0.50	1	
PCB081	ND	0.50	1		PCB180	ND	0.50	1	
PCB087	ND	0.50	1		PCB183	ND	0.50	1	
PCB095	ND	0.50	1		PCB184	ND	0.50	1	
PCB097	ND	0.50	1		PCB187	ND	0.50	1	
PCB099	ND	0.50	1		PCB189	ND	0.50	1	
PCB101	ND	0.50	1		PCB194	ND	0.50	1	
PCB105	ND	0.50	1		PCB195	ND	0.50	1	
PCB110	ND	0.50	1		PCB200	ND	0.50	1	
PCB114	ND	0.50	1		PCB201	ND	0.50	1	
PCB118	ND	0.50	1		PCB203	ND	0.50	1	
PCB119	ND	0.50	1		PCB206	ND	0.50	1	
PCB123	ND	0.50	1		PCB209	ND	0.50	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	102	50-125		p-Terphenyl-d14	105	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: Organotins by Krone et al.
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-D**	**11/14/11 16:15**	**Sediment**	**GC/MS Y**	**11/18/11**	**11/21/11 16:33**	**111118L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	5.1	1		Tetrabutyltin	ND	5.1	1	
Monobutyltin	ND	5.1	1		Tributyltin	ND	5.1	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	123	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-D**	**11/14/11 16:25**	**Sediment**	**GC/MS Y**	**11/18/11**	**11/21/11 17:05**	**111118L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.0	1		Tetrabutyltin	ND	4.0	1	
Monobutyltin	ND	4.0	1		Tributyltin	ND	4.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	130	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-891**	**N/A**	**Solid**	**GC/MS Y**	**11/18/11**	**11/21/11 15:59**	**111118L08**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.0	1		Tetrabutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1		Tributyltin	ND	3.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	119	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-B**	**11/14/11 16:15**	**Sediment**	**ICP/MS 04**	**11/16/11**	**11/16/11 20:36**	**111116L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.99	0.100	1		Nickel	4.85	0.100	1	
Cadmium	0.130	0.100	1		Selenium	0.206	0.100	1	
Chromium	10.0	0.100	1		Silver	ND	0.100	1	
Copper	15.8	0.100	1		Zinc	33.8	1.00	1	
Lead	6.50	0.100	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-B**	**11/14/11 16:25**	**Sediment**	**ICP/MS 04**	**11/16/11**	**11/16/11 20:16**	**111116L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	1.90	0.100	1		Nickel	2.91	0.100	1	
Cadmium	0.169	0.100	1		Selenium	0.139	0.100	1	
Chromium	5.87	0.100	1		Silver	ND	0.100	1	
Copper	2.79	0.100	1		Zinc	15.7	1.00	1	
Lead	0.921	0.100	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**096-10-002-2,132**	**N/A**	**Solid**	**ICP/MS 04**	**11/16/11**	**11/16/11 19:18**	**111116L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.100	1	
Chromium	ND	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	
Lead	ND	0.100	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Upper	**11-11-1200-1-B**	**11/14/11 16:15**	**Sediment**	**Mercury**	**11/16/11**	**11/16/11 13:05**	**111116L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0338	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-North-Lower	**11-11-1200-2-B**	**11/14/11 16:25**	**Sediment**	**Mercury**	**11/16/11**	**11/16/11 13:08**	**111116L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0269	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-247**	**N/A**	**Solid**	**Mercury**	**11/16/11**	**11/16/11 12:54**	**111116L01**

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0200	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3050B
Method: EPA 6020

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**ICP/MS 04**	**11/16/11**	**11/16/11**	**111116S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	98	97	80-120	1	0-20	
Cadmium	25.00	102	103	80-120	1	0-20	
Chromium	25.00	97	97	80-120	1	0-20	
Copper	25.00	105	103	80-120	1	0-20	
Lead	25.00	97	97	80-120	0	0-20	
Nickel	25.00	105	110	80-120	5	0-20	
Selenium	25.00	95	95	80-120	0	0-20	
Silver	12.50	100	103	80-120	3	0-20	
Zinc	25.00	115	142	80-120	14	0-20	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - PDS / PDSD

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3050B
Method: EPA 6020

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS / PDSD Batch Number
CB-COMP-North-Lower	**Sediment**	**ICP/MS 04**	**11/16/11**	**11/16/11**	**111116S01**

Parameter	SPIKE ADDED	PDS %REC	PDSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	93	94	75-125	1	0-20	
Cadmium	25.00	100	98	75-125	2	0-20	
Chromium	25.00	96	92	75-125	3	0-20	
Copper	25.00	98	98	75-125	1	0-20	
Lead	25.00	96	95	75-125	1	0-20	
Nickel	25.00	99	98	75-125	0	0-20	
Selenium	25.00	94	91	75-125	3	0-20	
Silver	12.50	89	89	75-125	1	0-20	
Zinc	25.00	95	95	75-125	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 9060A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**TOC 5**	**N/A**	**11/17/11**	**B1117TOCS1**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	30000	88	92	75-125	4	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
CB-COMP-North-Lower	**Sediment**	**N/A**	**11/17/11**	**11/17/11**	**B1117SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	0.70	0.70	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
CB-COMP-North-Lower	**Sediment**	**N/A**	**11/15/11**	**11/15/11**	**B1115DSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	NA	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: SM 2540 B

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
11-11-1346-2	**Solid**	**N/A**	**11/19/11**	**11/19/11**	**B1119TSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	72.5	71.5	1	0-10	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 160.4M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
11-11-1346-2	**Solid**	**N/A**	**11/21/11**	**11/21/11**	**B1121VSD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Volatile	0.56	0.47	17	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: Extraction
Method: EPA 413.2M

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**IR 2**	**12/16/11**	**11/16/11**	**111116S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Oil and Grease	100.0	117	109	55-135	7	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: Extraction
Method: EPA 418.1M

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**IR 2**	**11/16/11**	**11/16/11**	**111116S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	115	109	55-135	6	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**GCTQ 2**	**11/18/11**	**11/22/11**	**111118S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	5.000	87	99	25-200	13	0-25	
Cyfluthrin	5.000	71	77	25-200	8	0-25	
Cypermethrin	5.000	83	78	25-200	6	0-25	
Deltamethrin/Tralomethrin	5.000	68	74	25-200	8	0-25	
Fenvalerate/Esfenvalerate	5.000	61	63	25-200	2	0-25	
Fluvalinate	5.000	65	65	25-200	1	0-25	
Permethrin (cis/trans)	10.00	85	86	25-200	0	0-25	
Phenothrin	5.000	94	108	25-200	14	0-25	
Resmethrin/Bioresmethrin	5.000	47	67	25-200	35	0-25	4
lambda-Cyhalothrin	5.000	83	88	25-200	6	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 7471A Total
Method: EPA 7471A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**Mercury**	**11/16/11**	**11/16/11**	**111116S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	95	89	76-136	6	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: Organotins by Krone et al.

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**GC/MS Y**	**11/18/11**	**11/21/11**	**111118S08**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	101	126	50-130	22	0-20	4
Tributyltin	100.0	83	101	50-130	20	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8082

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**GC 58**	**11/16/11**	**11/22/11**	**111116S19**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	74	96	50-135	26	0-25	4
Aroclor-1260	20.00	78	100	50-135	24	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**GC/MS MM**	**11/16/11**	**11/21/11**	**111116S16**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	59	59	40-160	0	0-20	
2,4-Dichlorophenol	1.000	53	53	40-160	1	0-20	
2-Methylphenol	1.000	57	58	40-160	1	0-20	
2-Nitrophenol	1.000	55	55	40-160	1	0-20	
4-Chloro-3-Methylphenol	1.000	55	54	40-160	1	0-20	
Acenaphthene	1.000	64	64	40-106	1	0-20	
Benzo (a) Pyrene	1.000	84	83	17-163	0	0-20	
Chrysene	1.000	74	74	17-168	1	0-20	
Di-n-Butyl Phthalate	1.000	70	70	40-160	1	0-20	
Dimethyl Phthalate	1.000	35	34	40-160	1	0-20	3
Fluoranthene	1.000	68	68	26-137	1	0-20	
Fluorene	1.000	66	66	59-121	1	0-20	
Naphthalene	1.000	66	65	21-133	0	0-20	
Phenanthrene	1.000	67	66	54-120	1	0-20	
Phenol	1.000	51	52	40-160	2	0-20	
Pyrene	1.000	69	68	6-156	2	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8081A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**GC 51**	**11/16/11**	**11/21/11**	**111116S18**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	67	68	50-135	0	0-25	
Alpha-BHC	5.000	66	65	50-135	2	0-25	
Beta-BHC	5.000	72	72	50-135	1	0-25	
Delta-BHC	5.000	56	57	50-135	2	0-25	
Gamma-BHC	5.000	65	64	50-135	1	0-25	
Dieldrin	5.000	62	58	50-135	6	0-25	
4,4'-DDD	5.000	72	71	50-135	2	0-25	
4,4'-DDE	5.000	68	68	50-135	0	0-25	
4,4'-DDT	5.000	84	82	50-135	3	0-25	
Endosulfan I	5.000	62	62	50-135	0	0-25	
Endosulfan II	5.000	69	69	50-135	0	0-25	
Endosulfan Sulfate	5.000	71	70	50-135	1	0-25	
Endrin	5.000	66	67	50-135	1	0-25	
Endrin Aldehyde	5.000	72	61	50-135	17	0-25	
Endrin Ketone	5.000	83	82	50-135	2	0-25	
Heptachlor	5.000	68	69	50-135	1	0-25	
Heptachlor Epoxide	5.000	60	61	50-135	2	0-25	
Methoxychlor	5.000	76	74	50-135	4	0-25	
Alpha Chlordane	5.000	63	63	50-135	1	0-25	
Gamma Chlordane	5.000	63	63	50-135	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/14/11
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-North-Lower	**Sediment**	**GC/MS HHH**	**11/16/11**	**11/18/11**	**111116S15**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB018	25.00	89	101	50-125	12	0-30	
PCB028	25.00	94	109	50-125	15	0-30	
PCB044	25.00	90	103	50-125	13	0-30	
PCB052	25.00	88	101	50-125	14	0-30	
PCB066	25.00	95	110	50-125	15	0-30	
PCB077	25.00	96	113	50-125	16	0-30	
PCB101	25.00	93	107	50-125	14	0-30	
PCB105	25.00	94	109	50-125	15	0-30	
PCB118	25.00	101	118	50-125	15	0-30	
PCB126	25.00	90	104	50-125	15	0-30	
PCB128	25.00	88	102	50-125	14	0-30	
PCB153	25.00	90	104	50-125	14	0-30	
PCB170	25.00	87	100	50-125	15	0-30	
PCB180	25.00	92	106	50-125	14	0-30	
PCB187	25.00	89	102	50-125	14	0-30	
PCB206	25.00	93	108	50-125	16	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: EPA 3050B
Method: EPA 6020

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-2,132	**Solid**	**ICP/MS 04**	**11/16/11**	**11/16/11**	**111116L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	96	96	80-120	1	0-20	
Cadmium	25.00	100	101	80-120	1	0-20	
Chromium	25.00	98	97	80-120	1	0-20	
Copper	25.00	103	101	80-120	2	0-20	
Lead	25.00	97	97	80-120	0	0-20	
Nickel	25.00	102	99	80-120	2	0-20	
Selenium	25.00	93	95	80-120	2	0-20	
Silver	12.50	91	92	80-120	1	0-20	
Zinc	25.00	100	99	80-120	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: N/A
Method: EPA 9060A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-653	**Solid**	**TOC 5**	**N/A**	**11/17/11**	**B1117TOCL1**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	6000	93	89	80-120	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: Extraction
Method: EPA 413.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-019-107	**Solid**	**IR 2**	**11/16/11**	**NONE**	**111116LO2**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Oil and Grease	100.0	92.70	93	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-11-1200
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 418.1M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,811	**Solid**	**IR 2**	**11/16/11**	**NONE**	**111116L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100.0	106.5	106	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-403-8	**Sediment**	**GCTQ 2**	**11/18/11**	**11/22/11**	**111118L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	5.000	93	99	25-200	6	0-25	
Cyfluthrin	5.000	65	59	25-200	9	0-25	
Cypermethrin	5.000	77	69	25-200	11	0-25	
Deltamethrin/Tralomethrin	5.000	70	64	25-200	9	0-25	
Fenvalerate/Esfenvalerate	5.000	64	54	25-200	16	0-25	
Fluvalinate	5.000	66	61	25-200	8	0-25	
Permethrin (cis/trans)	10.00	70	65	25-200	7	0-25	
Phenothrin	5.000	87	92	25-200	6	0-25	
Resmethrin/Bioresmethrin	5.000	78	86	25-200	10	0-25	
lambda-Cyhalothrin	5.000	70	69	25-200	2	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-247	**Solid**	**Mercury**	**11/16/11**	**11/16/11**	**111116L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	101	100	82-124	0	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: Organotins by Krone et al.

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-891	**Solid**	**GC/MS Y**	**11/18/11**	**11/21/11**	**111118L08**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	86	88	50-130	2	0-20	
Tributyltin	100.0	92	97	50-130	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-11-1200
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-207	**Solid**	**GC 58**	**11/16/11**	**11/22/11**	**111116L19**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	94	86	50-135	9	0-25	
Aroclor-1260	20.00	104	84	50-135	21	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-413-346	**Solid**	**GC/MS MM**	**11/16/11**	**11/21/11**	**111116L16**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	74	75	40-160	20-180	2	0-20	
2,4-Dichlorophenol	1.000	70	70	40-160	20-180	1	0-20	
2-Methylphenol	1.000	81	80	40-160	20-180	1	0-20	
2-Nitrophenol	1.000	64	63	40-160	20-180	2	0-20	
4-Chloro-3-Methylphenol	1.000	74	73	40-160	20-180	0	0-20	
Acenaphthene	1.000	76	76	48-108	38-118	0	0-11	
Benzo (a) Pyrene	1.000	95	96	17-163	0-187	1	0-20	
Chrysene	1.000	80	80	17-168	0-193	0	0-20	
Di-n-Butyl Phthalate	1.000	78	77	40-160	20-180	1	0-20	
Dimethyl Phthalate	1.000	70	71	40-160	20-180	1	0-20	
Fluoranthene	1.000	80	80	26-137	8-156	0	0-20	
Fluorene	1.000	78	79	59-121	49-131	1	0-20	
Naphthalene	1.000	77	77	21-133	2-152	0	0-20	
Phenanthrene	1.000	78	78	54-120	43-131	0	0-20	
Phenol	1.000	74	73	40-160	20-180	1	0-20	
Pyrene	1.000	80	79	28-106	15-119	1	0-16	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8081A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-858-117	**Solid**	**GC 51**	**11/16/11**	**11/21/11**	**111116L18**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	82	81	50-135	36-149	1	0-25	
Alpha-BHC	5.000	86	84	50-135	36-149	2	0-25	
Beta-BHC	5.000	88	83	50-135	36-149	6	0-25	
Delta-BHC	5.000	77	81	50-135	36-149	5	0-25	
Gamma-BHC	5.000	90	89	50-135	36-149	1	0-25	
Dieldrin	5.000	70	67	50-135	36-149	4	0-25	
4,4'-DDD	5.000	101	98	50-135	36-149	3	0-25	
4,4'-DDE	5.000	91	87	50-135	36-149	5	0-25	
4,4'-DDT	5.000	107	109	50-135	36-149	2	0-25	
Endosulfan I	5.000	85	82	50-135	36-149	3	0-25	
Endosulfan II	5.000	94	91	50-135	36-149	3	0-25	
Endosulfan Sulfate	5.000	89	88	50-135	36-149	1	0-25	
Endrin	5.000	82	81	50-135	36-149	1	0-25	
Endrin Aldehyde	5.000	76	74	50-135	36-149	2	0-25	
Endrin Ketone	5.000	108	105	50-135	36-149	2	0-25	
Heptachlor	5.000	86	85	50-135	36-149	2	0-25	
Heptachlor Epoxide	5.000	73	66	50-135	36-149	10	0-25	
Methoxychlor	5.000	90	91	50-135	36-149	1	0-25	
Alpha Chlordane	5.000	86	80	50-135	36-149	7	0-25	
Gamma Chlordane	5.000	85	83	50-135	36-149	2	0-25	

Total number of LCS compounds : 20
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1200
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-341-24	**Solid**	**GC/MS HHH**	**11/16/11**	**11/18/11**	**111116L15**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
PCB018	25.00	104	105	50-125	38-138	0	0-30	
PCB028	25.00	107	109	50-125	38-138	2	0-30	
PCB044	25.00	104	106	50-125	38-138	1	0-30	
PCB052	25.00	101	103	50-125	38-138	1	0-30	
PCB066	25.00	107	109	50-125	38-138	1	0-30	
PCB077	25.00	109	109	50-125	38-138	0	0-30	
PCB101	25.00	106	107	50-125	38-138	1	0-30	
PCB105	25.00	106	106	50-125	38-138	0	0-30	
PCB118	25.00	113	115	50-125	38-138	2	0-30	
PCB126	25.00	100	100	50-125	38-138	0	0-30	
PCB128	25.00	101	102	50-125	38-138	1	0-30	
PCB153	25.00	102	102	50-125	38-138	1	0-30	
PCB170	25.00	94	97	50-125	38-138	3	0-30	
PCB180	25.00	102	103	50-125	38-138	1	0-30	
PCB187	25.00	100	101	50-125	38-138	1	0-30	
PCB206	25.00	97	101	50-125	38-138	3	0-30	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 11-11-1200

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

Return to Contents

Calscience Environmental Laboratories, Inc.

☐ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

CHAIN OF CUSTODY RECORD

Date 11/14/11

Page 1 of 1

WO # / LAB USE ONLY: 11-11-1200

LABORATORY CLIENT: URS Corporation

ADDRESS: 4225 Executive Square Suite 1600

CITY: La Jolla STATE: CA ZIP: 92037

TEL: 619.888-0512 E-MAIL: david.schug@urs.com

CLIENT PROJECT NAME / NUMBER: SEL 27661119.10000

P.O. NO.:

PROJECT CONTACT: Derek Rector / David Schug

SAMPLER(S): (PRINT) Derek Rector

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

☐ COELT EDF GLOBAL ID LOG CODE

SPECIAL INSTRUCTIONS: Note - This composite is from samples taken ~6 days Ago.

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260) or ( )	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	CEL Quotation 952472		
1	CB-Comp-NW-upper	11/14/11	4:15	Soil	4																			X		
2	CB-Comp-NW-Lower	11/14/11	4:25	Soil	4																			X		

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Derek Rector	[signature]	11/14/11	16:50
[signature]	Precy R. [signature]	11/14/11	1815

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

06/01/10 Revision

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-11-1200

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: URS CORP DATE: 11/14/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 1.5 °C + 0.5 °C (CF) = 2.0 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: VG

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: VG

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: DL

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** DL

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** JS

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:**_____

Return to Contents

Vikas Patel

From: Rector, Derek [derek.rector@urs.com]
Sent: Thursday, January 19, 2012 2:07 PM
To: Vikas Patel
Subject: correction of reported data

Hi Vik,

There was an error in naming one of the composite samples for San Elijo Lagoon. It was my fault. The first sample I sent you I put CB-Comp-NW on the COC when in fact it should have been CB-COMP-North. There was a following analysis for CB-COMP-NW which is representative of the correct data.

Can you change the name on the report for 11-11-1200 to show CB-COMP-North (Upper and Lower) as the sample name(s) and send me the pdf and Excel reports?

Thanks for your help,

Derek Rector, P.G.
Professional Geologist
URS Corporation - GeoEngineering Division
858-812-9292 office
619.888.0487 cell

4225 Executive Square ▮ Suite 1600 ▮ La Jolla, CA 92037

This e-mail and any attachments contain URS Corporation confidential information that may be proprietary or privileged. If you receive this message in error or are not the intended recipient, you should not retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 11-11-1346

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: URS Corporation

Client Project Name: SEL / 27661119.10000

Attention: David Schug
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Vikas Patel

Approved for release on 12/27/2011 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: SEL / 27661119.10000
Work Order Number: 11-11-1346

1 Detections Summary 3

2 Client Sample Data 5
2.1 EPA 376.2 (M) Total Sulfide (Solid) 5
2.2 EPA 376.2 (M) Dissolved Sulfide (Solid) 6
2.3 EPA 9060A Total Organic Carbon (Solid) 7
2.4 EPA 160.4 (M) Volatile Solids (Solid) 8
2.5 SM 2540 B Total Solids (Solid) 9
2.6 EPA 413.2 (M) Oil and Grease (Solid) 10
2.7 EPA 418.1 (M) TRPH (Solid) 11
2.8 8270DM/TQ/EI Pyrethroids (Sediment) 12
2.9 EPA 8081A Organochlorine Pesticides (Solid) 13
2.10 EPA 8082 PCB Aroclors (Solid) 15
2.11 EPA 8270C SIM (Solid) 16
2.12 EPA 8270C SIM PCB Congeners (Solid) 19
2.13 Krone et al. Organotins (Solid) 22
2.14 EPA 6020 ICP/MS Metals / EPA 7471A Mercury (Solid) 23

3 Quality Control Sample Data 24
3.1 MS/MSD and/or Duplicate 24
3.2 LCS/LCSD 40

4 Glossary of Terms and Qualifiers 51

5 Chain of Custody/Sample Receipt Form 52

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation	Work Order:	11-11-1346
	4225 Executive Square, Suite 1600	Project name:	SEL / 27661119.10000
	La Jolla, CA 92037-1487	Received:	11/16/11 17:40
Attn:	David Schug		

DETECTIONS SUMMARY

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
Client Sample ID: CB-COMP-South-Upper						
Arsenic	**3.74**		0.152	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.413**		0.152	mg/kg	EPA 6020	EPA 3050B
Chromium	**20.7**		0.152	mg/kg	EPA 6020	EPA 3050B
Copper	**32.5**		0.152	mg/kg	EPA 6020	EPA 3050B
Lead	**9.19**		0.152	mg/kg	EPA 6020	EPA 3050B
Nickel	**9.32**		0.152	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.475**		0.152	mg/kg	EPA 6020	EPA 3050B
Zinc	**60.6**		1.52	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**27**		3.0	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**8200**		760	mg/kg	EPA 9060A	N/A
Solids, Volatile	**4.4**		0.15	%	EPA 160.4M	N/A
Solids, Total	**65.9**		0.100	%	SM 2540 B	N/A
2,4'-DDE	**1.5**	Z	1.5	ug/kg	EPA 8081A	EPA 3545
4,4'-DDD	**1.5**		1.5	ug/kg	EPA 8081A	EPA 3545
4,4'-DDE	**6.5**		1.5	ug/kg	EPA 8081A	EPA 3545
2,6-Dimethylnaphthalene	**0.020**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
1-Methylnaphthalene	**0.033**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
2-Methylnaphthalene	**0.088**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Acenaphthene	**0.015**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Bis(2-Ethylhexyl) Phthalate	**0.040**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.44**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Naphthalene	**0.18**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Client Sample ID: CB-COMP-South-Lower						
Arsenic	**2.02**		0.138	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.168**		0.138	mg/kg	EPA 6020	EPA 3050B
Chromium	**7.83**		0.138	mg/kg	EPA 6020	EPA 3050B
Copper	**4.35**		0.138	mg/kg	EPA 6020	EPA 3050B
Lead	**1.21**		0.138	mg/kg	EPA 6020	EPA 3050B
Nickel	**2.97**		0.138	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.316**		0.138	mg/kg	EPA 6020	EPA 3050B
Zinc	**18.2**		1.38	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**0.83**		0.14	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**1400**		690	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.77**		0.14	%	EPA 160.4M	N/A
Solids, Total	**72.5**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.032**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.014**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.24**		0.014	mg/kg	EPA 8270C SIM	EPA 3545

*MDL is shown.

Return to Contents

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-11-1346
		Project name:	SEL / 27661119.10000
		Received:	11/16/11 17:40
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction

Subcontracted analyses, if any, are not included in this summary.

Return to Contents

*MDL is shown.

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-A**	**11/16/11 15:10**	**Solid**	**N/A**	**11/17/11**	**11/17/11 15:48**	**B1117SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	27	3.0	20		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-A**	**11/16/11 15:20**	**Solid**	**N/A**	**11/17/11**	**11/17/11 15:48**	**B1117SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	0.83	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-10-035-28**	**N/A**	**Solid**	**N/A**	**11/17/11**	**11/17/11 15:48**	**B1117SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-A**	**11/16/11 15:10**	**Solid**	**N/A**	**11/16/11**	**11/16/11 18:04**	**B1116DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.15	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-A**	**11/16/11 15:20**	**Solid**	**N/A**	**11/16/11**	**11/16/11 18:04**	**B1116DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-095-20**	**N/A**	**Solid**	**N/A**	**11/16/11**	**11/16/11 18:04**	**B1116DSB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 9060A

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-C**	**11/16/11 15:10**	**Solid**	**TOC 5**	**N/A**	**11/17/11 18:00**	**B1117TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	8200	760	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-C**	**11/16/11 15:20**	**Solid**	**TOC 5**	**N/A**	**11/17/11 18:00**	**B1117TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	1400	690	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-653**	**N/A**	**Solid**	**TOC 5**	**N/A**	**11/17/11 18:00**	**B1117TOCL1**

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	ND	500	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 160.4M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-C**	**11/16/11 15:10**	**Solid**	**N/A**	**11/21/11**	**11/21/11 21:00**	**B1121VSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	4.4	0.15	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-C**	**11/16/11 15:20**	**Solid**	**N/A**	**11/21/11**	**11/21/11 21:00**	**B1121VSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.77	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-020-1,001**	**N/A**	**Solid**	**N/A**	**11/21/11**	**11/21/11 21:00**	**B1121VSB2**

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	ND	0.10	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: SM 2540 B

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-C**	**11/16/11 15:10**	**Solid**	**N/A**	**11/19/11**	**11/19/11 15:00**	**B1119TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	65.9	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-C**	**11/16/11 15:20**	**Solid**	**N/A**	**11/19/11**	**11/19/11 15:00**	**B1119TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	72.5	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-1,767**	**N/A**	**Solid**	**N/A**	**11/19/11**	**11/19/11 15:00**	**B1119TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	ND	0.100	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: Extraction
Method: EPA 413.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-E**	**11/16/11 15:10**	**Solid**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	15	1		mg/kg

CB-COMP-South-Lower	**11-11-1346-2-E**	**11/16/11 15:20**	**Solid**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	14	1		mg/kg

Method Blank	**099-07-019-106**	**N/A**	**Solid**	**IR 2**	**12/16/11**	**11/16/11 07:00**	**111116L02**

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: Extraction
Method: EPA 418.1M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-A**	**11/16/11 15:10**	**Solid**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	15	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-A**	**11/16/11 15:20**	**Solid**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1,811**	**N/A**	**Solid**	**IR 2**	**11/16/11**	**11/16/11 07:00**	**111116L01**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-E**	**11/16/11 15:10**	**Solid**	**GCTQ 2**	**11/18/11**	**11/22/11 15:50**	**111118L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.77	1.01		Fluvalinate	ND	0.77	1.01	
Bifenthrin	ND	0.77	1.01		Permethrin (cis/trans)	ND	1.5	1.01	
Cyfluthrin	ND	0.77	1.01		Phenothrin	ND	0.77	1.01	
Cypermethrin	ND	0.77	1.01		Resmethrin/Bioresmethrin	ND	0.77	1.01	
Deltamethrin/Tralomethrin	ND	0.77	1.01		Tetramethrin	ND	0.77	1.01	
Fenpropathrin	ND	0.77	1.01		lambda-Cyhalothrin	ND	0.77	1.01	
Fenvalerate/Esfenvalerate	ND	0.77	1.01						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	74	25-200	

CB-COMP-South-Lower	**11-11-1346-2-E**	**11/16/11 15:20**	**Solid**	**GCTQ 2**	**11/18/11**	**11/22/11 16:26**	**111118L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.69	1		Fluvalinate	ND	0.69	1	
Bifenthrin	ND	0.69	1		Permethrin (cis/trans)	ND	1.4	1	
Cyfluthrin	ND	0.69	1		Phenothrin	ND	0.69	1	
Cypermethrin	ND	0.69	1		Resmethrin/Bioresmethrin	ND	0.69	1	
Deltamethrin/Tralomethrin	ND	0.69	1		Tetramethrin	ND	0.69	1	
Fenpropathrin	ND	0.69	1		lambda-Cyhalothrin	ND	0.69	1	
Fenvalerate/Esfenvalerate	ND	0.69	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	76	25-200	

Method Blank	**099-14-403-8**	**N/A**	**Sediment**	**GCTQ 2**	**11/18/11**	**11/22/11 15:13**	**111118L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.50	1		Fluvalinate	ND	0.50	1	
Bifenthrin	ND	0.50	1		Permethrin (cis/trans)	ND	1.0	1	
Cyfluthrin	ND	0.50	1		Phenothrin	ND	0.50	1	
Cypermethrin	ND	0.50	1		Resmethrin/Bioresmethrin	ND	0.50	1	
Deltamethrin/Tralomethrin	ND	0.50	1		Tetramethrin	ND	0.50	1	
Fenpropathrin	ND	0.50	1		lambda-Cyhalothrin	ND	0.50	1	
Fenvalerate/Esfenvalerate	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	69	25-200	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	11/16/11
4225 Executive Square, Suite 1600		Work Order No:	11-11-1346
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-B**	**11/16/11 15:10**	**Solid**	**GC 51**	**11/16/11**	**11/21/11 16:28**	**111116L18**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	38	1		Endosulfan I	ND	1.5	1	
Aldrin	ND	1.5	1		Endosulfan II	ND	1.5	1	
Alpha-BHC	ND	1.5	1		Endosulfan Sulfate	ND	1.5	1	
Beta-BHC	ND	1.5	1		Endrin	ND	1.5	1	
Delta-BHC	ND	1.5	1		Endrin Aldehyde	ND	1.5	1	
Gamma-BHC	ND	1.5	1		Endrin Ketone	ND	1.5	1	
Chlordane	ND	15	1		Heptachlor	ND	1.5	1	
Dieldrin	ND	1.5	1		Heptachlor Epoxide	ND	1.5	1	
Trans-nonachlor	ND	1.5	1		Methoxychlor	ND	1.5	1	
2,4'-DDD	ND	1.5	1		Toxaphene	ND	30	1	
2,4'-DDE	1.5	1.5	1	Z	Alpha Chlordane	ND	1.5	1	
2,4'-DDT	ND	1.5	1		Gamma Chlordane	ND	1.5	1	
4,4'-DDD	1.5	1.5	1		Cis-nonachlor	ND	1.5	1	
4,4'-DDE	6.5	1.5	1		Mirex	ND	7.6	1	
4,4'-DDT	ND	1.5	1		Oxychlordane	ND	1.5	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	108	50-130		Decachlorobiphenyl	80	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-B**	**11/16/11 15:20**	**Solid**	**GC 51**	**11/16/11**	**11/21/11 14:47**	**111116L18**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	34	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	28	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	ND	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	ND	1.4	1		Mirex	ND	6.9	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	115	50-130		Decachlorobiphenyl	71	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-117**	**N/A**	**Solid**	**GC 51**	**11/16/11**	**11/21/11 12:08**	**111116L18**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	25	1		Endosulfan I	ND	1.0	1	
Aldrin	ND	1.0	1		Endosulfan II	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endosulfan Sulfate	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin	ND	1.0	1	
Delta-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Chlordane	ND	10	1		Heptachlor	ND	1.0	1	
Dieldrin	ND	1.0	1		Heptachlor Epoxide	ND	1.0	1	
Trans-nonachlor	ND	1.0	1		Methoxychlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDE	ND	1.0	1		Alpha Chlordane	ND	1.0	1	
2,4'-DDT	ND	1.0	1		Gamma Chlordane	ND	1.0	1	
4,4'-DDD	ND	1.0	1		Cis-nonachlor	ND	1.0	1	
4,4'-DDE	ND	1.0	1		Mirex	ND	5.0	1	
4,4'-DDT	ND	1.0	1		Oxychlordane	ND	1.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	88	50-130			Decachlorobiphenyl	61	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	11/16/11
4225 Executive Square, Suite 1600		Work Order No:	11-11-1346
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082
		Units:	ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-B**	**11/16/11 15:10**	**Solid**	**GC 58**	**11/16/11**	**11/22/11 17:19**	**111116L19**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	15	1		Aroclor-1248	ND	15	1	
Aroclor-1221	ND	15	1		Aroclor-1254	ND	15	1	
Aroclor-1232	ND	15	1		Aroclor-1260	ND	15	1	
Aroclor-1242	ND	15	1		Aroclor-1262	ND	15	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	109	50-130			Decachlorobiphenyl	120	50-130		

CB-COMP-South-Lower	**11-11-1346-2-B**	**11/16/11 15:20**	**Solid**	**GC 58**	**11/16/11**	**11/22/11 17:37**	**111116L19**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	ND	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	109	50-130			Decachlorobiphenyl	118	50-130		

Method Blank	**099-12-565-207**	**N/A**	**Solid**	**GC 58**	**11/16/11**	**11/22/11 15:49**	**111116L19**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	10	1		Aroclor-1248	ND	10	1	
Aroclor-1221	ND	10	1		Aroclor-1254	ND	10	1	
Aroclor-1232	ND	10	1		Aroclor-1260	ND	10	1	
Aroclor-1242	ND	10	1		Aroclor-1262	ND	10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	125	50-130			Decachlorobiphenyl	128	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-B**	**11/16/11 15:10**	**Solid**	**GC/MS MM**	**11/16/11**	**11/22/11 17:42**	**111116L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	0.020	0.015	1		Benzo (k) Fluoranthene	ND	0.015	1	
Biphenyl	ND	0.015	1		Bis(2-Ethylhexyl) Phthalate	0.040	0.015	1	
Benzo (e) Pyrene	ND	0.015	1		Butyl Benzyl Phthalate	ND	0.015	1	
Perylene	ND	0.015	1		Chrysene	ND	0.015	1	
1-Methylnaphthalene	0.033	0.015	1		Di-n-Butyl Phthalate	ND	0.015	1	
2,4,5-Trichlorophenol	ND	0.015	1		Di-n-Octyl Phthalate	ND	0.015	1	
2,4,6-Trichlorophenol	ND	0.015	1		Dibenz (a,h) Anthracene	ND	0.015	1	
2,4-Dichlorophenol	ND	0.015	1		Diethyl Phthalate	ND	0.015	1	
2,4-Dimethylphenol	ND	0.015	1		Dimethyl Phthalate	0.44	0.015	1	
2,4-Dinitrophenol	ND	0.76	1		Fluoranthene	ND	0.015	1	
2-Chlorophenol	ND	0.015	1		Fluorene	ND	0.015	1	
2-Methylnaphthalene	0.088	0.015	1		Indeno (1,2,3-c,d) Pyrene	ND	0.015	1	
2-Methylphenol	ND	0.015	1		Naphthalene	0.18	0.015	1	
2-Nitrophenol	ND	0.015	1		Pentachlorophenol	ND	0.76	1	
3/4-Methylphenol	ND	0.015	1		Phenanthrene	ND	0.015	1	
4,6-Dinitro-2-Methylphenol	ND	0.76	1		Phenol	ND	0.015	1	
4-Chloro-3-Methylphenol	ND	0.015	1		Pyrene	ND	0.015	1	
4-Nitrophenol	ND	0.76	1		1,6,7-Trimethylnaphthalene	ND	0.015	1	
Acenaphthene	0.015	0.015	1		2,3,4,6-Tetrachlorophenol	ND	0.015	1	
Acenaphthylene	ND	0.015	1		2,6-Dichlorophenol	ND	0.015	1	
Anthracene	ND	0.015	1		Benzoic Acid	ND	0.15	1	
Benzo (a) Anthracene	ND	0.015	1		1-Methylphenanthrene	ND	0.015	1	
Benzo (a) Pyrene	ND	0.015	1		DCPA	ND	0.015	1	
Benzo (b) Fluoranthene	ND	0.015	1		Dibenzothiophene	ND	0.015	1	
Benzo (g,h,i) Perylene	ND	0.015	1		Perthane	ND	0.015	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	62	32-143		2-Fluorobiphenyl	60	14-146	
2-Fluorophenol	77	15-138		Nitrobenzene-d5	70	18-162	
p-Terphenyl-d14	67	34-148		Phenol-d6	71	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-B**	**11/16/11 15:20**	**Solid**	**GC/MS MM**	**11/16/11**	**11/22/11 18:08**	**111116L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzo (e) Pyrene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Perylene	ND	0.014	1		Bis(2-Ethylhexyl) Phthalate	0.032	0.014	1	
Biphenyl	ND	0.014	1		Butyl Benzyl Phthalate	0.014	0.014	1	
2,6-Dimethylnaphthalene	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	ND	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	ND	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	0.24	0.014	1	
2,4-Dinitrophenol	ND	0.69	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.69	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.69	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.69	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	72	32-143		2-Fluorobiphenyl	73	14-146	
2-Fluorophenol	80	15-138		Nitrobenzene-d5	78	18-162	
p-Terphenyl-d14	76	34-148		Phenol-d6	82	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-413-346**	**N/A**	**Solid**	**GC/MS MM**	**11/16/11**	**11/22/11 17:16**	**111116L16**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Perylene	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.010	1	
2,6-Dimethylnaphthalene	ND	0.010	1		Bis(2-Ethylhexyl) Phthalate	ND	0.010	1	
Biphenyl	ND	0.010	1		Butyl Benzyl Phthalate	ND	0.010	1	
Benzo (e) Pyrene	ND	0.010	1		Chrysene	ND	0.010	1	
1-Methylnaphthalene	ND	0.010	1		Di-n-Butyl Phthalate	ND	0.010	1	
2,4,5-Trichlorophenol	ND	0.010	1		Di-n-Octyl Phthalate	ND	0.010	1	
2,4,6-Trichlorophenol	ND	0.010	1		Dibenz (a,h) Anthracene	ND	0.010	1	
2,4-Dichlorophenol	ND	0.010	1		Diethyl Phthalate	ND	0.010	1	
2,4-Dimethylphenol	ND	0.010	1		Dimethyl Phthalate	ND	0.010	1	
2,4-Dinitrophenol	ND	0.50	1		Fluoranthene	ND	0.010	1	
2-Chlorophenol	ND	0.010	1		Fluorene	ND	0.010	1	
2-Methylnaphthalene	ND	0.010	1		Indeno (1,2,3-c,d) Pyrene	ND	0.010	1	
2-Methylphenol	ND	0.010	1		Naphthalene	ND	0.010	1	
2-Nitrophenol	ND	0.010	1		Pentachlorophenol	ND	0.50	1	
3/4-Methylphenol	ND	0.010	1		Phenanthrene	ND	0.010	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Phenol	ND	0.010	1	
4-Chloro-3-Methylphenol	ND	0.010	1		Pyrene	ND	0.010	1	
4-Nitrophenol	ND	0.50	1		1,6,7-Trimethylnaphthalene	ND	0.010	1	
Acenaphthene	ND	0.010	1		2,3,4,6-Tetrachlorophenol	ND	0.010	1	
Acenaphthylene	ND	0.010	1		2,6-Dichlorophenol	ND	0.010	1	
Anthracene	ND	0.010	1		1-Methylphenanthrene	ND	0.010	1	
Benzo (a) Anthracene	ND	0.010	1		Benzoic Acid	ND	0.10	1	
Benzo (a) Pyrene	ND	0.010	1		DCPA	ND	0.010	1	
Benzo (b) Fluoranthene	ND	0.010	1		Dibenzothiophene	ND	0.010	1	
Benzo (g,h,i) Perylene	ND	0.010	1		Perthane	ND	0.010	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	79	32-143		2-Fluorobiphenyl	73	14-146	
2-Fluorophenol	71	15-138		Nitrobenzene-d5	63	18-162	
p-Terphenyl-d14	85	34-148		Phenol-d6	89	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-B**	**11/16/11 15:10**	**Solid**	**GC/MS HHH**	**11/16/11**	**11/18/11 18:58**	**111116L15**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.76	1		PCB126	ND	0.76	1	
PCB008	ND	0.76	1		PCB128	ND	0.76	1	
PCB018	ND	0.76	1		PCB132	ND	0.76	1	
PCB028	ND	0.76	1		PCB138/158	ND	1.5	1	
PCB031	ND	0.76	1		PCB141	ND	0.76	1	
PCB033	ND	0.76	1		PCB149	ND	0.76	1	
PCB037	ND	0.76	1		PCB151	ND	0.76	1	
PCB044	ND	0.76	1		PCB153	ND	0.76	1	
PCB049	ND	0.76	1		PCB156	ND	0.76	1	
PCB052	ND	0.76	1		PCB157	ND	0.76	1	
PCB056	ND	0.76	1		PCB167	ND	0.76	1	
PCB060	ND	0.76	1		PCB168	ND	0.76	1	
PCB066	ND	0.76	1		PCB169	ND	0.76	1	
PCB070	ND	0.76	1		PCB170	ND	0.76	1	
PCB074	ND	0.76	1		PCB174	ND	0.76	1	
PCB077	ND	0.76	1		PCB177	ND	0.76	1	
PCB081	ND	0.76	1		PCB180	ND	0.76	1	
PCB087	ND	0.76	1		PCB183	ND	0.76	1	
PCB095	ND	0.76	1		PCB184	ND	0.76	1	
PCB097	ND	0.76	1		PCB187	ND	0.76	1	
PCB099	ND	0.76	1		PCB189	ND	0.76	1	
PCB101	ND	0.76	1		PCB194	ND	0.76	1	
PCB105	ND	0.76	1		PCB195	ND	0.76	1	
PCB110	ND	0.76	1		PCB200	ND	0.76	1	
PCB114	ND	0.76	1		PCB201	ND	0.76	1	
PCB118	ND	0.76	1		PCB203	ND	0.76	1	
PCB119	ND	0.76	1		PCB206	ND	0.76	1	
PCB123	ND	0.76	1		PCB209	ND	0.76	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	188	50-125	1,2,7	p-Terphenyl-d14	101	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-B**	**11/16/11 15:20**	**Solid**	**GC/MS HHH**	**11/16/11**	**11/18/11 19:24**	**111116L15**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.69	1		PCB126	ND	0.69	1	
PCB008	ND	0.69	1		PCB128	ND	0.69	1	
PCB018	ND	0.69	1		PCB132	ND	0.69	1	
PCB028	ND	0.69	1		PCB138/158	ND	1.4	1	
PCB031	ND	0.69	1		PCB141	ND	0.69	1	
PCB033	ND	0.69	1		PCB149	ND	0.69	1	
PCB037	ND	0.69	1		PCB151	ND	0.69	1	
PCB044	ND	0.69	1		PCB153	ND	0.69	1	
PCB049	ND	0.69	1		PCB156	ND	0.69	1	
PCB052	ND	0.69	1		PCB157	ND	0.69	1	
PCB056	ND	0.69	1		PCB167	ND	0.69	1	
PCB060	ND	0.69	1		PCB168	ND	0.69	1	
PCB066	ND	0.69	1		PCB169	ND	0.69	1	
PCB070	ND	0.69	1		PCB170	ND	0.69	1	
PCB074	ND	0.69	1		PCB174	ND	0.69	1	
PCB077	ND	0.69	1		PCB177	ND	0.69	1	
PCB081	ND	0.69	1		PCB180	ND	0.69	1	
PCB087	ND	0.69	1		PCB183	ND	0.69	1	
PCB095	ND	0.69	1		PCB184	ND	0.69	1	
PCB097	ND	0.69	1		PCB187	ND	0.69	1	
PCB099	ND	0.69	1		PCB189	ND	0.69	1	
PCB101	ND	0.69	1		PCB194	ND	0.69	1	
PCB105	ND	0.69	1		PCB195	ND	0.69	1	
PCB110	ND	0.69	1		PCB200	ND	0.69	1	
PCB114	ND	0.69	1		PCB201	ND	0.69	1	
PCB118	ND	0.69	1		PCB203	ND	0.69	1	
PCB119	ND	0.69	1		PCB206	ND	0.69	1	
PCB123	ND	0.69	1		PCB209	ND	0.69	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	188	50-125	1,2,7	p-Terphenyl-d14	86	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-24**	**N/A**	**Solid**	**GC/MS HHH**	**11/16/11**	**11/18/11 17:37**	**111116L15**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.50	1		PCB126	ND	0.50	1	
PCB008	ND	0.50	1		PCB128	ND	0.50	1	
PCB018	ND	0.50	1		PCB132	ND	0.50	1	
PCB028	ND	0.50	1		PCB138/158	ND	1.0	1	
PCB031	ND	0.50	1		PCB141	ND	0.50	1	
PCB033	ND	0.50	1		PCB149	ND	0.50	1	
PCB037	ND	0.50	1		PCB151	ND	0.50	1	
PCB044	ND	0.50	1		PCB153	ND	0.50	1	
PCB049	ND	0.50	1		PCB156	ND	0.50	1	
PCB052	ND	0.50	1		PCB157	ND	0.50	1	
PCB056	ND	0.50	1		PCB167	ND	0.50	1	
PCB060	ND	0.50	1		PCB168	ND	0.50	1	
PCB066	ND	0.50	1		PCB169	ND	0.50	1	
PCB070	ND	0.50	1		PCB170	ND	0.50	1	
PCB074	ND	0.50	1		PCB174	ND	0.50	1	
PCB077	ND	0.50	1		PCB177	ND	0.50	1	
PCB081	ND	0.50	1		PCB180	ND	0.50	1	
PCB087	ND	0.50	1		PCB183	ND	0.50	1	
PCB095	ND	0.50	1		PCB184	ND	0.50	1	
PCB097	ND	0.50	1		PCB187	ND	0.50	1	
PCB099	ND	0.50	1		PCB189	ND	0.50	1	
PCB101	ND	0.50	1		PCB194	ND	0.50	1	
PCB105	ND	0.50	1		PCB195	ND	0.50	1	
PCB110	ND	0.50	1		PCB200	ND	0.50	1	
PCB114	ND	0.50	1		PCB201	ND	0.50	1	
PCB118	ND	0.50	1		PCB203	ND	0.50	1	
PCB119	ND	0.50	1		PCB206	ND	0.50	1	
PCB123	ND	0.50	1		PCB209	ND	0.50	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	102	50-125		p-Terphenyl-d14	105	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: Organotins by Krone et al.
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-B**	**11/16/11 15:10**	**Solid**	**GC/MS Y**	**11/18/11**	**11/21/11 17:38**	**111118L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.6	1		Tetrabutyltin	ND	4.6	1	
Monobutyltin	ND	4.6	1		Tributyltin	ND	4.6	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	119	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-B**	**11/16/11 15:20**	**Solid**	**GC/MS Y**	**11/18/11**	**11/21/11 18:12**	**111118L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.1	1		Tetrabutyltin	ND	4.1	1	
Monobutyltin	ND	4.1	1		Tributyltin	ND	4.1	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	123	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-891**	**N/A**	**Solid**	**GC/MS Y**	**11/18/11**	**11/21/11 15:59**	**111118L08**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.0	1		Tetrabutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1		Tributyltin	ND	3.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	119	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3050B / EPA 7471A Total
Method: EPA 6020 / EPA 7471A
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Upper	**11-11-1346-1-B**	**11/16/11 15:10**	**Solid**	**ICP/MS 04**	**11/16/11**	**11/17/11 21:24**	**111116L01**

Comment(s): -Mercury analysis was performed on 11/17/11 17:15 with batch 111117L03.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.74	0.152	1		Mercury	ND	0.0304	1	
Cadmium	0.413	0.152	1		Nickel	9.32	0.152	1	
Chromium	20.7	0.152	1		Selenium	0.475	0.152	1	
Copper	32.5	0.152	1		Silver	ND	0.152	1	
Lead	9.19	0.152	1		Zinc	60.6	1.52	1	

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-COMP-South-Lower	**11-11-1346-2-B**	**11/16/11 15:20**	**Solid**	**ICP/MS 04**	**11/16/11**	**11/17/11 21:30**	**111116L01**

Comment(s): -Mercury analysis was performed on 11/17/11 17:17 with batch 111117L03.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.02	0.138	1		Mercury	ND	0.0276	1	
Cadmium	0.168	0.138	1		Nickel	2.97	0.138	1	
Chromium	7.83	0.138	1		Selenium	0.316	0.138	1	
Copper	4.35	0.138	1		Silver	ND	0.138	1	
Lead	1.21	0.138	1		Zinc	18.2	1.38	1	

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-248**	**N/A**	**Solid**	**Mercury**	**11/17/11**	**11/17/11 17:04**	**111117L03**

Comment(s): -Preparation/analysis for Mercury was performed by EPA 7471A.

Parameter	Result	RL	DF	Qual
Mercury	ND	0.0200	1	

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**096-10-002-2,132**	**N/A**	**Solid**	**ICP/MS 04**	**11/16/11**	**11/16/11 19:18**	**111116L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.100	1	
Chromium	ND	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	
Lead	ND	0.100	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3050B
Method: EPA 6020

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**ICP/MS 04**	**11/16/11**	**11/16/11**	**111116S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	98	97	80-120	1	0-20	
Cadmium	25.00	102	103	80-120	1	0-20	
Chromium	25.00	97	97	80-120	1	0-20	
Copper	25.00	105	103	80-120	1	0-20	
Lead	25.00	97	97	80-120	0	0-20	
Nickel	25.00	105	110	80-120	5	0-20	
Selenium	25.00	95	95	80-120	0	0-20	
Silver	12.50	100	103	80-120	3	0-20	
Zinc	25.00	115	142	80-120	14	0-20	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - PDS / PDSD

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3050B
Method: EPA 6020

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS / PDSD Batch Number
11-11-1200-2	**Sediment**	**ICP/MS 04**	**11/16/11**	**11/16/11**	**111116S01**

Parameter	SPIKE ADDED	PDS %REC	PDSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	93	94	75-125	1	0-20	
Cadmium	25.00	100	98	75-125	2	0-20	
Chromium	25.00	96	92	75-125	3	0-20	
Copper	25.00	98	98	75-125	1	0-20	
Lead	25.00	96	95	75-125	1	0-20	
Nickel	25.00	99	98	75-125	0	0-20	
Selenium	25.00	94	91	75-125	3	0-20	
Silver	12.50	89	89	75-125	1	0-20	
Zinc	25.00	95	95	75-125	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 9060A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**TOC 5**	**N/A**	**11/17/11**	**B1117TOCS1**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	30000	88	92	75-125	4	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
11-11-1200-2	**Sediment**	**N/A**	**11/17/11**	**11/17/11**	**B1117SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	0.70	0.70	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
CB-COMP-South-Upper	**Solid**	**N/A**	**11/16/11**	**11/16/11**	**B1116DSD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	NA	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	11/16/11
4225 Executive Square, Suite 1600		Work Order No:	11-11-1346
La Jolla, CA 92037-1487		Preparation:	N/A
		Method:	SM 2540 B

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
CB-COMP-South-Lower	**Solid**	**N/A**	**11/19/11**	**11/19/11**	**B1119TSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	72.5	71.5	1	0-10	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 160.4M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
CB-COMP-South-Lower	**Solid**	**N/A**	**11/21/11**	**11/21/11**	**B1121VSD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Volatile	0.56	0.47	17	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: Extraction
Method: EPA 413.2M

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**IR 2**	**12/16/11**	**11/16/11**	**111116S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Oil and Grease	100.0	117	109	55-135	7	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: Extraction
Method: EPA 418.1M

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**IR 2**	**11/16/11**	**11/16/11**	**111116S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	115	109	55-135	6	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**GCTQ 2**	**11/18/11**	**11/22/11**	**111118S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	5.000	87	99	25-200	13	0-25	
Cyfluthrin	5.000	71	77	25-200	8	0-25	
Cypermethrin	5.000	83	78	25-200	6	0-25	
Deltamethrin/Tralomethrin	5.000	68	74	25-200	8	0-25	
Fenvalerate/Esfenvalerate	5.000	61	63	25-200	2	0-25	
Fluvalinate	5.000	65	65	25-200	1	0-25	
Permethrin (cis/trans)	10.00	85	86	25-200	0	0-25	
Phenothrin	5.000	94	108	25-200	14	0-25	
Resmethrin/Bioresmethrin	5.000	47	67	25-200	35	0-25	4
lambda-Cyhalothrin	5.000	83	88	25-200	6	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 7471A Total
Method: EPA 7471A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-COMP-South-Upper	**Solid**	**Mercury**	**11/17/11**	**11/17/11**	**111117S03**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	92	92	76-136	0	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: Organotins by Krone et al.

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**GC/MS Y**	**11/18/11**	**11/21/11**	**111118S08**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	101	126	50-130	22	0-20	4
Tributyltin	100.0	83	101	50-130	20	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8082

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**GC 58**	**11/16/11**	**11/22/11**	**111116S19**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	74	96	50-135	26	0-25	4
Aroclor-1260	20.00	78	100	50-135	24	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**GC/MS MM**	**11/16/11**	**11/21/11**	**111116S16**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	59	59	40-160	0	0-20	
2,4-Dichlorophenol	1.000	53	53	40-160	1	0-20	
2-Methylphenol	1.000	57	58	40-160	1	0-20	
2-Nitrophenol	1.000	55	55	40-160	1	0-20	
4-Chloro-3-Methylphenol	1.000	55	54	40-160	1	0-20	
Acenaphthene	1.000	64	64	40-106	1	0-20	
Benzo (a) Pyrene	1.000	84	83	17-163	0	0-20	
Chrysene	1.000	74	74	17-168	1	0-20	
Di-n-Butyl Phthalate	1.000	70	70	40-160	1	0-20	
Dimethyl Phthalate	1.000	35	34	40-160	1	0-20	3
Fluoranthene	1.000	68	68	26-137	1	0-20	
Fluorene	1.000	66	66	59-121	1	0-20	
Naphthalene	1.000	66	65	21-133	0	0-20	
Phenanthrene	1.000	67	66	54-120	1	0-20	
Phenol	1.000	51	52	40-160	2	0-20	
Pyrene	1.000	69	68	6-156	2	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8081A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**GC 51**	**11/16/11**	**11/21/11**	**111116S18**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	67	68	50-135	0	0-25	
Alpha-BHC	5.000	66	65	50-135	2	0-25	
Beta-BHC	5.000	72	72	50-135	1	0-25	
Delta-BHC	5.000	56	57	50-135	2	0-25	
Gamma-BHC	5.000	65	64	50-135	1	0-25	
Dieldrin	5.000	62	58	50-135	6	0-25	
4,4'-DDD	5.000	72	71	50-135	2	0-25	
4,4'-DDE	5.000	68	68	50-135	0	0-25	
4,4'-DDT	5.000	84	82	50-135	3	0-25	
Endosulfan I	5.000	62	62	50-135	0	0-25	
Endosulfan II	5.000	69	69	50-135	0	0-25	
Endosulfan Sulfate	5.000	71	70	50-135	1	0-25	
Endrin	5.000	66	67	50-135	1	0-25	
Endrin Aldehyde	5.000	72	61	50-135	17	0-25	
Endrin Ketone	5.000	83	82	50-135	2	0-25	
Heptachlor	5.000	68	69	50-135	1	0-25	
Heptachlor Epoxide	5.000	60	61	50-135	2	0-25	
Methoxychlor	5.000	76	74	50-135	4	0-25	
Alpha Chlordane	5.000	63	63	50-135	1	0-25	
Gamma Chlordane	5.000	63	63	50-135	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/16/11
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1200-2	**Sediment**	**GC/MS HHH**	**11/16/11**	**11/18/11**	**111116S15**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB018	25.00	89	101	50-125	12	0-30	
PCB028	25.00	94	109	50-125	15	0-30	
PCB044	25.00	90	103	50-125	13	0-30	
PCB052	25.00	88	101	50-125	14	0-30	
PCB066	25.00	95	110	50-125	15	0-30	
PCB077	25.00	96	113	50-125	16	0-30	
PCB101	25.00	93	107	50-125	14	0-30	
PCB105	25.00	94	109	50-125	15	0-30	
PCB118	25.00	101	118	50-125	15	0-30	
PCB126	25.00	90	104	50-125	15	0-30	
PCB128	25.00	88	102	50-125	14	0-30	
PCB153	25.00	90	104	50-125	14	0-30	
PCB170	25.00	87	100	50-125	15	0-30	
PCB180	25.00	92	106	50-125	14	0-30	
PCB187	25.00	89	102	50-125	14	0-30	
PCB206	25.00	93	108	50-125	16	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 3050B
Method: EPA 6020

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-2,132	**Solid**	**ICP/MS 04**	**11/16/11**	**11/16/11**	**111116L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	96	96	80-120	1	0-20	
Cadmium	25.00	100	101	80-120	1	0-20	
Chromium	25.00	98	97	80-120	1	0-20	
Copper	25.00	103	101	80-120	2	0-20	
Lead	25.00	97	97	80-120	0	0-20	
Nickel	25.00	102	99	80-120	2	0-20	
Selenium	25.00	93	95	80-120	2	0-20	
Silver	12.50	91	92	80-120	1	0-20	
Zinc	25.00	100	99	80-120	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: N/A
Method: EPA 9060A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-653	**Solid**	**TOC 5**	**N/A**	**11/17/11**	**B1117TOCL1**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	6000	93	89	80-120	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: Extraction
Method: EPA 413.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-019-106	**Solid**	**IR 2**	**11/16/11**		**111116L02**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Oil and Grease	100.0	92.70	93	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: Extraction
Method: EPA 418.1M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,811	**Solid**	**IR 2**	**11/16/11**	**NONE**	**111116L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100.0	106.5	106	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-403-8	**Sediment**	**GCTQ 2**	**11/18/11**	**11/22/11**	**111118L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	5.000	93	99	25-200	6	0-25	
Cyfluthrin	5.000	65	59	25-200	9	0-25	
Cypermethrin	5.000	77	69	25-200	11	0-25	
Deltamethrin/Tralomethrin	5.000	70	64	25-200	9	0-25	
Fenvalerate/Esfenvalerate	5.000	64	54	25-200	16	0-25	
Fluvalinate	5.000	66	61	25-200	8	0-25	
Permethrin (cis/trans)	10.00	70	65	25-200	7	0-25	
Phenothrin	5.000	87	92	25-200	6	0-25	
Resmethrin/Bioresmethrin	5.000	78	86	25-200	10	0-25	
lambda-Cyhalothrin	5.000	70	69	25-200	2	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-248	**Solid**	**Mercury**	**11/17/11**	**11/17/11**	**111117L03**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	97	96	82-124	1	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: Organotins by Krone et al.

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-891	**Solid**	**GC/MS Y**	**11/18/11**	**11/21/11**	**111118L08**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	86	88	50-130	2	0-20	
Tributyltin	100.0	92	97	50-130	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8082

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-207	**Solid**	**GC 58**	**11/16/11**	**11/22/11**	**111116L19**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	94	86	50-135	9	0-25	
Aroclor-1260	20.00	104	84	50-135	21	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-413-346	**Solid**	**GC/MS MM**	**11/16/11**	**11/21/11**	**111116L16**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	74	75	40-160	20-180	2	0-20	
2,4-Dichlorophenol	1.000	70	70	40-160	20-180	1	0-20	
2-Methylphenol	1.000	81	80	40-160	20-180	1	0-20	
2-Nitrophenol	1.000	64	63	40-160	20-180	2	0-20	
4-Chloro-3-Methylphenol	1.000	74	73	40-160	20-180	0	0-20	
Acenaphthene	1.000	76	76	48-108	38-118	0	0-11	
Benzo (a) Pyrene	1.000	95	96	17-163	0-187	1	0-20	
Chrysene	1.000	80	80	17-168	0-193	0	0-20	
Di-n-Butyl Phthalate	1.000	78	77	40-160	20-180	1	0-20	
Dimethyl Phthalate	1.000	70	71	40-160	20-180	1	0-20	
Fluoranthene	1.000	80	80	26-137	8-156	0	0-20	
Fluorene	1.000	78	79	59-121	49-131	1	0-20	
Naphthalene	1.000	77	77	21-133	2-152	0	0-20	
Phenanthrene	1.000	78	78	54-120	43-131	0	0-20	
Phenol	1.000	74	73	40-160	20-180	1	0-20	
Pyrene	1.000	80	79	28-106	15-119	1	0-16	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8081A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-858-117	**Solid**	**GC 51**	**11/16/11**	**11/21/11**	**111116L18**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	82	81	50-135	36-149	1	0-25	
Alpha-BHC	5.000	86	84	50-135	36-149	2	0-25	
Beta-BHC	5.000	88	83	50-135	36-149	6	0-25	
Delta-BHC	5.000	77	81	50-135	36-149	5	0-25	
Gamma-BHC	5.000	90	89	50-135	36-149	1	0-25	
Dieldrin	5.000	70	67	50-135	36-149	4	0-25	
4,4'-DDD	5.000	101	98	50-135	36-149	3	0-25	
4,4'-DDE	5.000	91	87	50-135	36-149	5	0-25	
4,4'-DDT	5.000	107	109	50-135	36-149	2	0-25	
Endosulfan I	5.000	85	82	50-135	36-149	3	0-25	
Endosulfan II	5.000	94	91	50-135	36-149	3	0-25	
Endosulfan Sulfate	5.000	89	88	50-135	36-149	1	0-25	
Endrin	5.000	82	81	50-135	36-149	1	0-25	
Endrin Aldehyde	5.000	76	74	50-135	36-149	2	0-25	
Endrin Ketone	5.000	108	105	50-135	36-149	2	0-25	
Heptachlor	5.000	86	85	50-135	36-149	2	0-25	
Heptachlor Epoxide	5.000	73	66	50-135	36-149	10	0-25	
Methoxychlor	5.000	90	91	50-135	36-149	1	0-25	
Alpha Chlordane	5.000	86	80	50-135	36-149	7	0-25	
Gamma Chlordane	5.000	85	83	50-135	36-149	2	0-25	

Total number of LCS compounds : 20
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1346
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-341-24	**Solid**	**GC/MS HHH**	**11/16/11**	**11/18/11**	**111116L15**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
PCB018	25.00	104	105	50-125	38-138	0	0-30	
PCB028	25.00	107	109	50-125	38-138	2	0-30	
PCB044	25.00	104	106	50-125	38-138	1	0-30	
PCB052	25.00	101	103	50-125	38-138	1	0-30	
PCB066	25.00	107	109	50-125	38-138	1	0-30	
PCB077	25.00	109	109	50-125	38-138	0	0-30	
PCB101	25.00	106	107	50-125	38-138	1	0-30	
PCB105	25.00	106	106	50-125	38-138	0	0-30	
PCB118	25.00	113	115	50-125	38-138	2	0-30	
PCB126	25.00	100	100	50-125	38-138	0	0-30	
PCB128	25.00	101	102	50-125	38-138	1	0-30	
PCB153	25.00	102	102	50-125	38-138	1	0-30	
PCB170	25.00	94	97	50-125	38-138	3	0-30	
PCB180	25.00	102	103	50-125	38-138	1	0-30	
PCB187	25.00	100	101	50-125	38-138	1	0-30	
PCB206	25.00	97	101	50-125	38-138	3	0-30	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 11-11-1346

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

Return to Contents

Calscience Environmental Laboratories, Inc.

☐ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

WO # / LAB USE ONLY
11-11-1346

CHAIN OF CUSTODY RECORD

Date 11/16/11

Page 1 of 1

LABORATORY CLIENT: URS Corporation

ADDRESS: 4225 Executive Square Suite 1600

CITY: La Jolla STATE: CA ZIP: 92037

TEL:

E-MAIL: david.schug@~~urs~~ URS.com, derek.rector@URS.com

CLIENT PROJECT NAME / NUMBER: SEL / 27661119, 10000

P.O. NO.:

PROJECT CONTACT: Derek Rector / David Schug

SAMPLER(S): (PRINT) Derek Rector

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

☐ COELT EDF GLOBAL ID LOG CODE

SPECIAL INSTRUCTIONS:
Note - Samples are composited from sample ~6 days old. ~~[illegible]~~. Please begin analysis ASAP.

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH (___)	BTEX / MTBE (8260) or (___)	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	San Elijo Lagoon Tests as	Previous two samples	call 619.888.0487 if questions
1	CB-Comp-south-upper	11/16/11	15:10	soil	5																			X		
2	CB-Comp-south-lower	11/16/11	15:20	soil	5																			X		

Vikas is the Calscience PM.

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
[signature]	[signature] CEL	11/16/11	15:45
[signature]	[signature] CEL	11/16/11	1740

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

06/01/10 Revision

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-11-1346

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: URS Corp DATE: 11/16/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 1.3 °C + 0.5 °C (CF) = 1.8 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: NB

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: NB

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: RS

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ[4] ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☑Z

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** RS

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** YL

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** YL

Return to Contents

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 11-11-1777

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: URS Corporation

Client Project Name: SEL / 27661119.10000

Attention: David Schug
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Vikas Patel

Approved for release on 12/27/2011 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: SEL / 27661119.10000
Work Order Number: 11-11-1777

1 Detections Summary 3

2 Client Sample Data 5
2.1 EPA 376.2 (M) Total Sulfide (Solid) 5
2.2 EPA 376.2 (M) Dissolved Sulfide (Solid) 6
2.3 EPA 9060A Total Organic Carbon (Solid) 7
2.4 EPA 160.4 (M) Volatile Solids (Solid) 8
2.5 SM 2540 B Total Solids (Solid) 9
2.6 EPA 413.2 (M) Oil and Grease (Solid) 10
2.7 EPA 418.1 (M) TRPH (Solid) 11
2.8 GC/MS/MS Pyrethroids (Sediment) 12
2.9 EPA 8081A Organochlorine Pesticides (Solid) 14
2.10 EPA 8082 PCB Aroclors (Solid) 17
2.11 EPA 8270C SIM (Solid) 19
2.12 EPA 8270C SIM PCB Congeners (Solid) 24
2.13 Krone et al. Organotins (Solid) 29
2.14 EPA 6020 ICP/MS Metals / EPA 7471A Mercury (Solid) 31

3 Quality Control Sample Data 33
3.1 MS/MSD and/or Duplicate 33
3.2 LCS/LCSD 49

4 Glossary of Terms and Qualifiers 60

5 Chain of Custody/Sample Receipt Form 61

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-11-1777
		Project name:	SEL / 27661119.10000
		Received:	11/22/11 19:00
Attn:	David Schug		

DETECTIONS SUMMARY

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
Client Sample ID: CB-Comp-NW-Upper						
Arsenic	**2.07**		0.140	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.178**		0.140	mg/kg	EPA 6020	EPA 3050B
Chromium	**11.8**		0.140	mg/kg	EPA 6020	EPA 3050B
Copper	**21.9**		0.140	mg/kg	EPA 6020	EPA 3050B
Lead	**6.05**		0.140	mg/kg	EPA 6020	EPA 3050B
Nickel	**4.91**		0.140	mg/kg	EPA 6020	EPA 3050B
Zinc	**41.8**		1.40	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**14**		0.70	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**6900**		700	mg/kg	EPA 9060A	N/A
Solids, Volatile	**2.2**		0.14	%	EPA 160.4M	N/A
Solids, Total	**71.5**		0.100	%	SM 2540 B	N/A
Oil and Grease	**28**		14	mg/kg	EPA 413.2M	Extraction
TRPH	**16**		14	mg/kg	EPA 418.1M	Extraction
4,4'-DDD	**2.8**		1.4	ug/kg	EPA 8081A	EPA 3545
4,4'-DDE	**3.1**		1.4	ug/kg	EPA 8081A	EPA 3545
Perylene	**0.015**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Bis(2-Ethylhexyl) Phthalate	**0.077**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.023**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Di-n-Butyl Phthalate	**0.019**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.095**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Client Sample ID: CB-Comp-NW-Lower						
Arsenic	**1.66**		0.131	mg/kg	EPA 6020	EPA 3050B
Chromium	**5.65**		0.131	mg/kg	EPA 6020	EPA 3050B
Copper	**2.26**		0.131	mg/kg	EPA 6020	EPA 3050B
Lead	**0.919**		0.131	mg/kg	EPA 6020	EPA 3050B
Nickel	**2.04**		0.131	mg/kg	EPA 6020	EPA 3050B
Zinc	**11.4**		1.31	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**3.3**		0.13	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**6200**		660	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.50**		0.13	%	EPA 160.4M	N/A
Solids, Total	**76.2**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.059**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.025**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Di-n-Butyl Phthalate	**0.020**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.11**		0.013	mg/kg	EPA 8270C SIM	EPA 3545

Return to Contents

*MDL is shown.

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-11-1777
		Project name:	SEL / 27661119.10000
		Received:	11/22/11 19:00
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
WB-Comp-S-Upper						
Arsenic	**2.41**		0.143	mg/kg	EPA 6020	EPA 3050B
Chromium	**10.7**		0.143	mg/kg	EPA 6020	EPA 3050B
Copper	**19.5**		0.143	mg/kg	EPA 6020	EPA 3050B
Lead	**12.0**		0.143	mg/kg	EPA 6020	EPA 3050B
Nickel	**4.34**		0.143	mg/kg	EPA 6020	EPA 3050B
Zinc	**40.0**		1.43	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**2.9**		0.14	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**1000**		720	mg/kg	EPA 9060A	N/A
Solids, Volatile	**3.0**		0.14	%	EPA 160.4M	N/A
Solids, Total	**69.7**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.048**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.022**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Di-n-Butyl Phthalate	**0.019**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.13**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
WB-Comp-S-Lower						
Arsenic	**1.16**		0.135	mg/kg	EPA 6020	EPA 3050B
Chromium	**5.33**		0.135	mg/kg	EPA 6020	EPA 3050B
Copper	**2.05**		0.135	mg/kg	EPA 6020	EPA 3050B
Lead	**1.26**		0.135	mg/kg	EPA 6020	EPA 3050B
Nickel	**1.70**		0.135	mg/kg	EPA 6020	EPA 3050B
Zinc	**13.7**		1.35	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**2.7**		0.13	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**6200**		670	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.39**		0.13	%	EPA 160.4M	N/A
Solids, Total	**74.2**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.077**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.031**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Di-n-Butyl Phthalate	**0.023**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.10**		0.013	mg/kg	EPA 8270C SIM	EPA 3545

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-C**	**11/22/11 13:10**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 18:40**	**B1123SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	14	0.70	5		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-C**	**11/22/11 13:20**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 18:40**	**B1123SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	3.3	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-C**	**11/22/11 13:30**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 18:40**	**B1123SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	2.9	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-C**	**11/22/11 13:40**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 18:40**	**B1123SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	2.7	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-10-035-29**	**N/A**	**Solid**	**N/A**	**11/23/11**	**11/23/11 18:40**	**B1123SB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-D**	**11/22/11 13:10**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 11:45**	**B1123DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-D**	**11/22/11 13:20**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 11:45**	**B1123DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-D**	**11/22/11 13:30**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 11:45**	**B1123DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-D**	**11/22/11 13:40**	**Sediment**	**N/A**	**11/23/11**	**11/23/11 11:45**	**B1123DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-095-22**	**N/A**	**Solid**	**N/A**	**11/23/11**	**11/23/11 11:45**	**B1123DSB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 9060A

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**TOC 5**	**N/A**	**11/29/11 17:15**	**B1129TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	6900	700	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**TOC 5**	**N/A**	**11/29/11 17:15**	**B1129TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	6200	660	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**TOC 5**	**N/A**	**11/29/11 17:15**	**B1129TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	1000	720	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**TOC 5**	**N/A**	**11/29/11 17:15**	**B1129TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	6200	670	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-652**	**N/A**	**Solid**	**TOC 5**	**N/A**	**11/29/11 17:15**	**B1129TOCL1**

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	ND	500	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 160.4M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-D**	**11/22/11 13:10**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 20:00**	**B1129VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	2.2	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-D**	**11/22/11 13:20**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 20:00**	**B1129VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.50	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-D**	**11/22/11 13:30**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 20:00**	**B1129VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	3.0	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-D**	**11/22/11 13:40**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 20:00**	**B1129VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.39	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-020-1,002**	**N/A**	**Solid**	**N/A**	**11/29/11**	**11/29/11 20:00**	**B1129VSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	ND	0.10	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: SM 2540 B

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-D**	**11/22/11 13:10**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 16:00**	**B1129TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	71.5	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-D**	**11/22/11 13:20**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 16:00**	**B1129TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	76.2	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-D**	**11/22/11 13:30**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 16:00**	**B1129TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	69.7	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-D**	**11/22/11 13:40**	**Sediment**	**N/A**	**11/29/11**	**11/29/11 16:00**	**B1129TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	74.2	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-1,773**	**N/A**	**Solid**	**N/A**	**11/29/11**	**11/29/11 16:00**	**B1129TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	ND	0.100	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: Extraction
Method: EPA 413.2M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	28	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-019-108**	**N/A**	**Solid**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L01**

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: Extraction
Method: EPA 418.1M

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	16	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1,813**	**N/A**	**Solid**	**IR 2**	**11/29/11**	**11/29/11 13:00**	**111129L03**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3540C
Method: Pyrethroids by GC/MS/MS
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**GCTQ 2**	**11/28/11**	**11/29/11 20:31**	**111128L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.70	0.995		Fluvalinate	ND	0.70	0.995	
Bifenthrin	ND	0.70	0.995		Permethrin (cis/trans)	ND	1.4	0.995	
Cyfluthrin	ND	0.70	0.995		Phenothrin	ND	0.70	0.995	
Cypermethrin	ND	0.70	0.995		Resmethrin/Bioresmethrin	ND	0.70	0.995	
Deltamethrin/Tralomethrin	ND	0.70	0.995		Tetramethrin	ND	0.70	0.995	
Fenpropathrin	ND	0.70	0.995		lambda-Cyhalothrin	ND	0.70	0.995	
Fenvalerate/Esfenvalerate	ND	0.70	0.995						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	114	25-200	

CB-Comp-NW-Lower	11-11-1777-2-A	11/22/11 13:20	Sediment	GCTQ 2	11/28/11	11/29/11 21:08	111128L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.66	1		Fluvalinate	ND	0.66	1	
Bifenthrin	ND	0.66	1		Permethrin (cis/trans)	ND	1.3	1	
Cyfluthrin	ND	0.66	1		Phenothrin	ND	0.66	1	
Cypermethrin	ND	0.66	1		Resmethrin/Bioresmethrin	ND	0.66	1	
Deltamethrin/Tralomethrin	ND	0.66	1		Tetramethrin	ND	0.66	1	
Fenpropathrin	ND	0.66	1		lambda-Cyhalothrin	ND	0.66	1	
Fenvalerate/Esfenvalerate	ND	0.66	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	106	25-200	

WB-Comp-S-Upper	11-11-1777-3-A	11/22/11 13:30	Sediment	GCTQ 2	11/28/11	11/29/11 21:44	111128L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.71	0.99		Fluvalinate	ND	0.71	0.99	
Bifenthrin	ND	0.71	0.99		Permethrin (cis/trans)	ND	1.4	0.99	
Cyfluthrin	ND	0.71	0.99		Phenothrin	ND	0.71	0.99	
Cypermethrin	ND	0.71	0.99		Resmethrin/Bioresmethrin	ND	0.71	0.99	
Deltamethrin/Tralomethrin	ND	0.71	0.99		Tetramethrin	ND	0.71	0.99	
Fenpropathrin	ND	0.71	0.99		lambda-Cyhalothrin	ND	0.71	0.99	
Fenvalerate/Esfenvalerate	ND	0.71	0.99						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	90	25-200	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3540C
Method: Pyrethroids by GC/MS/MS
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**GCTQ 2**	**11/28/11**	**11/29/11 22:21**	**111128L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.67	0.995		Fluvalinate	ND	0.67	0.995	
Bifenthrin	ND	0.67	0.995		Permethrin (cis/trans)	ND	1.3	0.995	
Cyfluthrin	ND	0.67	0.995		Phenothrin	ND	0.67	0.995	
Cypermethrin	ND	0.67	0.995		Resmethrin/Bioresmethrin	ND	0.67	0.995	
Deltamethrin/Tralomethrin	ND	0.67	0.995		Tetramethrin	ND	0.67	0.995	
Fenpropathrin	ND	0.67	0.995		lambda-Cyhalothrin	ND	0.67	0.995	
Fenvalerate/Esfenvalerate	ND	0.67	0.995						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	96	25-200	

Method Blank	099-14-403-9	N/A	Sediment	GCTQ 2	11/28/11	11/29/11 19:54	111128L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.50	1		Fluvalinate	ND	0.50	1	
Bifenthrin	ND	0.50	1		Permethrin (cis/trans)	ND	1.0	1	
Cyfluthrin	ND	0.50	1		Phenothrin	ND	0.50	1	
Cypermethrin	ND	0.50	1		Resmethrin/Bioresmethrin	ND	0.50	1	
Deltamethrin/Tralomethrin	ND	0.50	1		Tetramethrin	ND	0.50	1	
Fenpropathrin	ND	0.50	1		lambda-Cyhalothrin	ND	0.50	1	
Fenvalerate/Esfenvalerate	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	82	25-200	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**GC 51**	**11/29/11**	**12/02/11 14:17**	**111129L06**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	35	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	28	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	2.8	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	3.1	1.4	1		Mirex	ND	7.0	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	119	50-130			Decachlorobiphenyl	86	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**GC 51**	**11/29/11**	**12/02/11 14:31**	**111129L06**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	33	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	26	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.6	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	112	50-130			Decachlorobiphenyl	76	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**GC 51**	**11/29/11**	**12/02/11 14:45**	**111129L06**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	36	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	29	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	ND	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	ND	1.4	1		Mirex	ND	7.2	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	114	50-130			Decachlorobiphenyl	75	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**GC 51**	**11/29/11**	**12/02/11 15:00**	**111129L06**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	34	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	27	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.7	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	130	50-130			Decachlorobiphenyl	84	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-119**	**N/A**	**Solid**	**GC 51**	**11/29/11**	**12/02/11 11:09**	**111129L06**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	25	1		Endosulfan I	ND	1.0	1	
Aldrin	ND	1.0	1		Endosulfan II	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endosulfan Sulfate	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin	ND	1.0	1	
Delta-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Chlordane	ND	10	1		Heptachlor	ND	1.0	1	
Dieldrin	ND	1.0	1		Heptachlor Epoxide	ND	1.0	1	
Trans-nonachlor	ND	1.0	1		Methoxychlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDE	ND	1.0	1		Alpha Chlordane	ND	1.0	1	
2,4'-DDT	ND	1.0	1		Gamma Chlordane	ND	1.0	1	
4,4'-DDD	ND	1.0	1		Cis-nonachlor	ND	1.0	1	
4,4'-DDE	ND	1.0	1		Mirex	ND	5.0	1	
4,4'-DDT	ND	1.0	1		Oxychlordane	ND	1.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	116	50-130			Decachlorobiphenyl	74	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**GC 58**	**11/29/11**	**12/02/11 17:31**	**111129L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	ND	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	122	50-130			Decachlorobiphenyl	113	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**GC 58**	**11/29/11**	**12/02/11 17:49**	**111129L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	ND	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	120	50-130			Decachlorobiphenyl	107	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**GC 58**	**11/29/11**	**12/02/11 18:07**	**111129L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	ND	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	98	50-130			Decachlorobiphenyl	92	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**GC 58**	**11/29/11**	**12/02/11 18:25**	**111129L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	ND	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	122	50-130			Decachlorobiphenyl	117	50-130		

Method Blank	099-12-565-208	N/A	Solid	GC 58	11/29/11	12/02/11 13:19	111129L07

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	10	1		Aroclor-1248	ND	10	1	
Aroclor-1221	ND	10	1		Aroclor-1254	ND	10	1	
Aroclor-1232	ND	10	1		Aroclor-1260	ND	10	1	
Aroclor-1242	ND	10	1		Aroclor-1262	ND	10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	122	50-130			Decachlorobiphenyl	112	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**GC/MS MM**	**11/29/11**	**12/01/11 19:36**	**111129L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Perylene	0.015	0.014	1		Bis(2-Ethylhexyl) Phthalate	0.077	0.014	1	
Biphenyl	ND	0.014	1		Butyl Benzyl Phthalate	0.023	0.014	1	
Benzo (e) Pyrene	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	0.019	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	ND	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	0.095	0.014	1	
2,4-Dinitrophenol	ND	0.70	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.70	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.70	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.70	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	93	32-143			2-Fluorobiphenyl	85	14-146		
2-Fluorophenol	90	15-138			Nitrobenzene-d5	89	18-162		
p-Terphenyl-d14	90	34-148			Phenol-d6	96	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**GC/MS MM**	**11/29/11**	**12/01/11 17:28**	**111129L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Biphenyl	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.059	0.013	1	
Perylene	ND	0.013	1		Butyl Benzyl Phthalate	0.025	0.013	1	
Benzo (e) Pyrene	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	0.020	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	0.11	0.013	1	
2,4-Dinitrophenol	ND	0.66	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.66	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.66	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.66	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	83	32-143		2-Fluorobiphenyl	78	14-146	
2-Fluorophenol	79	15-138		Nitrobenzene-d5	79	18-162	
p-Terphenyl-d14	86	34-148		Phenol-d6	84	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**GC/MS MM**	**11/29/11**	**12/01/11 17:54**	**111129L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Benzo (e) Pyrene	ND	0.014	1		Bis(2-Ethylhexyl) Phthalate	0.048	0.014	1	
Perylene	ND	0.014	1		Butyl Benzyl Phthalate	0.022	0.014	1	
Biphenyl	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	0.019	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	ND	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	0.13	0.014	1	
2,4-Dinitrophenol	ND	0.72	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.72	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.72	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.72	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	79	32-143			2-Fluorobiphenyl	76	14-146		
2-Fluorophenol	84	15-138			Nitrobenzene-d5	82	18-162		
p-Terphenyl-d14	84	34-148			Phenol-d6	88	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**GC/MS MM**	**11/29/11**	**12/01/11 18:20**	**111129L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Benzo (e) Pyrene	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.077	0.013	1	
Perylene	ND	0.013	1		Butyl Benzyl Phthalate	0.031	0.013	1	
Biphenyl	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	0.023	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	0.10	0.013	1	
2,4-Dinitrophenol	ND	0.67	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.67	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.67	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.67	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	75	32-143			2-Fluorobiphenyl	69	14-146		
2-Fluorophenol	73	15-138			Nitrobenzene-d5	70	18-162		
p-Terphenyl-d14	76	34-148			Phenol-d6	78	17-141		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-413-347**	**N/A**	**Solid**	**GC/MS MM**	**12/01/11**	**12/01/11 14:27**	**111129L08**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzo (e) Pyrene	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.010	1	
Perylene	ND	0.010	1		Bis(2-Ethylhexyl) Phthalate	ND	0.010	1	
Biphenyl	ND	0.010	1		Butyl Benzyl Phthalate	ND	0.010	1	
2,6-Dimethylnaphthalene	ND	0.010	1		Chrysene	ND	0.010	1	
1-Methylnaphthalene	ND	0.010	1		Di-n-Butyl Phthalate	ND	0.010	1	
2,4,5-Trichlorophenol	ND	0.010	1		Di-n-Octyl Phthalate	ND	0.010	1	
2,4,6-Trichlorophenol	ND	0.010	1		Dibenz (a,h) Anthracene	ND	0.010	1	
2,4-Dichlorophenol	ND	0.010	1		Diethyl Phthalate	ND	0.010	1	
2,4-Dimethylphenol	ND	0.010	1		Dimethyl Phthalate	ND	0.010	1	
2,4-Dinitrophenol	ND	0.50	1		Fluoranthene	ND	0.010	1	
2-Chlorophenol	ND	0.010	1		Fluorene	ND	0.010	1	
2-Methylnaphthalene	ND	0.010	1		Indeno (1,2,3-c,d) Pyrene	ND	0.010	1	
2-Methylphenol	ND	0.010	1		Naphthalene	ND	0.010	1	
2-Nitrophenol	ND	0.010	1		Pentachlorophenol	ND	0.50	1	
3/4-Methylphenol	ND	0.010	1		Phenanthrene	ND	0.010	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Phenol	ND	0.010	1	
4-Chloro-3-Methylphenol	ND	0.010	1		Pyrene	ND	0.010	1	
4-Nitrophenol	ND	0.50	1		1,6,7-Trimethylnaphthalene	ND	0.010	1	
Acenaphthene	ND	0.010	1		2,3,4,6-Tetrachlorophenol	ND	0.010	1	
Acenaphthylene	ND	0.010	1		2,6-Dichlorophenol	ND	0.010	1	
Anthracene	ND	0.010	1		1-Methylphenanthrene	ND	0.010	1	
Benzo (a) Anthracene	ND	0.010	1		Benzoic Acid	ND	0.10	1	
Benzo (a) Pyrene	ND	0.010	1		DCPA	ND	0.010	1	
Benzo (b) Fluoranthene	ND	0.010	1		Dibenzothiophene	ND	0.010	1	
Benzo (g,h,i) Perylene	ND	0.010	1		Perthane	ND	0.010	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	112	32-143			2-Fluorobiphenyl	101	14-146		
2-Fluorophenol	114	15-138			Nitrobenzene-d5	114	18-162		
p-Terphenyl-d14	103	34-148			Phenol-d6	117	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**GC/MS HHH**	**11/29/11**	**11/30/11 20:03**	**111129L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.70	1		PCB126	ND	0.70	1	
PCB008	ND	0.70	1		PCB128	ND	0.70	1	
PCB018	ND	0.70	1		PCB132	ND	0.70	1	
PCB028	ND	0.70	1		PCB138/158	ND	1.4	1	
PCB031	ND	0.70	1		PCB141	ND	0.70	1	
PCB033	ND	0.70	1		PCB149	ND	0.70	1	
PCB037	ND	0.70	1		PCB151	ND	0.70	1	
PCB044	ND	0.70	1		PCB153	ND	0.70	1	
PCB049	ND	0.70	1		PCB156	ND	0.70	1	
PCB052	ND	0.70	1		PCB157	ND	0.70	1	
PCB056	ND	0.70	1		PCB167	ND	0.70	1	
PCB060	ND	0.70	1		PCB168	ND	0.70	1	
PCB066	ND	0.70	1		PCB169	ND	0.70	1	
PCB070	ND	0.70	1		PCB170	ND	0.70	1	
PCB074	ND	0.70	1		PCB174	ND	0.70	1	
PCB077	ND	0.70	1		PCB177	ND	0.70	1	
PCB081	ND	0.70	1		PCB180	ND	0.70	1	
PCB087	ND	0.70	1		PCB183	ND	0.70	1	
PCB095	ND	0.70	1		PCB184	ND	0.70	1	
PCB097	ND	0.70	1		PCB187	ND	0.70	1	
PCB099	ND	0.70	1		PCB189	ND	0.70	1	
PCB101	ND	0.70	1		PCB194	ND	0.70	1	
PCB105	ND	0.70	1		PCB195	ND	0.70	1	
PCB110	ND	0.70	1		PCB200	ND	0.70	1	
PCB114	ND	0.70	1		PCB201	ND	0.70	1	
PCB118	ND	0.70	1		PCB203	ND	0.70	1	
PCB119	ND	0.70	1		PCB206	ND	0.70	1	
PCB123	ND	0.70	1		PCB209	ND	0.70	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	102	50-125		p-Terphenyl-d14	102	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**GC/MS HHH**	**11/29/11**	**11/30/11 20:30**	**111129L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.66	1		PCB126	ND	0.66	1	
PCB008	ND	0.66	1		PCB128	ND	0.66	1	
PCB018	ND	0.66	1		PCB132	ND	0.66	1	
PCB028	ND	0.66	1		PCB138/158	ND	1.3	1	
PCB031	ND	0.66	1		PCB141	ND	0.66	1	
PCB033	ND	0.66	1		PCB149	ND	0.66	1	
PCB037	ND	0.66	1		PCB151	ND	0.66	1	
PCB044	ND	0.66	1		PCB153	ND	0.66	1	
PCB049	ND	0.66	1		PCB156	ND	0.66	1	
PCB052	ND	0.66	1		PCB157	ND	0.66	1	
PCB056	ND	0.66	1		PCB167	ND	0.66	1	
PCB060	ND	0.66	1		PCB168	ND	0.66	1	
PCB066	ND	0.66	1		PCB169	ND	0.66	1	
PCB070	ND	0.66	1		PCB170	ND	0.66	1	
PCB074	ND	0.66	1		PCB174	ND	0.66	1	
PCB077	ND	0.66	1		PCB177	ND	0.66	1	
PCB081	ND	0.66	1		PCB180	ND	0.66	1	
PCB087	ND	0.66	1		PCB183	ND	0.66	1	
PCB095	ND	0.66	1		PCB184	ND	0.66	1	
PCB097	ND	0.66	1		PCB187	ND	0.66	1	
PCB099	ND	0.66	1		PCB189	ND	0.66	1	
PCB101	ND	0.66	1		PCB194	ND	0.66	1	
PCB105	ND	0.66	1		PCB195	ND	0.66	1	
PCB110	ND	0.66	1		PCB200	ND	0.66	1	
PCB114	ND	0.66	1		PCB201	ND	0.66	1	
PCB118	ND	0.66	1		PCB203	ND	0.66	1	
PCB119	ND	0.66	1		PCB206	ND	0.66	1	
PCB123	ND	0.66	1		PCB209	ND	0.66	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	224	50-125	1,2,7	p-Terphenyl-d14	115	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**GC/MS HHH**	**11/29/11**	**11/30/11 20:57**	**111129L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.72	1		PCB126	ND	0.72	1	
PCB008	ND	0.72	1		PCB128	ND	0.72	1	
PCB018	ND	0.72	1		PCB132	ND	0.72	1	
PCB028	ND	0.72	1		PCB138/158	ND	1.4	1	
PCB031	ND	0.72	1		PCB141	ND	0.72	1	
PCB033	ND	0.72	1		PCB149	ND	0.72	1	
PCB037	ND	0.72	1		PCB151	ND	0.72	1	
PCB044	ND	0.72	1		PCB153	ND	0.72	1	
PCB049	ND	0.72	1		PCB156	ND	0.72	1	
PCB052	ND	0.72	1		PCB157	ND	0.72	1	
PCB056	ND	0.72	1		PCB167	ND	0.72	1	
PCB060	ND	0.72	1		PCB168	ND	0.72	1	
PCB066	ND	0.72	1		PCB169	ND	0.72	1	
PCB070	ND	0.72	1		PCB170	ND	0.72	1	
PCB074	ND	0.72	1		PCB174	ND	0.72	1	
PCB077	ND	0.72	1		PCB177	ND	0.72	1	
PCB081	ND	0.72	1		PCB180	ND	0.72	1	
PCB087	ND	0.72	1		PCB183	ND	0.72	1	
PCB095	ND	0.72	1		PCB184	ND	0.72	1	
PCB097	ND	0.72	1		PCB187	ND	0.72	1	
PCB099	ND	0.72	1		PCB189	ND	0.72	1	
PCB101	ND	0.72	1		PCB194	ND	0.72	1	
PCB105	ND	0.72	1		PCB195	ND	0.72	1	
PCB110	ND	0.72	1		PCB200	ND	0.72	1	
PCB114	ND	0.72	1		PCB201	ND	0.72	1	
PCB118	ND	0.72	1		PCB203	ND	0.72	1	
PCB119	ND	0.72	1		PCB206	ND	0.72	1	
PCB123	ND	0.72	1		PCB209	ND	0.72	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	106	50-125		p-Terphenyl-d14	92	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**GC/MS HHH**	**11/29/11**	**11/30/11 21:24**	**111129L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.67	1		PCB126	ND	0.67	1	
PCB008	ND	0.67	1		PCB128	ND	0.67	1	
PCB018	ND	0.67	1		PCB132	ND	0.67	1	
PCB028	ND	0.67	1		PCB138/158	ND	1.3	1	
PCB031	ND	0.67	1		PCB141	ND	0.67	1	
PCB033	ND	0.67	1		PCB149	ND	0.67	1	
PCB037	ND	0.67	1		PCB151	ND	0.67	1	
PCB044	ND	0.67	1		PCB153	ND	0.67	1	
PCB049	ND	0.67	1		PCB156	ND	0.67	1	
PCB052	ND	0.67	1		PCB157	ND	0.67	1	
PCB056	ND	0.67	1		PCB167	ND	0.67	1	
PCB060	ND	0.67	1		PCB168	ND	0.67	1	
PCB066	ND	0.67	1		PCB169	ND	0.67	1	
PCB070	ND	0.67	1		PCB170	ND	0.67	1	
PCB074	ND	0.67	1		PCB174	ND	0.67	1	
PCB077	ND	0.67	1		PCB177	ND	0.67	1	
PCB081	ND	0.67	1		PCB180	ND	0.67	1	
PCB087	ND	0.67	1		PCB183	ND	0.67	1	
PCB095	ND	0.67	1		PCB184	ND	0.67	1	
PCB097	ND	0.67	1		PCB187	ND	0.67	1	
PCB099	ND	0.67	1		PCB189	ND	0.67	1	
PCB101	ND	0.67	1		PCB194	ND	0.67	1	
PCB105	ND	0.67	1		PCB195	ND	0.67	1	
PCB110	ND	0.67	1		PCB200	ND	0.67	1	
PCB114	ND	0.67	1		PCB201	ND	0.67	1	
PCB118	ND	0.67	1		PCB203	ND	0.67	1	
PCB119	ND	0.67	1		PCB206	ND	0.67	1	
PCB123	ND	0.67	1		PCB209	ND	0.67	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	103	50-125		p-Terphenyl-d14	103	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-26**	**N/A**	**Solid**	**GC/MS HHH**	**11/29/11**	**12/01/11 12:50**	**111129L09**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.50	1		PCB126	ND	0.50	1	
PCB008	ND	0.50	1		PCB128	ND	0.50	1	
PCB018	ND	0.50	1		PCB132	ND	0.50	1	
PCB028	ND	0.50	1		PCB138/158	ND	1.0	1	
PCB031	ND	0.50	1		PCB141	ND	0.50	1	
PCB033	ND	0.50	1		PCB149	ND	0.50	1	
PCB037	ND	0.50	1		PCB151	ND	0.50	1	
PCB044	ND	0.50	1		PCB153	ND	0.50	1	
PCB049	ND	0.50	1		PCB156	ND	0.50	1	
PCB052	ND	0.50	1		PCB157	ND	0.50	1	
PCB056	ND	0.50	1		PCB167	ND	0.50	1	
PCB060	ND	0.50	1		PCB168	ND	0.50	1	
PCB066	ND	0.50	1		PCB169	ND	0.50	1	
PCB070	ND	0.50	1		PCB170	ND	0.50	1	
PCB074	ND	0.50	1		PCB174	ND	0.50	1	
PCB077	ND	0.50	1		PCB177	ND	0.50	1	
PCB081	ND	0.50	1		PCB180	ND	0.50	1	
PCB087	ND	0.50	1		PCB183	ND	0.50	1	
PCB095	ND	0.50	1		PCB184	ND	0.50	1	
PCB097	ND	0.50	1		PCB187	ND	0.50	1	
PCB099	ND	0.50	1		PCB189	ND	0.50	1	
PCB101	ND	0.50	1		PCB194	ND	0.50	1	
PCB105	ND	0.50	1		PCB195	ND	0.50	1	
PCB110	ND	0.50	1		PCB200	ND	0.50	1	
PCB114	ND	0.50	1		PCB201	ND	0.50	1	
PCB118	ND	0.50	1		PCB203	ND	0.50	1	
PCB119	ND	0.50	1		PCB206	ND	0.50	1	
PCB123	ND	0.50	1		PCB209	ND	0.50	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	98	50-125		p-Terphenyl-d14	94	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-A**	**11/22/11 13:10**	**Sediment**	**GC/MS Y**	**11/29/11**	**12/01/11 14:13**	**111129L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.2	1		Tetrabutyltin	ND	4.2	1	
Monobutyltin	ND	4.2	1		Tributyltin	ND	4.2	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	121	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-A**	**11/22/11 13:20**	**Sediment**	**GC/MS Y**	**11/29/11**	**12/01/11 18:37**	**111129L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.9	1		Tetrabutyltin	ND	3.9	1	
Monobutyltin	ND	3.9	1		Tributyltin	ND	3.9	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	96	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-A**	**11/22/11 13:30**	**Sediment**	**GC/MS Y**	**11/29/11**	**12/01/11 19:11**	**111129L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.3	1		Tetrabutyltin	ND	4.3	1	
Monobutyltin	ND	4.3	1		Tributyltin	ND	4.3	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	118	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-A**	**11/22/11 13:40**	**Sediment**	**GC/MS Y**	**11/29/11**	**12/01/11 19:45**	**111129L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.0	1		Tetrabutyltin	ND	4.0	1	
Monobutyltin	ND	4.0	1		Tributyltin	ND	4.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	91	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-895**	**N/A**	**Solid**	**GC/MS Y**	**11/29/11**	**12/01/11 11:19**	**111129L13**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.0	1		Tetrabutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1		Tributyltin	ND	3.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	118	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3050B / EPA 7471A Total
Method: EPA 6020 / EPA 7471A
Units: mg/kg

Project: SEL / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Upper	**11-11-1777-1-C**	**11/22/11 13:10**	**Sediment**	**ICP/MS 04**	**11/29/11**	**11/30/11 17:24**	**111129L01**

Comment(s): -Mercury analysis was performed on 11/28/11 13:20 with batch 111128L02.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.07	0.140	1		Mercury	ND	0.0280	1	
Cadmium	0.178	0.140	1		Nickel	4.91	0.140	1	
Chromium	11.8	0.140	1		Selenium	ND	0.140	1	
Copper	21.9	0.140	1		Silver	ND	0.140	1	
Lead	6.05	0.140	1		Zinc	41.8	1.40	1	

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-NW-Lower	**11-11-1777-2-C**	**11/22/11 13:20**	**Sediment**	**ICP/MS 04**	**11/29/11**	**11/30/11 17:34**	**111129L01**

Comment(s): -Mercury analysis was performed on 11/28/11 13:22 with batch 111128L02.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	1.66	0.131	1		Mercury	ND	0.0263	1	
Cadmium	ND	0.131	1		Nickel	2.04	0.131	1	
Chromium	5.65	0.131	1		Selenium	ND	0.131	1	
Copper	2.26	0.131	1		Silver	ND	0.131	1	
Lead	0.919	0.131	1		Zinc	11.4	1.31	1	

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Upper	**11-11-1777-3-C**	**11/22/11 13:30**	**Sediment**	**ICP/MS 04**	**11/29/11**	**11/30/11 17:38**	**111129L01**

Comment(s): -Mercury analysis was performed on 11/28/11 13:25 with batch 111128L02.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.41	0.143	1		Mercury	ND	0.0288	1	
Cadmium	ND	0.143	1		Nickel	4.34	0.143	1	
Chromium	10.7	0.143	1		Selenium	ND	0.143	1	
Copper	19.5	0.143	1		Silver	ND	0.143	1	
Lead	12.0	0.143	1		Zinc	40.0	1.43	1	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Project: SEL / 27661119.10000

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3050B / EPA 7471A Total
Method: EPA 6020 / EPA 7471A
Units: mg/kg
Page 2 of 2

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-S-Lower	**11-11-1777-4-C**	**11/22/11 13:40**	**Sediment**	**ICP/MS 04**	**11/29/11**	**11/30/11 17:41**	**111129L01**

Comment(s): -Mercury analysis was performed on 11/28/11 13:27 with batch 111128L02.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	1.16	0.135	1		Mercury	ND	0.0270	1	
Cadmium	ND	0.135	1		Nickel	1.70	0.135	1	
Chromium	5.33	0.135	1		Selenium	ND	0.135	1	
Copper	2.05	0.135	1		Silver	ND	0.135	1	
Lead	1.26	0.135	1		Zinc	13.7	1.35	1	

Method Blank	**099-12-452-252**	**N/A**	**Solid**	**Mercury**	**11/28/11**	**11/28/11 11:26**	**111128L02**

Comment(s): -Preparation/analysis for Mercury was performed by EPA 7471A.

Parameter	Result	RL	DF	Qual
Mercury	ND	0.0200	1	

Method Blank	**096-10-002-2,141**	**N/A**	**Solid**	**ICP/MS 04**	**11/29/11**	**11/30/11 16:54**	**111129L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.100	1	
Chromium	ND	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	
Lead	ND	0.100	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3050B
Method: EPA 6020

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-NW-Upper	**Sediment**	**ICP/MS 04**	**11/29/11**	**11/30/11**	**111129S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	106	106	80-120	0	0-20	
Cadmium	25.00	106	107	80-120	1	0-20	
Chromium	25.00	98	97	80-120	1	0-20	
Copper	25.00	83	187	80-120	53	0-20	4,3
Lead	25.00	107	106	80-120	1	0-20	
Nickel	25.00	101	103	80-120	2	0-20	
Selenium	25.00	93	97	80-120	4	0-20	
Silver	12.50	106	106	80-120	0	0-20	
Zinc	25.00	86	127	80-120	18	0-20	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - PDS / PDSD

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3050B
Method: EPA 6020

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS / PDSD Batch Number
CB-Comp-NW-Upper	**Sediment**	**ICP/MS 04**	**11/29/11**	**11/30/11**	**111129S01**

Parameter	SPIKE ADDED	PDS %REC	PDSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	108	106	75-125	2	0-20	
Cadmium	25.00	111	104	75-125	7	0-20	
Chromium	25.00	104	95	75-125	7	0-20	
Copper	25.00	110	98	75-125	7	0-20	
Lead	25.00	110	103	75-125	5	0-20	
Nickel	25.00	108	100	75-125	7	0-20	
Selenium	25.00	98	96	75-125	2	0-20	
Silver	12.50	101	95	75-125	6	0-20	
Zinc	25.00	103	90	75-125	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 9060A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1596-1	**Sediment**	**TOC 5**	**N/A**	**11/29/11**	**B1129TOCS1**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	30000	88	86	75-125	2	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-S-Lower	**Sediment**	**N/A**	**11/23/11**	**11/23/11**	**B1123SD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	2.0	2.0	2	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 376.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-S-Lower	**Sediment**	**N/A**	**11/23/11**	**11/23/11**	**B1123DSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	NA	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: SM 2540 B

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-S-Lower	**Sediment**	**N/A**	**11/29/11**	**11/29/11**	**B1129TSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	74.2	74.6	1	0-10	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 160.4M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-S-Lower	**Sediment**	**N/A**	**11/29/11**	**11/29/11**	**B1129VSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Volatile	0.29	0.27	7	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: Extraction
Method: EPA 413.2M

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**IR 2**	**11/29/11**	**11/29/11**	**111129S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Oil and Grease	100.0	97	97	55-135	1	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: Extraction
Method: EPA 418.1M

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**IR 2**	**11/29/11**	**11/29/11**	**111129S03**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	92	105	55-135	13	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3540C
Method: Pyrethroids by GC/MS/MS

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**GCTQ 2**	**11/28/11**	**11/29/11**	**111128S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	5.000	86	96	25-200	11	0-25	
Cyfluthrin	5.000	134	142	25-200	6	0-25	
Cypermethrin	5.000	135	143	25-200	6	0-25	
Deltamethrin/Tralomethrin	5.000	108	114	25-200	5	0-25	
Fenvalerate/Esfenvalerate	5.000	119	122	25-200	2	0-25	
Fluvalinate	5.000	104	108	25-200	4	0-25	
Permethrin (cis/trans)	10.00	80	88	25-200	9	0-25	
Phenothrin	5.000	95	105	25-200	10	0-25	
Resmethrin/Bioresmethrin	5.000	83	92	25-200	9	0-25	
lambda-Cyhalothrin	5.000	124	134	25-200	8	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 7471A Total
Method: EPA 7471A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1597-1	**Sediment**	**Mercury**	**11/28/11**	**11/28/11**	**111128S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	108	107	76-136	1	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**GC/MS Y**	**11/29/11**	**12/01/11**	**111129S13**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	89	90	50-130	1	0-20	
Tributyltin	100.0	96	97	50-130	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8082

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**GC 58**	**11/29/11**	**12/02/11**	**111129S07**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	112	114	50-135	2	0-25	
Aroclor-1260	20.00	134	132	50-135	2	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**GC/MS MM**	**11/29/11**	**12/01/11**	**111129S08**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	79	76	40-160	4	0-20	
2,4-Dichlorophenol	1.000	66	65	40-160	1	0-20	
2-Methylphenol	1.000	81	77	40-160	5	0-20	
2-Nitrophenol	1.000	70	69	40-160	2	0-20	
4-Chloro-3-Methylphenol	1.000	76	78	40-160	2	0-20	
Acenaphthene	1.000	74	71	40-106	5	0-20	
Benzo (a) Pyrene	1.000	94	89	17-163	5	0-20	
Chrysene	1.000	81	77	17-168	5	0-20	
Di-n-Butyl Phthalate	1.000	76	72	40-160	5	0-20	
Dimethyl Phthalate	1.000	71	68	40-160	4	0-20	
Fluoranthene	1.000	79	75	26-137	4	0-20	
Fluorene	1.000	77	74	59-121	4	0-20	
Naphthalene	1.000	70	69	21-133	2	0-20	
Phenanthrene	1.000	78	74	54-120	4	0-20	
Phenol	1.000	74	71	40-160	4	0-20	
Pyrene	1.000	77	73	6-156	5	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8081A

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**GC 51**	**11/29/11**	**12/02/11**	**111129S06**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	82	78	50-135	5	0-25	
Alpha-BHC	5.000	78	73	50-135	7	0-25	
Beta-BHC	5.000	79	82	50-135	4	0-25	
Delta-BHC	5.000	78	75	50-135	4	0-25	
Gamma-BHC	5.000	79	78	50-135	2	0-25	
Dieldrin	5.000	79	78	50-135	1	0-25	
4,4'-DDD	5.000	85	81	50-135	5	0-25	
4,4'-DDE	5.000	83	83	50-135	0	0-25	
4,4'-DDT	5.000	100	100	50-135	0	0-25	
Endosulfan I	5.000	80	81	50-135	2	0-25	
Endosulfan II	5.000	82	80	50-135	3	0-25	
Endosulfan Sulfate	5.000	85	88	50-135	4	0-25	
Endrin	5.000	86	84	50-135	1	0-25	
Endrin Aldehyde	5.000	80	76	50-135	4	0-25	
Endrin Ketone	5.000	100	98	50-135	2	0-25	
Heptachlor	5.000	83	80	50-135	3	0-25	
Heptachlor Epoxide	5.000	72	69	50-135	4	0-25	
Methoxychlor	5.000	84	80	50-135	5	0-25	
Alpha Chlordane	5.000	78	77	50-135	2	0-25	
Gamma Chlordane	5.000	78	77	50-135	1	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 11/22/11
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WB-Comp-S-Lower	**Sediment**	**GC/MS HHH**	**11/29/11**	**11/30/11**	**111129S09**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB018	25.00	108	120	50-125	11	0-30	
PCB028	25.00	112	124	50-125	10	0-30	
PCB044	25.00	108	120	50-125	11	0-30	
PCB052	25.00	104	116	50-125	11	0-30	
PCB066	25.00	111	123	50-125	10	0-30	
PCB077	25.00	111	124	50-125	11	0-30	
PCB101	25.00	108	120	50-125	10	0-30	
PCB105	25.00	108	119	50-125	9	0-30	
PCB118	25.00	116	128	50-125	10	0-30	3
PCB126	25.00	101	111	50-125	10	0-30	
PCB128	25.00	102	113	50-125	10	0-30	
PCB153	25.00	103	115	50-125	11	0-30	
PCB170	25.00	101	120	50-125	17	0-30	
PCB180	25.00	105	115	50-125	9	0-30	
PCB187	25.00	102	113	50-125	11	0-30	
PCB206	25.00	106	124	50-125	15	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: EPA 3050B
Method: EPA 6020

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-2,141	**Solid**	**ICP/MS 04**	**11/29/11**	**11/30/11**	**111129L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	104	102	80-120	2	0-20	
Cadmium	25.00	107	108	80-120	1	0-20	
Chromium	25.00	95	95	80-120	1	0-20	
Copper	25.00	100	100	80-120	0	0-20	
Lead	25.00	99	102	80-120	3	0-20	
Nickel	25.00	101	102	80-120	1	0-20	
Selenium	25.00	101	98	80-120	3	0-20	
Silver	12.50	97	97	80-120	1	0-20	
Zinc	25.00	101	101	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: N/A
Method: EPA 9060A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-652	**Solid**	**TOC 5**	**N/A**	**11/29/11**	**B1129TOCL1**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	6000	98	96	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-11-1777
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 413.2M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-019-108	**Solid**	**IR 2**	**11/29/11**	**NONE**	**111129L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Oil and Grease	100.0	97.84	98	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-11-1777
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 418.1M

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,813	**Solid**	**IR 2**	**11/29/11**	**NONE**	**111129L03**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100.0	93.18	93	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: EPA 3540C
Method: Pyrethroids by GC/MS/MS

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-403-9	**Sediment**	**GCTQ 2**	**11/28/11**	**11/29/11**	**111128L02**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	5.000	89	84	25-200	6	0-25	
Cyfluthrin	5.000	90	87	25-200	4	0-25	
Cypermethrin	5.000	88	87	25-200	1	0-25	
Deltamethrin/Tralomethrin	5.000	77	77	25-200	0	0-25	
Fenvalerate/Esfenvalerate	5.000	79	81	25-200	2	0-25	
Fluvalinate	5.000	79	78	25-200	1	0-25	
Permethrin (cis/trans)	10.00	73	68	25-200	6	0-25	
Phenothrin	5.000	95	87	25-200	9	0-25	
Resmethrin/Bioresmethrin	5.000	94	87	25-200	8	0-25	
lambda-Cyhalothrin	5.000	97	100	25-200	3	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-252	**Solid**	**Mercury**	**11/28/11**	**11/28/11**	**111128L02**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	96	96	82-124	1	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-895	**Solid**	**GC/MS Y**	**11/29/11**	**12/01/11**	**111129L13**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	89	91	50-130	2	0-20	
Tributyltin	100.0	88	94	50-130	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-11-1777
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-208	**Solid**	**GC 58**	**11/29/11**	**12/02/11**	**111129L07**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	110	116	50-135	5	0-25	
Aroclor-1260	20.00	110	104	50-135	6	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-413-347	**Solid**	**GC/MS MM**	**12/01/11**	**12/01/11**	**111129L08**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	75	75	40-160	20-180	0	0-20	
2,4-Dichlorophenol	1.000	67	65	40-160	20-180	4	0-20	
2-Methylphenol	1.000	77	75	40-160	20-180	2	0-20	
2-Nitrophenol	1.000	68	69	40-160	20-180	1	0-20	
4-Chloro-3-Methylphenol	1.000	80	81	40-160	20-180	0	0-20	
Acenaphthene	1.000	71	72	48-108	38-118	0	0-11	
Benzo (a) Pyrene	1.000	93	92	17-163	0-187	1	0-20	
Chrysene	1.000	76	76	17-168	0-193	1	0-20	
Di-n-Butyl Phthalate	1.000	74	73	40-160	20-180	2	0-20	
Dimethyl Phthalate	1.000	77	77	40-160	20-180	0	0-20	
Fluoranthene	1.000	76	75	26-137	8-156	1	0-20	
Fluorene	1.000	76	75	59-121	49-131	0	0-20	
Naphthalene	1.000	70	70	21-133	2-152	1	0-20	
Phenanthrene	1.000	74	74	54-120	43-131	1	0-20	
Phenol	1.000	71	71	40-160	20-180	0	0-20	
Pyrene	1.000	73	73	28-106	15-119	0	0-16	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8081A

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-858-119	**Solid**	**GC 51**	**11/29/11**	**12/02/11**	**111129L06**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	69	72	50-135	36-149	5	0-25	
Alpha-BHC	5.000	83	85	50-135	36-149	3	0-25	
Beta-BHC	5.000	80	86	50-135	36-149	7	0-25	
Delta-BHC	5.000	80	82	50-135	36-149	3	0-25	
Gamma-BHC	5.000	87	90	50-135	36-149	3	0-25	
Dieldrin	5.000	92	95	50-135	36-149	3	0-25	
4,4'-DDD	5.000	96	99	50-135	36-149	3	0-25	
4,4'-DDE	5.000	90	92	50-135	36-149	3	0-25	
4,4'-DDT	5.000	104	106	50-135	36-149	1	0-25	
Endosulfan I	5.000	92	95	50-135	36-149	3	0-25	
Endosulfan II	5.000	93	95	50-135	36-149	3	0-25	
Endosulfan Sulfate	5.000	86	89	50-135	36-149	3	0-25	
Endrin	5.000	91	95	50-135	36-149	3	0-25	
Endrin Aldehyde	5.000	94	97	50-135	36-149	3	0-25	
Endrin Ketone	5.000	97	99	50-135	36-149	2	0-25	
Heptachlor	5.000	75	77	50-135	36-149	3	0-25	
Heptachlor Epoxide	5.000	91	94	50-135	36-149	3	0-25	
Methoxychlor	5.000	84	85	50-135	36-149	1	0-25	
Alpha Chlordane	5.000	85	88	50-135	36-149	3	0-25	
Gamma Chlordane	5.000	81	85	50-135	36-149	4	0-25	

Total number of LCS compounds : 20
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Return to Contents

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-11-1777
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: SEL / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-341-26	**Solid**	**GC/MS HHH**	**11/29/11**	**11/30/11**	**111129L09**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
PCB018	25.00	102	102	50-125	38-138	0	0-30	
PCB028	25.00	106	104	50-125	38-138	2	0-30	
PCB044	25.00	102	101	50-125	38-138	1	0-30	
PCB052	25.00	98	97	50-125	38-138	1	0-30	
PCB066	25.00	104	102	50-125	38-138	1	0-30	
PCB077	25.00	104	102	50-125	38-138	2	0-30	
PCB101	25.00	102	100	50-125	38-138	2	0-30	
PCB105	25.00	101	99	50-125	38-138	2	0-30	
PCB118	25.00	108	106	50-125	38-138	2	0-30	
PCB126	25.00	94	93	50-125	38-138	1	0-30	
PCB128	25.00	97	95	50-125	38-138	2	0-30	
PCB153	25.00	97	95	50-125	38-138	2	0-30	
PCB170	25.00	95	93	50-125	38-138	2	0-30	
PCB180	25.00	97	95	50-125	38-138	2	0-30	
PCB187	25.00	95	93	50-125	38-138	2	0-30	
PCB206	25.00	96	96	50-125	38-138	0	0-30	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 11-11-1777

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Return to Contents

Calscience Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

☐ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

WO # / LAB USE ONLY: ☐ 11-11-1777 ☐

Date 11/22/11

Page 1 of 1

LABORATORY CLIENT: URS Corporation	CLIENT PROJECT NAME / NUMBER: San Elijo Lagoon / 27661119.10000
ADDRESS: 4225 Executive Square Suite 1600	P.O. NO.:
CITY: La Jolla STATE: CA ZIP: 92037	PROJECT CONTACT: David Shug / Derek Rector
TEL: 619.888.0487	E-MAIL: david.shug@URS.com, derek.rector@URS.com
	SAMPLER(S): (PRINT) Derek Rector

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

☐ COELT EDF | GLOBAL ID | LOG CODE

SPECIAL INSTRUCTIONS:
Note – Samples were composited today, but the original sampling began ~6 day ago. Please begin ANALYSIS ASAP.

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260) or ( )	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	VIK is the PM - See him for tests (San Elijo Lagoon)	
1	CB-Comp-NW-Upper	11/22/11	13:10	Soil	4																			4	
2	CB-Comp-NW-Lower	11/22/11	13:20	Soil	4																			4	
3	WB-Comp-S-Upper	11/22/11	13:30	Soil	4																			4	
4	WB-Comp-S-Lower	11/22/11	13:40	Soil	5																			4	

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date: 11/22/11	Time: 15:55
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date: 11/22/11	Time: 1900
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

06/01/10 Revision

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-11-1777

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: URS Corp DATE: 11/22/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 1.6 °C + 0.5 °C (CF) = 2.1 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: RB

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: RB

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: PT

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☐	☑	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☑#4 Z

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s** ☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB ☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** PT

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:**

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:**

Return to Contents

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 11-12-0283

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: URS Corporation

Client Project Name: San Elijo Lagoon / 27661119.10000

Attention: David Schug
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Vikas Patel

Approved for release on 01/5/2012 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: San Elijo Lagoon / 27661119.10000
Work Order Number: 11-12-0283

1 Detections Summary 3

2 Client Sample Data 5
2.1 EPA 376.2 (M) Total Sulfide (Solid) 5
2.2 EPA 376.2 (M) Dissolved Sulfide (Solid) 6
2.3 EPA 9060A Total Organic Carbon (Solid) 7
2.4 EPA 160.4 (M) Volatile Solids (Solid) 8
2.5 SM 2540 B Total Solids (Solid) 9
2.6 EPA 413.2 (M) Oil and Grease (Solid) 10
2.7 EPA 418.1 (M) TRPH (Solid) 11
2.8 8270DM/TQ/EI Pyrethroids (Sediment) 12
2.9 EPA 8081A Organochlorine Pesticides (Solid) 13
2.10 EPA 8082 PCB Aroclors (Solid) 15
2.11 EPA 8270C SIM (Solid) 16
2.12 EPA 8270C SIM PCB Congeners (Solid) 19
2.13 Krone et al. Organotins (Solid) 22
2.14 EPA 6020 ICP/MS Metals / EPA 7471A Mercury (Solid) 23

3 Quality Control Sample Data 24
3.1 MS/MSD and/or Duplicate 24
3.2 LCS/LCSD 40

4 Glossary of Terms and Qualifiers 51

5 Chain of Custody/Sample Receipt Form 52

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-12-0283
		Project name:	San Elijo Lagoon / 27661119.10000
		Received:	12/05/11 18:13
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
EB-Comp-North-Upper						
Arsenic	**4.50**		0.144	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.192**		0.144	mg/kg	EPA 6020	EPA 3050B
Chromium	**13.8**		0.144	mg/kg	EPA 6020	EPA 3050B
Copper	**21.8**		0.144	mg/kg	EPA 6020	EPA 3050B
Lead	**8.61**		0.144	mg/kg	EPA 6020	EPA 3050B
Nickel	**8.31**		0.144	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.167**		0.144	mg/kg	EPA 6020	EPA 3050B
Zinc	**59.4**		1.44	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**13**		1.4	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**9800**		720	mg/kg	EPA 9060A	N/A
Solids, Volatile	**2.9**		0.14	%	EPA 160.4M	N/A
Solids, Total	**69.5**		0.100	%	SM 2540 B	N/A
Oil and Grease	**53**		14	mg/kg	EPA 413.2M	Extraction
TRPH	**43**		14	mg/kg	EPA 418.1M	Extraction
Aroclor-1242	**39**		14	ug/kg	EPA 8082	EPA 3545
Bis(2-Ethylhexyl) Phthalate	**0.10**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.076**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Di-n-Butyl Phthalate	**0.015**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Diethyl Phthalate	**0.015**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.42**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
EB-Comp-North-Lower						
Arsenic	**6.63**		0.138	mg/kg	EPA 6020	EPA 3050B
Chromium	**10.5**		0.138	mg/kg	EPA 6020	EPA 3050B
Copper	**7.21**		0.138	mg/kg	EPA 6020	EPA 3050B
Lead	**3.54**		0.138	mg/kg	EPA 6020	EPA 3050B
Nickel	**4.55**		0.138	mg/kg	EPA 6020	EPA 3050B
Zinc	**32.5**		1.38	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**12**		1.4	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**2800**		690	mg/kg	EPA 9060A	N/A
Solids, Volatile	**1.4**		0.14	%	EPA 160.4M	N/A
Solids, Total	**72.6**		0.100	%	SM 2540 B	N/A
Oil and Grease	**79**		14	mg/kg	EPA 413.2M	Extraction
TRPH	**69**		14	mg/kg	EPA 418.1M	Extraction
Aroclor-1242	**18**		14	ug/kg	EPA 8082	EPA 3545
Bis(2-Ethylhexyl) Phthalate	**0.049**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.040**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.35**		0.014	mg/kg	EPA 8270C SIM	EPA 3545

*MDL is shown.

Return to Contents

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-12-0283
		Project name:	San Elijo Lagoon / 27661119.10000
		Received:	12/05/11 18:13
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction

Subcontracted analyses, if any, are not included in this summary.

Return to Contents

*MDL is shown.

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-D**	**12/05/11 04:10**	**Sediment**	**N/A**	**12/08/11**	**12/08/11 19:30**	**B1208SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	13	1.4	10		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**N/A**	**12/08/11**	**12/08/11 19:30**	**B1208SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	12	1.4	10		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-10-035-31**	**N/A**	**Solid**	**N/A**	**12/08/11**	**12/08/11 19:30**	**B1208SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-D**	**12/05/11 04:10**	**Sediment**	**N/A**	**12/05/11**	**12/05/11 20:00**	**B1205DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**N/A**	**12/05/11**	**12/05/11 20:00**	**B1205DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-095-25**	**N/A**	**Solid**	**N/A**	**12/05/11**	**12/05/11 20:00**	**B1205DSB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-A**	**12/05/11 04:10**	**Sediment**	**TOC 5**	**12/07/11**	**12/07/11 20:00**	**B1207TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	9800	720	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-A**	**12/05/11 04:20**	**Sediment**	**TOC 5**	**12/07/11**	**12/07/11 20:00**	**B1207TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	2800	690	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-664**	**N/A**	**Solid**	**TOC 5**	**12/07/11**	**12/07/11 20:00**	**B1207TOCL1**

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	ND	500	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-C**	**12/05/11 04:10**	**Sediment**	**N/A**	**12/09/11**	**12/09/11 19:00**	**B1209VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	2.9	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**N/A**	**12/09/11**	**12/09/11 19:00**	**B1209VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	1.4	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-020-1,004**	**N/A**	**Solid**	**N/A**	**12/09/11**	**12/09/11 19:00**	**B1209VSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	ND	0.10	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-C**	**12/05/11 04:10**	**Sediment**	**N/A**	**12/09/11**	**12/09/11 13:30**	**B1209TSB2**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	69.5	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**N/A**	**12/09/11**	**12/09/11 13:30**	**B1209TSB2**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	72.6	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-1,779**	**N/A**	**Solid**	**N/A**	**12/09/11**	**12/09/11 13:30**	**B1209TSB2**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	ND	0.100	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: Extraction
Method: EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-A**	**12/05/11 04:10**	**Sediment**	**IR 2**	**12/05/11**	**12/05/11 13:30**	**111205L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	53	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-A**	**12/05/11 04:20**	**Sediment**	**IR 2**	**12/05/11**	**12/05/11 13:30**	**111205L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	79	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-019-109**	**N/A**	**Solid**	**IR 2**	**12/05/11**	**12/05/11 13:30**	**111205L02**

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: Extraction
Method: EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-A**	**12/05/11 04:10**	**Sediment**	**IR 2**	**12/05/11**	**12/05/11 13:30**	**111205L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	43	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-A**	**12/05/11 04:20**	**Sediment**	**IR 2**	**12/05/11**	**12/05/11 13:30**	**111205L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	69	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1,814**	**N/A**	**Solid**	**IR 2**	**12/05/11**	**12/05/11 13:30**	**111205L01**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-A**	**12/05/11 04:10**	**Sediment**	**GCTQ 2**	**12/09/11**	**12/12/11 21:26**	**111209L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.72	1		Fluvalinate	ND	0.72	1	
Bifenthrin	ND	0.72	1		Permethrin (cis/trans)	ND	1.4	1	
Cyfluthrin	ND	0.72	1		Phenothrin	ND	0.72	1	
Cypermethrin	ND	0.72	1		Resmethrin/Bioresmethrin	ND	0.72	1	
Deltamethrin/Tralomethrin	ND	0.72	1		Tetramethrin	ND	0.72	1	
Fenpropathrin	ND	0.72	1		lambda-Cyhalothrin	ND	0.72	1	
Fenvalerate/Esfenvalerate	ND	0.72	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	83	25-200	

EB-Comp-North-Lower	11-12-0283-2-A	12/05/11 04:20	Sediment	GCTQ 2	12/09/11	12/12/11 22:02	111209L01

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.69	0.995		Fluvalinate	ND	0.69	0.995	
Bifenthrin	ND	0.69	0.995		Permethrin (cis/trans)	ND	1.4	0.995	
Cyfluthrin	ND	0.69	0.995		Phenothrin	ND	0.69	0.995	
Cypermethrin	ND	0.69	0.995		Resmethrin/Bioresmethrin	ND	0.69	0.995	
Deltamethrin/Tralomethrin	ND	0.69	0.995		Tetramethrin	ND	0.69	0.995	
Fenpropathrin	ND	0.69	0.995		lambda-Cyhalothrin	ND	0.69	0.995	
Fenvalerate/Esfenvalerate	ND	0.69	0.995						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	83	25-200	

Method Blank	099-14-403-10	N/A	Sediment	GCTQ 2	12/09/11	12/12/11 19:36	111209L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.50	1		Fluvalinate	ND	0.50	1	
Bifenthrin	ND	0.50	1		Permethrin (cis/trans)	ND	1.0	1	
Cyfluthrin	ND	0.50	1		Phenothrin	ND	0.50	1	
Cypermethrin	ND	0.50	1		Resmethrin/Bioresmethrin	ND	0.50	1	
Deltamethrin/Tralomethrin	ND	0.50	1		Tetramethrin	ND	0.50	1	
Fenpropathrin	ND	0.50	1		lambda-Cyhalothrin	ND	0.50	1	
Fenvalerate/Esfenvalerate	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	78	25-200	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	12/05/11
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-C**	**12/05/11 04:10**	**Sediment**	**GC 51**	**12/12/11**	**12/13/11 15:24**	**111212L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	36	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	29	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	ND	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	ND	1.4	1		Mirex	ND	7.2	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	64	50-130			Decachlorobiphenyl	58	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**GC 51**	**12/12/11**	**12/13/11 15:38**	**111212L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	34	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	28	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	ND	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	ND	1.4	1		Mirex	ND	6.9	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	69	50-130			Decachlorobiphenyl	57	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-121**	**N/A**	**Solid**	**GC 51**	**12/12/11**	**12/13/11 13:43**	**111212L08**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	25	1		Endosulfan I	ND	1.0	1	
Aldrin	ND	1.0	1		Endosulfan II	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endosulfan Sulfate	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin	ND	1.0	1	
Delta-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Chlordane	ND	10	1		Heptachlor	ND	1.0	1	
Dieldrin	ND	1.0	1		Heptachlor Epoxide	ND	1.0	1	
Trans-nonachlor	ND	1.0	1		Methoxychlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDE	ND	1.0	1		Alpha Chlordane	ND	1.0	1	
2,4'-DDT	ND	1.0	1		Gamma Chlordane	ND	1.0	1	
4,4'-DDD	ND	1.0	1		Cis-nonachlor	ND	1.0	1	
4,4'-DDE	ND	1.0	1		Mirex	ND	5.0	1	
4,4'-DDT	ND	1.0	1		Oxychlordane	ND	1.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	110	50-130			Decachlorobiphenyl	104	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	12/05/11
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000 — Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-C**	**12/05/11 04:10**	**Sediment**	**GC 58**	**12/12/11**	**12/15/11 13:23**	**111212L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	39	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	113	50-130			Decachlorobiphenyl	90	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**GC 58**	**12/12/11**	**12/15/11 13:41**	**111212L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	18	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	80	50-130			Decachlorobiphenyl	86	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-565-209**	**N/A**	**Solid**	**GC 58**	**12/12/11**	**12/15/11 12:29**	**111212L09**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	10	1		Aroclor-1248	ND	10	1	
Aroclor-1221	ND	10	1		Aroclor-1254	ND	10	1	
Aroclor-1232	ND	10	1		Aroclor-1260	ND	10	1	
Aroclor-1242	ND	10	1		Aroclor-1262	ND	10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	110	50-130			Decachlorobiphenyl	112	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	12/05/11
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-C**	**12/05/11 04:10**	**Sediment**	**GC/MS MM**	**12/12/11**	**12/14/11 14:46**	**111212L12A**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Biphenyl	ND	0.014	1		Bis(2-Ethylhexyl) Phthalate	0.10	0.014	1	
Benzo (e) Pyrene	ND	0.014	1		Butyl Benzyl Phthalate	0.076	0.014	1	
Perylene	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	0.015	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	0.015	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	0.42	0.014	1	
2,4-Dinitrophenol	ND	0.72	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.72	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.72	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.72	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	66	32-143			2-Fluorobiphenyl	64	14-146		
2-Fluorophenol	69	15-138			Nitrobenzene-d5	60	18-162		
p-Terphenyl-d14	65	34-148			Phenol-d6	57	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**GC/MS MM**	**12/12/11**	**12/14/11 15:12**	**111212L12A**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzo (e) Pyrene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Perylene	ND	0.014	1		Bis(2-Ethylhexyl) Phthalate	0.049	0.014	1	
Biphenyl	ND	0.014	1		Butyl Benzyl Phthalate	0.040	0.014	1	
2,6-Dimethylnaphthalene	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	ND	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	ND	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	0.35	0.014	1	
2,4-Dinitrophenol	ND	0.69	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.69	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.69	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.69	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	67	32-143			2-Fluorobiphenyl	67	14-146		
2-Fluorophenol	71	15-138			Nitrobenzene-d5	65	18-162		
p-Terphenyl-d14	65	34-148			Phenol-d6	55	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-413-353**	**N/A**	**Solid**	**GC/MS MM**	**12/12/11**	**12/14/11 14:21**	**111212L12A**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Perylene	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.010	1	
2,6-Dimethylnaphthalene	ND	0.010	1		Bis(2-Ethylhexyl) Phthalate	ND	0.010	1	
Biphenyl	ND	0.010	1		Butyl Benzyl Phthalate	ND	0.010	1	
Benzo (e) Pyrene	ND	0.010	1		Chrysene	ND	0.010	1	
1-Methylnaphthalene	ND	0.010	1		Di-n-Butyl Phthalate	ND	0.010	1	
2,4,5-Trichlorophenol	ND	0.010	1		Di-n-Octyl Phthalate	ND	0.010	1	
2,4,6-Trichlorophenol	ND	0.010	1		Dibenz (a,h) Anthracene	ND	0.010	1	
2,4-Dichlorophenol	ND	0.010	1		Diethyl Phthalate	ND	0.010	1	
2,4-Dimethylphenol	ND	0.010	1		Dimethyl Phthalate	ND	0.010	1	
2,4-Dinitrophenol	ND	0.50	1		Fluoranthene	ND	0.010	1	
2-Chlorophenol	ND	0.010	1		Fluorene	ND	0.010	1	
2-Methylnaphthalene	ND	0.010	1		Indeno (1,2,3-c,d) Pyrene	ND	0.010	1	
2-Methylphenol	ND	0.010	1		Naphthalene	ND	0.010	1	
2-Nitrophenol	ND	0.010	1		Pentachlorophenol	ND	0.50	1	
3/4-Methylphenol	ND	0.010	1		Phenanthrene	ND	0.010	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Phenol	ND	0.010	1	
4-Chloro-3-Methylphenol	ND	0.010	1		Pyrene	ND	0.010	1	
4-Nitrophenol	ND	0.50	1		1,6,7-Trimethylnaphthalene	ND	0.010	1	
Acenaphthene	ND	0.010	1		2,3,4,6-Tetrachlorophenol	ND	0.010	1	
Acenaphthylene	ND	0.010	1		2,6-Dichlorophenol	ND	0.010	1	
Anthracene	ND	0.010	1		1-Methylphenanthrene	ND	0.010	1	
Benzo (a) Anthracene	ND	0.010	1		Benzoic Acid	ND	0.10	1	
Benzo (a) Pyrene	ND	0.010	1		DCPA	ND	0.010	1	
Benzo (b) Fluoranthene	ND	0.010	1		Dibenzothiophene	ND	0.010	1	
Benzo (g,h,i) Perylene	ND	0.010	1		Perthane	ND	0.010	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	72	32-143			2-Fluorobiphenyl	85	14-146		
2-Fluorophenol	82	15-138			Nitrobenzene-d5	73	18-162		
p-Terphenyl-d14	77	34-148			Phenol-d6	76	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-C**	**12/05/11 04:10**	**Sediment**	**GC/MS HHH**	**12/12/11**	**12/14/11 17:48**	**111212L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.72	1		PCB126	ND	0.72	1	
PCB008	ND	0.72	1		PCB128	ND	0.72	1	
PCB018	ND	0.72	1		PCB132	ND	0.72	1	
PCB028	ND	0.72	1		PCB138/158	ND	1.4	1	
PCB031	ND	0.72	1		PCB141	ND	0.72	1	
PCB033	ND	0.72	1		PCB149	ND	0.72	1	
PCB037	ND	0.72	1		PCB151	ND	0.72	1	
PCB044	ND	0.72	1		PCB153	ND	0.72	1	
PCB049	ND	0.72	1		PCB156	ND	0.72	1	
PCB052	ND	0.72	1		PCB157	ND	0.72	1	
PCB056	ND	0.72	1		PCB167	ND	0.72	1	
PCB060	ND	0.72	1		PCB168	ND	0.72	1	
PCB066	ND	0.72	1		PCB169	ND	0.72	1	
PCB070	ND	0.72	1		PCB170	ND	0.72	1	
PCB074	ND	0.72	1		PCB174	ND	0.72	1	
PCB077	ND	0.72	1		PCB177	ND	0.72	1	
PCB081	ND	0.72	1		PCB180	ND	0.72	1	
PCB087	ND	0.72	1		PCB183	ND	0.72	1	
PCB095	ND	0.72	1		PCB184	ND	0.72	1	
PCB097	ND	0.72	1		PCB187	ND	0.72	1	
PCB099	ND	0.72	1		PCB189	ND	0.72	1	
PCB101	ND	0.72	1		PCB194	ND	0.72	1	
PCB105	ND	0.72	1		PCB195	ND	0.72	1	
PCB110	ND	0.72	1		PCB200	ND	0.72	1	
PCB114	ND	0.72	1		PCB201	ND	0.72	1	
PCB118	ND	0.72	1		PCB203	ND	0.72	1	
PCB119	ND	0.72	1		PCB206	ND	0.72	1	
PCB123	ND	0.72	1		PCB209	ND	0.72	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	52	50-125		p-Terphenyl-d14	53	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**GC/MS HHH**	**12/12/11**	**12/14/11 18:15**	**111212L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.69	1		PCB126	ND	0.69	1	
PCB008	ND	0.69	1		PCB128	ND	0.69	1	
PCB018	ND	0.69	1		PCB132	ND	0.69	1	
PCB028	ND	0.69	1		PCB138/158	ND	1.4	1	
PCB031	ND	0.69	1		PCB141	ND	0.69	1	
PCB033	ND	0.69	1		PCB149	ND	0.69	1	
PCB037	ND	0.69	1		PCB151	ND	0.69	1	
PCB044	ND	0.69	1		PCB153	ND	0.69	1	
PCB049	ND	0.69	1		PCB156	ND	0.69	1	
PCB052	ND	0.69	1		PCB157	ND	0.69	1	
PCB056	ND	0.69	1		PCB167	ND	0.69	1	
PCB060	ND	0.69	1		PCB168	ND	0.69	1	
PCB066	ND	0.69	1		PCB169	ND	0.69	1	
PCB070	ND	0.69	1		PCB170	ND	0.69	1	
PCB074	ND	0.69	1		PCB174	ND	0.69	1	
PCB077	ND	0.69	1		PCB177	ND	0.69	1	
PCB081	ND	0.69	1		PCB180	ND	0.69	1	
PCB087	ND	0.69	1		PCB183	ND	0.69	1	
PCB095	ND	0.69	1		PCB184	ND	0.69	1	
PCB097	ND	0.69	1		PCB187	ND	0.69	1	
PCB099	ND	0.69	1		PCB189	ND	0.69	1	
PCB101	ND	0.69	1		PCB194	ND	0.69	1	
PCB105	ND	0.69	1		PCB195	ND	0.69	1	
PCB110	ND	0.69	1		PCB200	ND	0.69	1	
PCB114	ND	0.69	1		PCB201	ND	0.69	1	
PCB118	ND	0.69	1		PCB203	ND	0.69	1	
PCB119	ND	0.69	1		PCB206	ND	0.69	1	
PCB123	ND	0.69	1		PCB209	ND	0.69	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	91	50-125		p-Terphenyl-d14	146	50-125	1,2,7

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-27**	**N/A**	**Solid**	**GC/MS HHH**	**12/12/11**	**12/15/11 12:34**	**111212L11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.50	1		PCB126	ND	0.50	1	
PCB008	ND	0.50	1		PCB128	ND	0.50	1	
PCB018	ND	0.50	1		PCB132	ND	0.50	1	
PCB028	ND	0.50	1		PCB138/158	ND	1.0	1	
PCB031	ND	0.50	1		PCB141	ND	0.50	1	
PCB033	ND	0.50	1		PCB149	ND	0.50	1	
PCB037	ND	0.50	1		PCB151	ND	0.50	1	
PCB044	ND	0.50	1		PCB153	ND	0.50	1	
PCB049	ND	0.50	1		PCB156	ND	0.50	1	
PCB052	ND	0.50	1		PCB157	ND	0.50	1	
PCB056	ND	0.50	1		PCB167	ND	0.50	1	
PCB060	ND	0.50	1		PCB168	ND	0.50	1	
PCB066	ND	0.50	1		PCB169	ND	0.50	1	
PCB070	ND	0.50	1		PCB170	ND	0.50	1	
PCB074	ND	0.50	1		PCB174	ND	0.50	1	
PCB077	ND	0.50	1		PCB177	ND	0.50	1	
PCB081	ND	0.50	1		PCB180	ND	0.50	1	
PCB087	ND	0.50	1		PCB183	ND	0.50	1	
PCB095	ND	0.50	1		PCB184	ND	0.50	1	
PCB097	ND	0.50	1		PCB187	ND	0.50	1	
PCB099	ND	0.50	1		PCB189	ND	0.50	1	
PCB101	ND	0.50	1		PCB194	ND	0.50	1	
PCB105	ND	0.50	1		PCB195	ND	0.50	1	
PCB110	ND	0.50	1		PCB200	ND	0.50	1	
PCB114	ND	0.50	1		PCB201	ND	0.50	1	
PCB118	ND	0.50	1		PCB203	ND	0.50	1	
PCB119	ND	0.50	1		PCB206	ND	0.50	1	
PCB123	ND	0.50	1		PCB209	ND	0.50	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	101	50-125		p-Terphenyl-d14	94	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-C**	**12/05/11 04:10**	**Sediment**	**GC/MS Y**	**12/13/11**	**12/15/11 13:01**	**111213L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.3	1		Tetrabutyltin	ND	4.3	1	
Monobutyltin	ND	4.3	1		Tributyltin	ND	4.3	1	
Surrogates:	REC (%)	Control Limits	Qual						
Tripentyltin	114	50-130							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Lower	**11-12-0283-2-C**	**12/05/11 04:20**	**Sediment**	**GC/MS Y**	**12/13/11**	**12/15/11 13:36**	**111213L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.1	1		Tetrabutyltin	ND	4.1	1	
Monobutyltin	ND	4.1	1		Tributyltin	ND	4.1	1	
Surrogates:	REC (%)	Control Limits	Qual						
Tripentyltin	116	50-130							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-899**	**N/A**	**Solid**	**GC/MS Y**	**12/13/11**	**12/15/11 15:53**	**111213L13**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.0	1		Tetrabutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1		Tributyltin	ND	3.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Tripentyltin	111	50-130							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3050B / EPA 7471A Total
Method: EPA 6020 / EPA 7471A
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-North-Upper	**11-12-0283-1-A**	**12/05/11 04:10**	**Sediment**	**ICP/MS 04**	**12/07/11**	**12/07/11 19:12**	**111207L01**

Comment(s): -Mercury analysis was performed on 12/07/11 17:00 with batch 111207L02E.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	4.50	0.144	1		Mercury	ND	0.0288	1	
Cadmium	0.192	0.144	1		Nickel	8.31	0.144	1	
Chromium	13.8	0.144	1		Selenium	0.167	0.144	1	
Copper	21.8	0.144	1		Silver	ND	0.144	1	
Lead	8.61	0.144	1		Zinc	59.4	1.44	1	

EB-Comp-North-Lower	**11-12-0283-2-A**	**12/05/11 04:20**	**Sediment**	**ICP/MS 04**	**12/07/11**	**12/07/11 19:16**	**111207L01**

Comment(s): -Mercury analysis was performed on 12/07/11 17:03 with batch 111207L02E.
-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	6.63	0.138	1		Mercury	ND	0.0276	1	
Cadmium	ND	0.138	1		Nickel	4.55	0.138	1	
Chromium	10.5	0.138	1		Selenium	ND	0.138	1	
Copper	7.21	0.138	1		Silver	ND	0.138	1	
Lead	3.54	0.138	1		Zinc	32.5	1.38	1	

Method Blank	**099-12-452-255**	**N/A**	**Solid**	**Mercury**	**12/07/11**	**12/07/11 10:40**	**111207L02E**

Comment(s): -Preparation/analysis for Mercury was performed by EPA 7471A.

Parameter	Result	RL	DF	Qual
Mercury	ND	0.0200	1	

Method Blank	**096-10-002-2,142**	**N/A**	**Solid**	**ICP/MS 04**	**12/07/11**	**12/07/11 18:25**	**111207L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.100	1	
Chromium	ND	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	
Lead	ND	0.100	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3050B
Method: EPA 6020

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1983-1	**Sediment**	**ICP/MS 04**	**12/07/11**	**12/07/11**	**111207S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	95	133	80-120	28	0-20	4,3
Cadmium	25.00	93	101	80-120	8	0-20	
Chromium	25.00	72	99	80-120	14	0-20	3
Copper	25.00	79	146	80-120	36	0-20	3,4
Lead	25.00	94	109	80-120	13	0-20	
Nickel	25.00	82	102	80-120	12	0-20	
Selenium	25.00	85	87	80-120	2	0-20	
Silver	12.50	90	95	80-120	6	0-20	
Zinc	25.00	73	144	80-120	35	0-20	3,4

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - PDS / PDSD

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3050B
Method: EPA 6020

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS / PDSD Batch Number
11-11-1983-1	**Sediment**	**ICP/MS 04**	**12/07/11**	**12/07/11**	**111207S01**

Parameter	SPIKE ADDED	PDS %REC	PDSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	105	101	75-125	3	0-20	
Cadmium	25.00	97	97	75-125	0	0-20	
Chromium	25.00	95	96	75-125	0	0-20	
Copper	25.00	92	94	75-125	2	0-20	
Lead	25.00	101	101	75-125	1	0-20	
Nickel	25.00	98	100	75-125	1	0-20	
Selenium	25.00	94	106	75-125	12	0-20	
Silver	12.50	78	77	75-125	1	0-20	
Zinc	25.00	82	85	75-125	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 9060A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EB-Comp-North-Lower	**Sediment**	**TOC 5**	**12/07/11**	**12/07/11**	**B1207TOCS1**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	30000	84	85	75-125	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
EB-Comp-North-Upper	**Sediment**	**N/A**	**12/08/11**	**12/08/11**	**B1208SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	9.0	9.0	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
EB-Comp-North-Lower	**Sediment**	**N/A**	**12/05/11**	**12/05/11**	**B1205DSD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	NA	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
EB-Comp-North-Upper	**Sediment**	**N/A**	**12/09/11**	**12/09/11**	**B1209TSD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	69.5	70.8	2	0-10	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
EB-Comp-North-Lower	**Sediment**	**N/A**	**12/09/11**	**12/09/11**	**B1209VSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Volatile	1.0	1.2	18	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: Extraction
Method: EPA 413.2M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1983-3	**Sediment**	**IR 2**	**12/05/11**	**12/05/11**	**111205S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Oil and Grease	100.0	103	100	55-135	1	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 418.1M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-11-1983-3	**Sediment**	**IR 2**	**12/05/11**	**12/05/11**	**111205S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	105	106	55-135	1	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EB-Comp-North-Lower	**Sediment**	**GCTQ 2**	**12/09/11**	**12/12/11**	**111209S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	50.00	86	77	25-200	11	0-25	
Cyfluthrin	50.00	169	157	25-200	8	0-25	
Cypermethrin	50.00	176	165	25-200	6	0-25	
Deltamethrin/Tralomethrin	50.00	147	134	25-200	9	0-25	
Fenvalerate/Esfenvalerate	50.00	162	150	25-200	7	0-25	
Fluvalinate	50.00	136	125	25-200	8	0-25	
Permethrin (cis/trans)	100.0	89	85	25-200	4	0-25	
Phenothrin	50.00	96	85	25-200	12	0-25	
Resmethrin/Bioresmethrin	50.00	70	62	25-200	12	0-25	
lambda-Cyhalothrin	50.00	152	133	25-200	13	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 7471A Total
Method: EPA 7471A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0359-2	**Solid**	**Mercury**	**12/07/11**	**12/07/11**	**111207S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	100	100	71-137	0	0-14	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0662-3	**Solid**	**GC/MS Y**	**12/13/11**	**12/15/11**	**111213S13**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	135	128	50-130	5	0-20	3
Tributyltin	100.0	119	112	50-130	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8082

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0662-3	**Solid**	**GC 58**	**12/12/11**	**12/16/11**	**111212S09**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	334	326	50-135	3	0-25	3
Aroclor-1260	20.00	98	102	50-135	4	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0378-31	**Solid**	**GC/MS MM**	**12/12/11**	**12/14/11**	**111212S12**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	71	71	40-160	0	0-20	
2,4-Dichlorophenol	1.000	73	73	40-160	1	0-20	
2-Methylphenol	1.000	71	70	40-160	1	0-20	
2-Nitrophenol	1.000	69	68	40-160	1	0-20	
4-Chloro-3-Methylphenol	1.000	73	74	40-160	1	0-20	
Acenaphthene	1.000	55	55	40-106	0	0-20	
Benzo (a) Pyrene	1.000	73	72	17-163	1	0-20	
Chrysene	1.000	65	65	17-168	0	0-20	
Di-n-Butyl Phthalate	1.000	61	62	40-160	1	0-20	
Dimethyl Phthalate	1.000	70	71	40-160	1	0-20	
Fluoranthene	1.000	64	65	26-137	1	0-20	
Fluorene	1.000	60	60	59-121	1	0-20	
Naphthalene	1.000	93	93	21-133	0	0-20	
Phenanthrene	1.000	62	63	54-120	1	0-20	
Phenol	1.000	68	67	40-160	1	0-20	
Pyrene	1.000	61	60	6-156	0	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8081A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EB-Comp-North-Upper	**Sediment**	**GC 51**	**12/12/11**	**12/13/11**	**111212S08**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	69	61	50-135	12	0-25	
Alpha-BHC	5.000	67	65	50-135	3	0-25	
Beta-BHC	5.000	82	79	50-135	5	0-25	
Delta-BHC	5.000	65	54	50-135	17	0-25	
Gamma-BHC	5.000	69	66	50-135	5	0-25	
Dieldrin	5.000	68	58	50-135	17	0-25	
4,4'-DDD	5.000	69	58	50-135	18	0-25	
4,4'-DDE	5.000	83	70	50-135	17	0-25	
4,4'-DDT	5.000	84	77	50-135	10	0-25	
Endosulfan I	5.000	73	62	50-135	17	0-25	
Endosulfan II	5.000	75	63	50-135	17	0-25	
Endosulfan Sulfate	5.000	79	80	50-135	1	0-25	
Endrin	5.000	83	75	50-135	10	0-25	
Endrin Aldehyde	5.000	71	63	50-135	12	0-25	
Endrin Ketone	5.000	98	79	50-135	21	0-25	
Heptachlor	5.000	70	66	50-135	7	0-25	
Heptachlor Epoxide	5.000	64	59	50-135	8	0-25	
Methoxychlor	5.000	92	100	50-135	9	0-25	
Alpha Chlordane	5.000	75	63	50-135	18	0-25	
Gamma Chlordane	5.000	73	61	50-135	18	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/05/11
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0662-3	**Solid**	**GC/MS HHH**	**12/12/11**	**12/14/11**	**111212S11**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB018	25.00	93	93	50-125	0	0-30	
PCB028	25.00	108	109	50-125	1	0-30	
PCB044	25.00	109	110	50-125	1	0-30	
PCB052	25.00	104	106	50-125	2	0-30	
PCB066	25.00	115	117	50-125	2	0-30	
PCB077	25.00	116	119	50-125	2	0-30	
PCB101	25.00	112	115	50-125	3	0-30	
PCB105	25.00	112	114	50-125	2	0-30	
PCB118	25.00	122	123	50-125	1	0-30	
PCB126	25.00	107	110	50-125	3	0-30	
PCB128	25.00	106	108	50-125	2	0-30	
PCB153	25.00	107	109	50-125	1	0-30	
PCB170	25.00	109	110	50-125	1	0-30	
PCB180	25.00	107	110	50-125	3	0-30	
PCB187	25.00	104	106	50-125	2	0-30	
PCB206	25.00	109	109	50-125	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0283
Preparation: EPA 3050B
Method: EPA 6020

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-2,142	**Solid**	**ICP/MS 04**	**12/07/11**	**12/07/11**	**111207L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	105	100	80-120	5	0-20	
Cadmium	25.00	107	105	80-120	2	0-20	
Chromium	25.00	96	94	80-120	2	0-20	
Copper	25.00	108	108	80-120	0	0-20	
Lead	25.00	97	96	80-120	1	0-20	
Nickel	25.00	106	106	80-120	0	0-20	
Selenium	25.00	97	95	80-120	2	0-20	
Silver	12.50	85	84	80-120	2	0-20	
Zinc	25.00	109	107	80-120	1	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0283
Preparation: N/A
Method: EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-664	**Solid**	**TOC 5**	**12/07/11**	**12/07/11**	**B1207TOCL1**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	6000	87	88	80-120	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-019-109	**Solid**	**IR 2**	**12/05/11**	**NONE**	**111205L02**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Oil and Grease	100.0	90.82	91	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,814	**Solid**	**IR 2**	**12/05/11**	**NONE**	**111205L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100.0	86.61	87	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0283
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-403-10	**Sediment**	**GCTQ 2**	**12/09/11**	**12/12/11**	**111209L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	50.00	94	110	25-200	16	0-25	
Cyfluthrin	50.00	109	112	25-200	3	0-25	
Cypermethrin	50.00	108	120	25-200	10	0-25	
Deltamethrin/Tralomethrin	50.00	92	94	25-200	1	0-25	
Fenvalerate/Esfenvalerate	50.00	101	101	25-200	0	0-25	
Fluvalinate	50.00	96	94	25-200	3	0-25	
Permethrin (cis/trans)	100.0	80	83	25-200	4	0-25	
Phenothrin	50.00	92	110	25-200	18	0-25	
Resmethrin/Bioresmethrin	50.00	83	104	25-200	23	0-25	
lambda-Cyhalothrin	50.00	107	104	25-200	3	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	EPA 7471A Total
		Method:	EPA 7471A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-255	**Solid**	**Mercury**	**12/07/11**	**12/07/11**	**111207L02E**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	98	98	82-124	0	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	EPA 3550B
		Method:	Organotins by Krone et al.

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-899	**Solid**	**GC/MS Y**	**12/13/11**	**12/15/11**	**111213L13**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	109	112	50-130	2	0-20	
Tributyltin	100.0	108	113	50-130	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0283
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-209	**Solid**	**GC 58**	**12/12/11**	**12/15/11**	**111212L09**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	121	122	50-135	0	0-25	
Aroclor-1260	20.00	109	110	50-135	1	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-413-353	**Solid**	**GC/MS MM**	**12/14/11**	**14DEC005.rr**	**111212L12A**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	ME_CL	Qualifiers
2,4,6-Trichlorophenol	1.000	0.7157	72	40-160	20-180	
2,4-Dichlorophenol	1.000	0.7365	74	40-160	20-180	
2-Methylphenol	1.000	0.6880	69	40-160	20-180	
2-Nitrophenol	1.000	0.6514	65	40-160	20-180	
4-Chloro-3-Methylphenol	1.000	0.7854	79	40-160	20-180	
Acenaphthene	1.000	0.7040	70	48-108	38-118	
Benzo (a) Pyrene	1.000	0.7699	77	17-163	0-187	
Chrysene	1.000	0.6700	67	17-168	0-193	
Di-n-Butyl Phthalate	1.000	0.6970	70	40-160	20-180	
Dimethyl Phthalate	1.000	0.7353	74	40-160	20-180	
Fluoranthene	1.000	0.6936	69	26-137	8-156	
Fluorene	1.000	0.7417	74	59-121	49-131	
Naphthalene	1.000	0.7002	70	21-133	2-152	
Phenanthrene	1.000	0.6917	69	54-120	43-131	
Phenol	1.000	0.7137	71	40-160	20-180	
Pyrene	1.000	0.6501	65	28-106	15-119	

Total number of LCS compounds : 16
Total number of ME compounds: 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8081A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-858-121	**Solid**	**GC 51**	**12/13/11**	**11121321**	**111212L08**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	ME_CL	Qualifiers
Aldrin	5.000	4.816	96	50-135	36-149	
Alpha-BHC	5.000	4.805	96	50-135	36-149	
Beta-BHC	5.000	4.559	91	50-135	36-149	
Delta-BHC	5.000	4.231	85	50-135	36-149	
Gamma-BHC	5.000	4.937	99	50-135	36-149	
Dieldrin	5.000	4.955	99	50-135	36-149	
4,4'-DDD	5.000	4.488	90	50-135	36-149	
4,4'-DDE	5.000	4.516	90	50-135	36-149	
4,4'-DDT	5.000	4.818	96	50-135	36-149	
Endosulfan I	5.000	5.258	105	50-135	36-149	
Endosulfan II	5.000	4.585	92	50-135	36-149	
Endosulfan Sulfate	5.000	4.904	98	50-135	36-149	
Endrin	5.000	4.965	99	50-135	36-149	
Endrin Aldehyde	5.000	4.891	98	50-135	36-149	
Endrin Ketone	5.000	5.229	105	50-135	36-149	
Heptachlor	5.000	4.760	95	50-135	36-149	
Heptachlor Epoxide	5.000	4.773	95	50-135	36-149	
Methoxychlor	5.000	4.605	92	50-135	36-149	
Alpha Chlordane	5.000	4.810	96	50-135	36-149	
Gamma Chlordane	5.000	5.000	100	50-135	36-149	

Total number of LCS compounds : 20
Total number of ME compounds: 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0283
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-14-341-27	**Solid**	**GC/MS HHH**	**12/14/11**	**14DEC004.rr**	**111212L11**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	ME_CL	Qualifiers
PCB018	25.00	17.28	69	50-125	38-138	
PCB028	25.00	17.88	72	50-125	38-138	
PCB044	25.00	17.48	70	50-125	38-138	
PCB052	25.00	17.01	68	50-125	38-138	
PCB066	25.00	18.04	72	50-125	38-138	
PCB077	25.00	17.53	70	50-125	38-138	
PCB101	25.00	17.81	71	50-125	38-138	
PCB105	25.00	17.25	69	50-125	38-138	
PCB118	25.00	18.56	74	50-125	38-138	
PCB126	25.00	15.81	63	50-125	38-138	
PCB128	25.00	16.28	65	50-125	38-138	
PCB153	25.00	16.54	66	50-125	38-138	
PCB170	25.00	15.30	61	50-125	38-138	
PCB180	25.00	16.13	65	50-125	38-138	
PCB187	25.00	16.01	64	50-125	38-138	
PCB206	25.00	14.60	58	50-125	38-138	

Total number of LCS compounds : 16
Total number of ME compounds: 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 11-12-0283

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

Return to Contents

Calscience Environmental Laboratories, Inc.

☐ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY: 11-12-0283

Date: 12/05/11

Page 1 of 1

LABORATORY CLIENT: URS Corporation

ADDRESS: 4225 Executive Square Suite 1600

CITY: La Jolla STATE: CA ZIP: 92037

TEL: 858.812.9292 E-MAIL: derekrector@urs.com david.schug@urs.com

CLIENT PROJECT NAME / NUMBER: San Elijo Lagoon / 27661119.10000

P.O. NO.:

PROJECT CONTACT: Derek Rector / Dave Schug

SAMPLER(S): (PRINT) Derek Rector

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

☐ COELT EDF GLOBAL ID LOG CODE

SPECIAL INSTRUCTIONS: Please Begin ASAP (By 12/6/11)

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260) or ( )	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	SAN Elijo Lagoon	Vik Patel PM	
1	EB-Comp - North-upper	12/5/11	4:10	Soil	4																			X		
2	EB-Comp - North-Lower	12/5/11	4:20	Soil	4																			X		

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Derek Rector	[signature] CEL	12/5/11	16:45
[signature]	Dannyle CEL	12/5/11	18:13

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

06/01/10 Revision

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-12-0283

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: URS DATE: 12/05/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 1.5 °C + 0.5 °C (CF) = 2.0 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: VG

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: VG

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: KM

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☑	☐	☑ TN 12/5/11
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOAh ☐VOA**na$_2$** ☐125AGB ☐125AGBh ☐125AGBp ☐1AGB ☐1AGB**na$_2$** ☐1AGBs ☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐1PBna ☐500PB ☐250PB ☐250PBn ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** KM

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope **Reviewed by:** TN

Preservative: h: HCL n: HNO_3 **na$_2$**:$Na_2S_2O_3$ na: NaOH p: H_3PO_4 s: H_2SO_4 u: Ultra-pure **znna:** $ZnAc_2$+NaOH f: Filtered **Scanned by:** TN

Return to Contents

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 11-12-0636

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: URS Corporation

Client Project Name: San Elijo Lagoon / 27661119.10000

Attention: David Schug
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Vikas Patel

Approved for release on 01/5/2012 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: San Elijo Lagoon / 27661119.10000
Work Order Number: 11-12-0636

1 Detections Summary 3

2 Client Sample Data 4
2.1 EPA 376.2 (M) Total Sulfide (Solid) 4
2.2 EPA 376.2 (M) Dissolved Sulfide (Solid) 5
2.3 EPA 9060A Total Organic Carbon (Solid) 6
2.4 EPA 160.4 (M) Volatile Solids (Solid) 7
2.5 SM 2540 B Total Solids (Solid) 8
2.6 EPA 413.2 (M) Oil and Grease (Solid) 9
2.7 EPA 418.1 (M) TRPH (Solid) 10
2.8 8270DM/TQ/EI Pyrethroids (Sediment) 11
2.9 EPA 8081A Organochlorine Pesticides (Solid) 12
2.10 EPA 8082 PCB Aroclors (Solid) 14
2.11 EPA 8270C SIM (Solid) 15
2.12 EPA 8270C SIM PCB Congeners (Solid) 18
2.13 Krone et al. Organotins (Solid) 21
2.14 EPA 6020 ICP/MS Metals (Solid) 22
2.15 EPA 7471A Mercury (Solid) 23

3 Quality Control Sample Data 24
3.1 MS/MSD and/or Duplicate 24
3.2 LCS/LCSD 39

4 Glossary of Terms and Qualifiers 50

5 Chain of Custody/Sample Receipt Form 51

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-12-0636
		Project name:	San Elijo Lagoon / 27661119.10000
		Received:	12/08/11 19:20
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
EB-Comp-South-Upper						
Arsenic	**6.09**		0.148	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.230**		0.148	mg/kg	EPA 6020	EPA 3050B
Chromium	**19.1**		0.148	mg/kg	EPA 6020	EPA 3050B
Copper	**26.4**		0.148	mg/kg	EPA 6020	EPA 3050B
Lead	**11.0**		0.148	mg/kg	EPA 6020	EPA 3050B
Nickel	**9.93**		0.148	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.422**		0.148	mg/kg	EPA 6020	EPA 3050B
Zinc	**65.5**		1.48	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**1.6**		0.15	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**11000**		740	mg/kg	EPA 9060A	N/A
Solids, Volatile	**5.9**		0.15	%	EPA 160.4M	N/A
Solids, Total	**67.4**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.21**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.15**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Di-n-Butyl Phthalate	**0.021**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Diethyl Phthalate	**0.016**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.34**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
EB-Comp-South-Lower						
Arsenic	**3.75**		0.132	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.132**		0.132	mg/kg	EPA 6020	EPA 3050B
Chromium	**9.78**		0.132	mg/kg	EPA 6020	EPA 3050B
Copper	**5.11**		0.132	mg/kg	EPA 6020	EPA 3050B
Lead	**1.82**		0.132	mg/kg	EPA 6020	EPA 3050B
Nickel	**3.68**		0.132	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.147**		0.132	mg/kg	EPA 6020	EPA 3050B
Zinc	**29.9**		1.32	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**2.4**		0.13	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**3700**		660	mg/kg	EPA 9060A	N/A
Solids, Volatile	**1.0**		0.13	%	EPA 160.4M	N/A
Solids, Total	**75.9**		0.100	%	SM 2540 B	N/A
Aroclor-1242	**92**		13	ug/kg	EPA 8082	EPA 3545
Bis(2-Ethylhexyl) Phthalate	**0.059**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.049**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Di-n-Butyl Phthalate	**0.016**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.30**		0.013	mg/kg	EPA 8270C SIM	EPA 3545

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-C**	**12/08/11 14:20**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 12:30**	**B1215SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	1.6	0.15	1		mg/kg

EB-Comp-South-Lower	**11-12-0636-2-C**	**12/08/11 14:30**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 12:30**	**B1215SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	2.4	0.13	1		mg/kg

Method Blank	**099-10-035-33**	**N/A**	**Solid**	**N/A**	**12/15/11**	**12/15/11 12:30**	**B1215SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-A**	**12/08/11 14:20**	**Sediment**	**N/A**	**12/08/11**	**12/08/11 20:00**	**B1208DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.15	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-A**	**12/08/11 14:30**	**Sediment**	**N/A**	**12/08/11**	**12/08/11 20:00**	**B1208DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-095-27**	**N/A**	**Solid**	**N/A**	**12/08/11**	**12/08/11 20:00**	**B1208DSB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-C**	**12/08/11 14:20**	**Sediment**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	11000	740	1		mg/kg

EB-Comp-South-Lower	**11-12-0636-2-C**	**12/08/11 14:30**	**Sediment**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	3700	660	1		mg/kg

Method Blank	**099-06-013-672**	**N/A**	**Solid**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	ND	500	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-A**	**12/08/11 14:20**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	5.9	0.15	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-A**	**12/08/11 14:30**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	1.0	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-020-1,005**	**N/A**	**Solid**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	ND	0.10	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-A**	**12/08/11 14:20**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	67.4	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-A**	**12/08/11 14:30**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	75.9	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-1,798**	**N/A**	**Solid**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	ND	0.100	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: Extraction
Method: EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-C**	**12/08/11 14:20**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 11:00**	**111216L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	15	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-C**	**12/08/11 14:30**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 11:00**	**111216L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-019-110**	**N/A**	**Solid**	**IR 2**	**12/16/11**	**12/16/11 11:00**	**111216L01**

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: Extraction
Method: EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-A**	**12/08/11 14:20**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	15	1		mg/kg

EB-Comp-South-Lower	**11-12-0636-2-A**	**12/08/11 14:30**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

Method Blank	**099-07-015-1,818**	**N/A**	**Solid**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-A**	**12/08/11 14:20**	**Sediment**	**GCTQ 2**	**12/09/11**	**12/12/11 20:13**	**111209L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.73	0.99		Fluvalinate	ND	0.73	0.99	
Bifenthrin	ND	0.73	0.99		Permethrin (cis/trans)	ND	1.5	0.99	
Cyfluthrin	ND	0.73	0.99		Phenothrin	ND	0.73	0.99	
Cypermethrin	ND	0.73	0.99		Resmethrin/Bioresmethrin	ND	0.73	0.99	
Deltamethrin/Tralomethrin	ND	0.73	0.99		Tetramethrin	ND	0.73	0.99	
Fenpropathrin	ND	0.73	0.99		lambda-Cyhalothrin	ND	0.73	0.99	
Fenvalerate/Esfenvalerate	ND	0.73	0.99						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	75	25-200	

EB-Comp-South-Lower	11-12-0636-2-A	12/08/11 14:30	Sediment	GCTQ 2	12/09/11	12/12/11 20:49	111209L01

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.66	0.995		Fluvalinate	ND	0.66	0.995	
Bifenthrin	ND	0.66	0.995		Permethrin (cis/trans)	ND	1.3	0.995	
Cyfluthrin	ND	0.66	0.995		Phenothrin	ND	0.66	0.995	
Cypermethrin	ND	0.66	0.995		Resmethrin/Bioresmethrin	ND	0.66	0.995	
Deltamethrin/Tralomethrin	ND	0.66	0.995		Tetramethrin	ND	0.66	0.995	
Fenpropathrin	ND	0.66	0.995		lambda-Cyhalothrin	ND	0.66	0.995	
Fenvalerate/Esfenvalerate	ND	0.66	0.995						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	81	25-200	

Method Blank	099-14-403-10	N/A	Sediment	GCTQ 2	12/09/11	12/12/11 19:36	111209L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.50	1		Fluvalinate	ND	0.50	1	
Bifenthrin	ND	0.50	1		Permethrin (cis/trans)	ND	1.0	1	
Cyfluthrin	ND	0.50	1		Phenothrin	ND	0.50	1	
Cypermethrin	ND	0.50	1		Resmethrin/Bioresmethrin	ND	0.50	1	
Deltamethrin/Tralomethrin	ND	0.50	1		Tetramethrin	ND	0.50	1	
Fenpropathrin	ND	0.50	1		lambda-Cyhalothrin	ND	0.50	1	
Fenvalerate/Esfenvalerate	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	78	25-200	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	12/08/11
4225 Executive Square, Suite 1600		Work Order No:	11-12-0636
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-B**	**12/08/11 14:20**	**Sediment**	**GC 51**	**12/12/11**	**12/13/11 15:53**	**111212L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	37	1		Endosulfan I	ND	1.5	1	
Aldrin	ND	1.5	1		Endosulfan II	ND	1.5	1	
Alpha-BHC	ND	1.5	1		Endosulfan Sulfate	ND	1.5	1	
Beta-BHC	ND	1.5	1		Endrin	ND	1.5	1	
Delta-BHC	ND	1.5	1		Endrin Aldehyde	ND	1.5	1	
Gamma-BHC	ND	1.5	1		Endrin Ketone	ND	1.5	1	
Chlordane	ND	15	1		Heptachlor	ND	1.5	1	
Dieldrin	ND	1.5	1		Heptachlor Epoxide	ND	1.5	1	
Trans-nonachlor	ND	1.5	1		Methoxychlor	ND	1.5	1	
2,4'-DDD	ND	1.5	1		Toxaphene	ND	30	1	
2,4'-DDE	ND	1.5	1		Alpha Chlordane	ND	1.5	1	
2,4'-DDT	ND	1.5	1		Gamma Chlordane	ND	1.5	1	
4,4'-DDD	ND	1.5	1		Cis-nonachlor	ND	1.5	1	
4,4'-DDE	ND	1.5	1		Mirex	ND	7.4	1	
4,4'-DDT	ND	1.5	1		Oxychlordane	ND	1.5	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	58	50-130			Decachlorobiphenyl	94	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-B**	**12/08/11 14:30**	**Sediment**	**GC 51**	**12/12/11**	**12/13/11 16:07**	**111212L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	33	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	26	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.6	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	65	50-130			Decachlorobiphenyl	74	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-121**	**N/A**	**Solid**	**GC 51**	**12/12/11**	**12/13/11 13:43**	**111212L08**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	25	1		Endosulfan I	ND	1.0	1	
Aldrin	ND	1.0	1		Endosulfan II	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endosulfan Sulfate	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin	ND	1.0	1	
Delta-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Chlordane	ND	10	1		Heptachlor	ND	1.0	1	
Dieldrin	ND	1.0	1		Heptachlor Epoxide	ND	1.0	1	
Trans-nonachlor	ND	1.0	1		Methoxychlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDE	ND	1.0	1		Alpha Chlordane	ND	1.0	1	
2,4'-DDT	ND	1.0	1		Gamma Chlordane	ND	1.0	1	
4,4'-DDD	ND	1.0	1		Cis-nonachlor	ND	1.0	1	
4,4'-DDE	ND	1.0	1		Mirex	ND	5.0	1	
4,4'-DDT	ND	1.0	1		Oxychlordane	ND	1.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	110	50-130			Decachlorobiphenyl	104	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-B**	**12/08/11 14:20**	**Sediment**	**GC 58**	**12/12/11**	**12/15/11 18:35**	**111212L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	15	1		Aroclor-1248	ND	15	1	
Aroclor-1221	ND	15	1		Aroclor-1254	ND	15	1	
Aroclor-1232	ND	15	1		Aroclor-1260	ND	15	1	
Aroclor-1242	ND	15	1		Aroclor-1262	ND	15	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	75	50-130			Decachlorobiphenyl	80	50-130		

EB-Comp-South-Lower	**11-12-0636-2-B**	**12/08/11 14:30**	**Sediment**	**GC 58**	**12/12/11**	**12/15/11 18:53**	**111212L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	92	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	94	50-130			Decachlorobiphenyl	121	50-130		

Method Blank	**099-12-565-209**	**N/A**	**Solid**	**GC 58**	**12/12/11**	**12/15/11 12:29**	**111212L09**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	10	1		Aroclor-1248	ND	10	1	
Aroclor-1221	ND	10	1		Aroclor-1254	ND	10	1	
Aroclor-1232	ND	10	1		Aroclor-1260	ND	10	1	
Aroclor-1242	ND	10	1		Aroclor-1262	ND	10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	110	50-130			Decachlorobiphenyl	112	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-B**	**12/08/11 14:20**	**Sediment**	**GC/MS MM**	**12/12/11**	**12/14/11 15:37**	**111212L12A**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.015	1		Benzo (k) Fluoranthene	ND	0.015	1	
Biphenyl	ND	0.015	1		Bis(2-Ethylhexyl) Phthalate	0.21	0.015	1	
Benzo (e) Pyrene	ND	0.015	1		Butyl Benzyl Phthalate	0.15	0.015	1	
Perylene	ND	0.015	1		Chrysene	ND	0.015	1	
1-Methylnaphthalene	ND	0.015	1		Di-n-Butyl Phthalate	0.021	0.015	1	
2,4,5-Trichlorophenol	ND	0.015	1		Di-n-Octyl Phthalate	ND	0.015	1	
2,4,6-Trichlorophenol	ND	0.015	1		Dibenz (a,h) Anthracene	ND	0.015	1	
2,4-Dichlorophenol	ND	0.015	1		Diethyl Phthalate	0.016	0.015	1	
2,4-Dimethylphenol	ND	0.015	1		Dimethyl Phthalate	0.34	0.015	1	
2,4-Dinitrophenol	ND	0.74	1		Fluoranthene	ND	0.015	1	
2-Chlorophenol	ND	0.015	1		Fluorene	ND	0.015	1	
2-Methylnaphthalene	ND	0.015	1		Indeno (1,2,3-c,d) Pyrene	ND	0.015	1	
2-Methylphenol	ND	0.015	1		Naphthalene	ND	0.015	1	
2-Nitrophenol	ND	0.015	1		Pentachlorophenol	ND	0.74	1	
3/4-Methylphenol	ND	0.015	1		Phenanthrene	ND	0.015	1	
4,6-Dinitro-2-Methylphenol	ND	0.74	1		Phenol	ND	0.015	1	
4-Chloro-3-Methylphenol	ND	0.015	1		Pyrene	ND	0.015	1	
4-Nitrophenol	ND	0.74	1		1,6,7-Trimethylnaphthalene	ND	0.015	1	
Acenaphthene	ND	0.015	1		2,3,4,6-Tetrachlorophenol	ND	0.015	1	
Acenaphthylene	ND	0.015	1		2,6-Dichlorophenol	ND	0.015	1	
Anthracene	ND	0.015	1		Benzoic Acid	ND	0.15	1	
Benzo (a) Anthracene	ND	0.015	1		1-Methylphenanthrene	ND	0.015	1	
Benzo (a) Pyrene	ND	0.015	1		DCPA	ND	0.015	1	
Benzo (b) Fluoranthene	ND	0.015	1		Dibenzothiophene	ND	0.015	1	
Benzo (g,h,i) Perylene	ND	0.015	1		Perthane	ND	0.015	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	62	32-143			2-Fluorobiphenyl	60	14-146		
2-Fluorophenol	64	15-138			Nitrobenzene-d5	57	18-162		
p-Terphenyl-d14	62	34-148			Phenol-d6	52	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-B**	**12/08/11 14:30**	**Sediment**	**GC/MS MM**	**12/12/11**	**12/14/11 16:03**	**111212L12A**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzo (e) Pyrene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Perylene	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.059	0.013	1	
Biphenyl	ND	0.013	1		Butyl Benzyl Phthalate	0.049	0.013	1	
2,6-Dimethylnaphthalene	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	0.016	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	0.30	0.013	1	
2,4-Dinitrophenol	ND	0.66	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.66	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.66	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.66	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	62	32-143			2-Fluorobiphenyl	64	14-146		
2-Fluorophenol	67	15-138			Nitrobenzene-d5	60	18-162		
p-Terphenyl-d14	64	34-148			Phenol-d6	48	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-413-353**	**N/A**	**Solid**	**GC/MS MM**	**12/12/11**	**12/14/11 14:21**	**111212L12A**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Perylene	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.010	1	
2,6-Dimethylnaphthalene	ND	0.010	1		Bis(2-Ethylhexyl) Phthalate	ND	0.010	1	
Biphenyl	ND	0.010	1		Butyl Benzyl Phthalate	ND	0.010	1	
Benzo (e) Pyrene	ND	0.010	1		Chrysene	ND	0.010	1	
1-Methylnaphthalene	ND	0.010	1		Di-n-Butyl Phthalate	ND	0.010	1	
2,4,5-Trichlorophenol	ND	0.010	1		Di-n-Octyl Phthalate	ND	0.010	1	
2,4,6-Trichlorophenol	ND	0.010	1		Dibenz (a,h) Anthracene	ND	0.010	1	
2,4-Dichlorophenol	ND	0.010	1		Diethyl Phthalate	ND	0.010	1	
2,4-Dimethylphenol	ND	0.010	1		Dimethyl Phthalate	ND	0.010	1	
2,4-Dinitrophenol	ND	0.50	1		Fluoranthene	ND	0.010	1	
2-Chlorophenol	ND	0.010	1		Fluorene	ND	0.010	1	
2-Methylnaphthalene	ND	0.010	1		Indeno (1,2,3-c,d) Pyrene	ND	0.010	1	
2-Methylphenol	ND	0.010	1		Naphthalene	ND	0.010	1	
2-Nitrophenol	ND	0.010	1		Pentachlorophenol	ND	0.50	1	
3/4-Methylphenol	ND	0.010	1		Phenanthrene	ND	0.010	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Phenol	ND	0.010	1	
4-Chloro-3-Methylphenol	ND	0.010	1		Pyrene	ND	0.010	1	
4-Nitrophenol	ND	0.50	1		1,6,7-Trimethylnaphthalene	ND	0.010	1	
Acenaphthene	ND	0.010	1		2,3,4,6-Tetrachlorophenol	ND	0.010	1	
Acenaphthylene	ND	0.010	1		2,6-Dichlorophenol	ND	0.010	1	
Anthracene	ND	0.010	1		1-Methylphenanthrene	ND	0.010	1	
Benzo (a) Anthracene	ND	0.010	1		Benzoic Acid	ND	0.10	1	
Benzo (a) Pyrene	ND	0.010	1		DCPA	ND	0.010	1	
Benzo (b) Fluoranthene	ND	0.010	1		Dibenzothiophene	ND	0.010	1	
Benzo (g,h,i) Perylene	ND	0.010	1		Perthane	ND	0.010	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	72	32-143			2-Fluorobiphenyl	85	14-146		
2-Fluorophenol	82	15-138			Nitrobenzene-d5	73	18-162		
p-Terphenyl-d14	77	34-148			Phenol-d6	76	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	12/08/11
4225 Executive Square, Suite 1600		Work Order No:	11-12-0636
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-B**	**12/08/11 14:20**	**Sediment**	**GC/MS HHH**	**12/12/11**	**12/14/11 18:42**	**111212L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.74	1		PCB126	ND	0.74	1	
PCB008	ND	0.74	1		PCB128	ND	0.74	1	
PCB018	ND	0.74	1		PCB132	ND	0.74	1	
PCB028	ND	0.74	1		PCB138/158	ND	1.5	1	
PCB031	ND	0.74	1		PCB141	ND	0.74	1	
PCB033	ND	0.74	1		PCB149	ND	0.74	1	
PCB037	ND	0.74	1		PCB151	ND	0.74	1	
PCB044	ND	0.74	1		PCB153	ND	0.74	1	
PCB049	ND	0.74	1		PCB156	ND	0.74	1	
PCB052	ND	0.74	1		PCB157	ND	0.74	1	
PCB056	ND	0.74	1		PCB167	ND	0.74	1	
PCB060	ND	0.74	1		PCB168	ND	0.74	1	
PCB066	ND	0.74	1		PCB169	ND	0.74	1	
PCB070	ND	0.74	1		PCB170	ND	0.74	1	
PCB074	ND	0.74	1		PCB174	ND	0.74	1	
PCB077	ND	0.74	1		PCB177	ND	0.74	1	
PCB081	ND	0.74	1		PCB180	ND	0.74	1	
PCB087	ND	0.74	1		PCB183	ND	0.74	1	
PCB095	ND	0.74	1		PCB184	ND	0.74	1	
PCB097	ND	0.74	1		PCB187	ND	0.74	1	
PCB099	ND	0.74	1		PCB189	ND	0.74	1	
PCB101	ND	0.74	1		PCB194	ND	0.74	1	
PCB105	ND	0.74	1		PCB195	ND	0.74	1	
PCB110	ND	0.74	1		PCB200	ND	0.74	1	
PCB114	ND	0.74	1		PCB201	ND	0.74	1	
PCB118	ND	0.74	1		PCB203	ND	0.74	1	
PCB119	ND	0.74	1		PCB206	ND	0.74	1	
PCB123	ND	0.74	1		PCB209	ND	0.74	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	72	50-125		p-Terphenyl-d14	71	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-B**	**12/08/11 14:30**	**Sediment**	**GC/MS HHH**	**12/12/11**	**12/14/11 19:09**	**111212L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.66	1		PCB126	ND	0.66	1	
PCB008	ND	0.66	1		PCB128	ND	0.66	1	
PCB018	ND	0.66	1		PCB132	ND	0.66	1	
PCB028	ND	0.66	1		PCB138/158	ND	1.3	1	
PCB031	ND	0.66	1		PCB141	ND	0.66	1	
PCB033	ND	0.66	1		PCB149	ND	0.66	1	
PCB037	ND	0.66	1		PCB151	ND	0.66	1	
PCB044	ND	0.66	1		PCB153	ND	0.66	1	
PCB049	ND	0.66	1		PCB156	ND	0.66	1	
PCB052	ND	0.66	1		PCB157	ND	0.66	1	
PCB056	ND	0.66	1		PCB167	ND	0.66	1	
PCB060	ND	0.66	1		PCB168	ND	0.66	1	
PCB066	ND	0.66	1		PCB169	ND	0.66	1	
PCB070	ND	0.66	1		PCB170	ND	0.66	1	
PCB074	ND	0.66	1		PCB174	ND	0.66	1	
PCB077	ND	0.66	1		PCB177	ND	0.66	1	
PCB081	ND	0.66	1		PCB180	ND	0.66	1	
PCB087	ND	0.66	1		PCB183	ND	0.66	1	
PCB095	ND	0.66	1		PCB184	ND	0.66	1	
PCB097	ND	0.66	1		PCB187	ND	0.66	1	
PCB099	ND	0.66	1		PCB189	ND	0.66	1	
PCB101	ND	0.66	1		PCB194	ND	0.66	1	
PCB105	ND	0.66	1		PCB195	ND	0.66	1	
PCB110	ND	0.66	1		PCB200	ND	0.66	1	
PCB114	ND	0.66	1		PCB201	ND	0.66	1	
PCB118	ND	0.66	1		PCB203	ND	0.66	1	
PCB119	ND	0.66	1		PCB206	ND	0.66	1	
PCB123	ND	0.66	1		PCB209	ND	0.66	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	66	50-125		p-Terphenyl-d14	112	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-27**	**N/A**	**Solid**	**GC/MS HHH**	**12/12/11**	**12/15/11 12:34**	**111212L11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.50	1		PCB126	ND	0.50	1	
PCB008	ND	0.50	1		PCB128	ND	0.50	1	
PCB018	ND	0.50	1		PCB132	ND	0.50	1	
PCB028	ND	0.50	1		PCB138/158	ND	1.0	1	
PCB031	ND	0.50	1		PCB141	ND	0.50	1	
PCB033	ND	0.50	1		PCB149	ND	0.50	1	
PCB037	ND	0.50	1		PCB151	ND	0.50	1	
PCB044	ND	0.50	1		PCB153	ND	0.50	1	
PCB049	ND	0.50	1		PCB156	ND	0.50	1	
PCB052	ND	0.50	1		PCB157	ND	0.50	1	
PCB056	ND	0.50	1		PCB167	ND	0.50	1	
PCB060	ND	0.50	1		PCB168	ND	0.50	1	
PCB066	ND	0.50	1		PCB169	ND	0.50	1	
PCB070	ND	0.50	1		PCB170	ND	0.50	1	
PCB074	ND	0.50	1		PCB174	ND	0.50	1	
PCB077	ND	0.50	1		PCB177	ND	0.50	1	
PCB081	ND	0.50	1		PCB180	ND	0.50	1	
PCB087	ND	0.50	1		PCB183	ND	0.50	1	
PCB095	ND	0.50	1		PCB184	ND	0.50	1	
PCB097	ND	0.50	1		PCB187	ND	0.50	1	
PCB099	ND	0.50	1		PCB189	ND	0.50	1	
PCB101	ND	0.50	1		PCB194	ND	0.50	1	
PCB105	ND	0.50	1		PCB195	ND	0.50	1	
PCB110	ND	0.50	1		PCB200	ND	0.50	1	
PCB114	ND	0.50	1		PCB201	ND	0.50	1	
PCB118	ND	0.50	1		PCB203	ND	0.50	1	
PCB119	ND	0.50	1		PCB206	ND	0.50	1	
PCB123	ND	0.50	1		PCB209	ND	0.50	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	101	50-125		p-Terphenyl-d14	94	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-B**	**12/08/11 14:20**	**Sediment**	**GC/MS Y**	**12/13/11**	**12/15/11 19:13**	**111213L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.5	1		Tetrabutyltin	ND	4.5	1	
Monobutyltin	ND	4.5	1		Tributyltin	ND	4.5	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	108	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-B**	**12/08/11 14:30**	**Sediment**	**GC/MS Y**	**12/13/11**	**12/15/11 19:46**	**111213L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.0	1		Tetrabutyltin	ND	4.0	1	
Monobutyltin	ND	4.0	1		Tributyltin	ND	4.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	115	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-899**	**N/A**	**Solid**	**GC/MS Y**	**12/13/11**	**12/15/11 15:53**	**111213L13**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.0	1		Tetrabutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1		Tributyltin	ND	3.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	111	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-A**	**12/08/11 14:20**	**Sediment**	**ICP/MS 04**	**12/12/11**	**12/12/11 16:27**	**111212L04A**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	6.09	0.148	1		Nickel	9.93	0.148	1	
Cadmium	0.230	0.148	1		Selenium	0.422	0.148	1	
Chromium	19.1	0.148	1		Silver	ND	0.148	1	
Copper	26.4	0.148	1		Zinc	65.5	1.48	1	
Lead	11.0	0.148	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-A**	**12/08/11 14:30**	**Sediment**	**ICP/MS 04**	**12/12/11**	**12/12/11 16:30**	**111212L04A**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	3.75	0.132	1		Nickel	3.68	0.132	1	
Cadmium	0.132	0.132	1		Selenium	0.147	0.132	1	
Chromium	9.78	0.132	1		Silver	ND	0.132	1	
Copper	5.11	0.132	1		Zinc	29.9	1.32	1	
Lead	1.82	0.132	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**096-10-002-2,145**	**N/A**	**Solid**	**ICP/MS 04**	**12/12/11**	**12/12/11 15:53**	**111212L04A**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.100	1	
Chromium	ND	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	
Lead	ND	0.100	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Upper	**11-12-0636-1-A**	**12/08/11 14:20**	**Sediment**	**Mercury**	**12/12/11**	**12/12/11 12:48**	**111212L06A**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0297	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
EB-Comp-South-Lower	**11-12-0636-2-A**	**12/08/11 14:30**	**Sediment**	**Mercury**	**12/12/11**	**12/12/11 12:50**	**111212L06A**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0264	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-256**	**N/A**	**Solid**	**Mercury**	**12/12/11**	**12/12/11 12:36**	**111212L06A**

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0200	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3050B
Method: EPA 6020

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EB-Comp-South-Upper	**Sediment**	**ICP/MS 04**	**12/12/11**	**12/12/11**	**111212S04**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	100	102	80-120	2	0-20	
Cadmium	25.00	103	104	80-120	0	0-20	
Chromium	25.00	94	105	80-120	7	0-20	
Copper	25.00	92	97	80-120	3	0-20	
Lead	25.00	99	98	80-120	0	0-20	
Nickel	25.00	95	101	80-120	5	0-20	
Selenium	25.00	82	78	80-120	5	0-20	3
Silver	12.50	100	100	80-120	1	0-20	
Zinc	25.00	114	140	80-120	9	0-20	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 9060A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-1015-1	**Solid**	**TOC 5**	**12/28/11**	**12/28/11**	**B1228TOCS1**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	30000	94	101	75-125	6	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
EB-Comp-South-Upper	**Sediment**	**N/A**	**12/15/11**	**12/15/11**	**B1215SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	1.1	1.1	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
EB-Comp-South-Upper	**Sediment**	**N/A**	**12/08/11**	**12/08/11**	**B1208DSD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	NA	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
11-12-0898-4	**Sediment**	**N/A**	**12/15/11**	**12/15/11**	**B1215TSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	75.1	76.4	2	0-10	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
11-12-0898-4	**Sediment**	**N/A**	**12/15/11**	**12/15/11**	**B1215VSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Volatile	0.44	0.43	2	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: Extraction
Method: EPA 413.2M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EB-Comp-South-Lower	**Sediment**	**IR 2**	**12/16/11**	**12/16/11**	**111216S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Oil and Grease	100.0	102	98	55-135	5	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: Extraction
Method: EPA 418.1M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0378-34	**Solid**	**IR 2**	**12/16/11**	**12/16/11**	**111216S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	102	100	55-135	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0283-2	**Sediment**	**GCTQ 2**	**12/09/11**	**12/12/11**	**111209S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	50.00	86	77	25-200	11	0-25	
Cyfluthrin	50.00	169	157	25-200	8	0-25	
Cypermethrin	50.00	176	165	25-200	6	0-25	
Deltamethrin/Tralomethrin	50.00	147	134	25-200	9	0-25	
Fenvalerate/Esfenvalerate	50.00	162	150	25-200	7	0-25	
Fluvalinate	50.00	136	125	25-200	8	0-25	
Permethrin (cis/trans)	100.0	89	85	25-200	4	0-25	
Phenothrin	50.00	96	85	25-200	12	0-25	
Resmethrin/Bioresmethrin	50.00	70	62	25-200	12	0-25	
lambda-Cyhalothrin	50.00	152	133	25-200	13	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 7471A Total
Method: EPA 7471A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EB-Comp-South-Upper	**Sediment**	**Mercury**	**12/12/11**	**12/12/11**	**111212S06**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	111	107	76-136	4	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0662-3	**Solid**	**GC/MS Y**	**12/13/11**	**12/15/11**	**111213S13**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	135	128	50-130	5	0-20	3
Tributyltin	100.0	119	112	50-130	6	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8082

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0662-3	**Solid**	**GC 58**	**12/12/11**	**12/16/11**	**111212S09**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	334	326	50-135	3	0-25	3
Aroclor-1260	20.00	98	102	50-135	4	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0378-31	**Solid**	**GC/MS MM**	**12/12/11**	**12/14/11**	**111212S12**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	71	71	40-160	0	0-20	
2,4-Dichlorophenol	1.000	73	73	40-160	1	0-20	
2-Methylphenol	1.000	71	70	40-160	1	0-20	
2-Nitrophenol	1.000	69	68	40-160	1	0-20	
4-Chloro-3-Methylphenol	1.000	73	74	40-160	1	0-20	
Acenaphthene	1.000	55	55	40-106	0	0-20	
Benzo (a) Pyrene	1.000	73	72	17-163	1	0-20	
Chrysene	1.000	65	65	17-168	0	0-20	
Di-n-Butyl Phthalate	1.000	61	62	40-160	1	0-20	
Dimethyl Phthalate	1.000	70	71	40-160	1	0-20	
Fluoranthene	1.000	64	65	26-137	1	0-20	
Fluorene	1.000	60	60	59-121	1	0-20	
Naphthalene	1.000	93	93	21-133	0	0-20	
Phenanthrene	1.000	62	63	54-120	1	0-20	
Phenol	1.000	68	67	40-160	1	0-20	
Pyrene	1.000	61	60	6-156	0	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8081A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0283-1	**Sediment**	**GC 51**	**12/12/11**	**12/13/11**	**111212S08**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	69	61	50-135	12	0-25	
Alpha-BHC	5.000	67	65	50-135	3	0-25	
Beta-BHC	5.000	82	79	50-135	5	0-25	
Delta-BHC	5.000	65	54	50-135	17	0-25	
Gamma-BHC	5.000	69	66	50-135	5	0-25	
Dieldrin	5.000	68	58	50-135	17	0-25	
4,4'-DDD	5.000	69	58	50-135	18	0-25	
4,4'-DDE	5.000	83	70	50-135	17	0-25	
4,4'-DDT	5.000	84	77	50-135	10	0-25	
Endosulfan I	5.000	73	62	50-135	17	0-25	
Endosulfan II	5.000	75	63	50-135	17	0-25	
Endosulfan Sulfate	5.000	79	80	50-135	1	0-25	
Endrin	5.000	83	75	50-135	10	0-25	
Endrin Aldehyde	5.000	71	63	50-135	12	0-25	
Endrin Ketone	5.000	98	79	50-135	21	0-25	
Heptachlor	5.000	70	66	50-135	7	0-25	
Heptachlor Epoxide	5.000	64	59	50-135	8	0-25	
Methoxychlor	5.000	92	100	50-135	9	0-25	
Alpha Chlordane	5.000	75	63	50-135	18	0-25	
Gamma Chlordane	5.000	73	61	50-135	18	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/08/11
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0662-3	**Solid**	**GC/MS HHH**	**12/12/11**	**12/14/11**	**111212S11**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB018	25.00	93	93	50-125	0	0-30	
PCB028	25.00	108	109	50-125	1	0-30	
PCB044	25.00	109	110	50-125	1	0-30	
PCB052	25.00	104	106	50-125	2	0-30	
PCB066	25.00	115	117	50-125	2	0-30	
PCB077	25.00	116	119	50-125	2	0-30	
PCB101	25.00	112	115	50-125	3	0-30	
PCB105	25.00	112	114	50-125	2	0-30	
PCB118	25.00	122	123	50-125	1	0-30	
PCB126	25.00	107	110	50-125	3	0-30	
PCB128	25.00	106	108	50-125	2	0-30	
PCB153	25.00	107	109	50-125	1	0-30	
PCB170	25.00	109	110	50-125	1	0-30	
PCB180	25.00	107	110	50-125	3	0-30	
PCB187	25.00	104	106	50-125	2	0-30	
PCB206	25.00	109	109	50-125	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0636
Preparation: EPA 3050B
Method: EPA 6020

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-2,145	**Solid**	**ICP/MS 04**	**12/12/11**	**12/12/11**	**111212L04A**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	110	109	80-120	1	0-20	
Cadmium	25.00	106	104	80-120	2	0-20	
Chromium	25.00	101	99	80-120	1	0-20	
Copper	25.00	106	104	80-120	2	0-20	
Lead	25.00	100	100	80-120	0	0-20	
Nickel	25.00	105	104	80-120	1	0-20	
Selenium	25.00	104	102	80-120	2	0-20	
Silver	12.50	95	94	80-120	1	0-20	
Zinc	25.00	108	105	80-120	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0636
Preparation: N/A
Method: EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-672	**Solid**	**TOC 5**	**12/28/11**	**12/28/11**	**B1228TOCL1**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	6000	113	108	80-120	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0636
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-019-110	**Solid**	**IR 2**	**12/16/11**	**NONE**	**111216L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Oil and Grease	100.0	99.02	99	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0636
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,818	**Solid**	**IR 2**	**12/16/11**	**NONE**	**111216L02**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100.0	99.36	99	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0636
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-403-10	**Sediment**	**GCTQ 2**	**12/09/11**	**12/12/11**	**111209L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	50.00	94	110	25-200	16	0-25	
Cyfluthrin	50.00	109	112	25-200	3	0-25	
Cypermethrin	50.00	108	120	25-200	10	0-25	
Deltamethrin/Tralomethrin	50.00	92	94	25-200	1	0-25	
Fenvalerate/Esfenvalerate	50.00	101	101	25-200	0	0-25	
Fluvalinate	50.00	96	94	25-200	3	0-25	
Permethrin (cis/trans)	100.0	80	83	25-200	4	0-25	
Phenothrin	50.00	92	110	25-200	18	0-25	
Resmethrin/Bioresmethrin	50.00	83	104	25-200	23	0-25	
lambda-Cyhalothrin	50.00	107	104	25-200	3	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0636
La Jolla, CA 92037-1487		Preparation:	EPA 7471A Total
		Method:	EPA 7471A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-256	**Solid**	**Mercury**	**12/12/11**	**12/12/11**	**111212L06A**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	100	100	82-124	0	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0636
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-899	**Solid**	**GC/MS Y**	**12/13/11**	**12/15/11**	**111213L13**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	109	112	50-130	2	0-20	
Tributyltin	100.0	108	113	50-130	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0636
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-209	**Solid**	**GC 58**	**12/12/11**	**12/15/11**	**111212L09**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	121	122	50-135	0	0-25	
Aroclor-1260	20.00	109	110	50-135	1	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-413-353	**Solid**	**GC/MS MM**	**12/12/11**	**12/14/11**	**111212L12A**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	72	72	40-160	20-180	1	0-20	
2,4-Dichlorophenol	1.000	74	74	40-160	20-180	1	0-20	
2-Methylphenol	1.000	69	69	40-160	20-180	0	0-20	
2-Nitrophenol	1.000	65	66	40-160	20-180	1	0-20	
4-Chloro-3-Methylphenol	1.000	79	79	40-160	20-180	1	0-20	
Acenaphthene	1.000	70	71	48-108	38-118	1	0-11	
Benzo (a) Pyrene	1.000	77	77	17-163	0-187	0	0-20	
Chrysene	1.000	67	67	17-168	0-193	0	0-20	
Di-n-Butyl Phthalate	1.000	70	69	40-160	20-180	1	0-20	
Dimethyl Phthalate	1.000	74	74	40-160	20-180	0	0-20	
Fluoranthene	1.000	69	70	26-137	8-156	1	0-20	
Fluorene	1.000	74	75	59-121	49-131	1	0-20	
Naphthalene	1.000	70	71	21-133	2-152	1	0-20	
Phenanthrene	1.000	69	70	54-120	43-131	1	0-20	
Phenol	1.000	71	71	40-160	20-180	1	0-20	
Pyrene	1.000	65	65	28-106	15-119	0	0-16	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8081A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-858-121	**Solid**	**GC 51**	**12/12/11**	**12/13/11**	**111212L08**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	96	96	50-135	36-149	0	0-25	
Alpha-BHC	5.000	96	97	50-135	36-149	1	0-25	
Beta-BHC	5.000	91	91	50-135	36-149	0	0-25	
Delta-BHC	5.000	85	85	50-135	36-149	1	0-25	
Gamma-BHC	5.000	99	100	50-135	36-149	1	0-25	
Dieldrin	5.000	99	99	50-135	36-149	0	0-25	
4,4'-DDD	5.000	90	91	50-135	36-149	1	0-25	
4,4'-DDE	5.000	90	92	50-135	36-149	2	0-25	
4,4'-DDT	5.000	96	99	50-135	36-149	2	0-25	
Endosulfan I	5.000	105	104	50-135	36-149	1	0-25	
Endosulfan II	5.000	92	90	50-135	36-149	1	0-25	
Endosulfan Sulfate	5.000	98	99	50-135	36-149	1	0-25	
Endrin	5.000	99	100	50-135	36-149	1	0-25	
Endrin Aldehyde	5.000	98	97	50-135	36-149	1	0-25	
Endrin Ketone	5.000	105	103	50-135	36-149	1	0-25	
Heptachlor	5.000	95	96	50-135	36-149	1	0-25	
Heptachlor Epoxide	5.000	95	95	50-135	36-149	0	0-25	
Methoxychlor	5.000	92	95	50-135	36-149	3	0-25	
Alpha Chlordane	5.000	96	96	50-135	36-149	0	0-25	
Gamma Chlordane	5.000	100	100	50-135	36-149	0	0-25	

Total number of LCS compounds : 20
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0636
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-341-27	**Solid**	**GC/MS HHH**	**12/12/11**	**12/14/11**	**111212L11**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
PCB018	25.00	69	80	50-125	38-138	15	0-30	
PCB028	25.00	72	83	50-125	38-138	15	0-30	
PCB044	25.00	70	82	50-125	38-138	15	0-30	
PCB052	25.00	68	79	50-125	38-138	15	0-30	
PCB066	25.00	72	83	50-125	38-138	14	0-30	
PCB077	25.00	70	81	50-125	38-138	15	0-30	
PCB101	25.00	71	82	50-125	38-138	14	0-30	
PCB105	25.00	69	79	50-125	38-138	14	0-30	
PCB118	25.00	74	86	50-125	38-138	15	0-30	
PCB126	25.00	63	74	50-125	38-138	15	0-30	
PCB128	25.00	65	75	50-125	38-138	15	0-30	
PCB153	25.00	66	77	50-125	38-138	15	0-30	
PCB170	25.00	61	73	50-125	38-138	17	0-30	
PCB180	25.00	65	75	50-125	38-138	15	0-30	
PCB187	25.00	64	74	50-125	38-138	15	0-30	
PCB206	25.00	58	70	50-125	38-138	18	0-30	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 11-12-0636

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

Return to Contents

Calscience Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

☐ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

WO # / LAB USE ONLY
11-12-0636

Date 12/8/11
Page 1 of 1

LABORATORY CLIENT: URS Corporation
ADDRESS: 4225 Executive Square Suite 1600
CITY: La Jolla STATE: CA ZIP: 92037
TEL:
E-MAIL: David.Schug@URS.com, Derek.Rector@URS.com

CLIENT PROJECT NAME / NUMBER: 27661119.10000 San Elijo Lagoon
PROJECT CONTACT: Derek Rector / David Schug
P.O. NO.:
SAMPLER(S): (PRINT) Derek Rector

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ STANDARD

☐ COELT EDF
GLOBAL ID
LOG CODE

SPECIAL INSTRUCTIONS:
Please begin by AM of 12/9/11

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260) or ( )	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	San Elijo Lagoon Tests	V.K 1st Lab PM
1	EB-Comp-South-Upper	12/8/11	2:20	soil	4																			X	X
2	EB-Comp-South-Lower	12/8/11	2:30	soil	4																			X	X

Relinquished by: (Signature) Derek Rector	Received by: (Signature/Affiliation) CEL	Date: 12/8/11	Time: 17:16
Relinquished by: (Signature)	Received by: (Signature/Affiliation) Danyle CEL	Date: 12/8/11	Time: 19:20
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

06/01/10 Revision

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-12-0636

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: URS Corp DATE: 12/08/11

TEMPERATURE: Thermometer ID: SC3 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 1.9 °C - 0.3 °C (CF) = 1.6 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: VD

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: VD

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: WB

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s** ☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB ☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** WB

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** WC

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** WC

Return to Contents

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 11-12-0898

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: URS Corporation

Client Project Name: San Elijo Lagoon / 27661119.10000

Attention: David Schug
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Vikas Patel

Approved for release on 01/5/2012 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: San Elijo Lagoon / 27661119.10000
Work Order Number: 11-12-0898

1 Detections Summary 3

2 Client Sample Data 6
2.1 EPA 376.2 (M) Total Sulfide (Solid) 6
2.2 EPA 376.2 (M) Dissolved Sulfide (Solid) 7
2.3 EPA 9060A Total Organic Carbon (Solid) 8
2.4 EPA 160.4 (M) Volatile Solids (Solid) 9
2.5 SM 2540 B Total Solids (Solid) 10
2.6 EPA 413.2 (M) Oil and Grease (Solid) 11
2.7 EPA 418.1 (M) TRPH (Solid) 12
2.8 8270DM/TQ/EI Pyrethroids (Sediment) 13
2.9 EPA 8081A Organochlorine Pesticides (Solid) 15
2.10 EPA 8082 PCB Aroclors (Solid) 18
2.11 EPA 8270C SIM (Solid) 20
2.12 EPA 8270C SIM PCB Congeners (Solid) 25
2.13 Krone et al. Organotins (Solid) 30
2.14 EPA 6020 ICP/MS Metals (Solid) 32
2.15 EPA 7471A Mercury (Solid) 34

3 Quality Control Sample Data 35
3.1 MS/MSD and/or Duplicate 35
3.2 LCS/LCSD 51

4 Glossary of Terms and Qualifiers 62

5 Chain of Custody/Sample Receipt Form 63

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-12-0898
		Project name:	San Elijo Lagoon / 27661119.10000
		Received:	12/13/11 09:20
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
CB-Comp-D-Upper						
Arsenic	**2.54**		0.137	mg/kg	EPA 6020	EPA 3050B
Chromium	**11.8**		0.137	mg/kg	EPA 6020	EPA 3050B
Copper	**8.90**		0.137	mg/kg	EPA 6020	EPA 3050B
Lead	**3.24**		0.137	mg/kg	EPA 6020	EPA 3050B
Nickel	**5.03**		0.137	mg/kg	EPA 6020	EPA 3050B
Zinc	**29.8**		1.37	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**1.1**		0.14	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**4200**		680	mg/kg	EPA 9060A	N/A
Solids, Volatile	**1.2**		0.14	%	EPA 160.4M	N/A
Solids, Total	**73.0**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.081**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.036**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
PCB008	**16**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB018	**34**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB028	**24**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB052	**15**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB049	**9.7**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB044	**19**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB037	**8.3**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB074	**8.5**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB070	**18**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB066	**15**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB101	**5.5**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB099	**2.7**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB087	**2.4**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB110	**4.7**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB077	**1.8**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB118	**4.1**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB153	**0.77**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB105	**2.8**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB031	**28**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB033	**23**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB056	**8.3**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB060	**5.7**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB095	**4.5**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB097	**2.8**		0.68	ug/kg	EPA 8270C SIM PC	EPA 3545

Return to Contents

*MDL is shown.

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-12-0898
		Project name:	San Elijo Lagoon / 27661119.10000
		Received:	12/13/11 09:20
Attn:	David Schug		

DETECTIONS SUMMARY

Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
Client Sample ID						
CB-Comp-D-Lower						
Arsenic	**1.30**		0.130	mg/kg	EPA 6020	EPA 3050B
Chromium	**4.22**		0.130	mg/kg	EPA 6020	EPA 3050B
Copper	**3.19**		0.130	mg/kg	EPA 6020	EPA 3050B
Lead	**0.818**		0.130	mg/kg	EPA 6020	EPA 3050B
Nickel	**1.59**		0.130	mg/kg	EPA 6020	EPA 3050B
Zinc	**12.5**		1.30	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**3.0**		0.13	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**1000**		650	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.49**		0.13	%	EPA 160.4M	N/A
Solids, Total	**77.0**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.048**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.027**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
PCB008	**0.73**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB018	**2.0**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB028	**1.5**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB052	**0.99**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB044	**1.2**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB070	**1.1**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB066	**1.0**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB031	**1.5**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545
PCB033	**1.3**		0.65	ug/kg	EPA 8270C SIM PC	EPA 3545

Return to Contents

*MDL is shown.

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	11-12-0898
		Project name:	San Elijo Lagoon / 27661119.10000
		Received:	12/13/11 09:20
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
WB/CB-Comp-D-Upper						
Arsenic	**2.77**		0.147	mg/kg	EPA 6020	EPA 3050B
Cadmium	**0.167**		0.147	mg/kg	EPA 6020	EPA 3050B
Chromium	**9.45**		0.147	mg/kg	EPA 6020	EPA 3050B
Copper	**14.0**		0.147	mg/kg	EPA 6020	EPA 3050B
Lead	**10.2**		0.147	mg/kg	EPA 6020	EPA 3050B
Nickel	**4.18**		0.147	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.233**		0.147	mg/kg	EPA 6020	EPA 3050B
Zinc	**29.7**		1.47	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**2.3**		0.15	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**8500**		730	mg/kg	EPA 9060A	N/A
Solids, Volatile	**2.3**		0.15	%	EPA 160.4M	N/A
Solids, Total	**68.2**		0.100	%	SM 2540 B	N/A
2,4'-DDD	**3.0**		1.5	ug/kg	EPA 8081A	EPA 3545
4,4'-DDD	**3.9**		1.5	ug/kg	EPA 8081A	EPA 3545
4,4'-DDE	**5.7**		1.5	ug/kg	EPA 8081A	EPA 3545
Bis(2-Ethylhexyl) Phthalate	**0.054**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.021**		0.015	mg/kg	EPA 8270C SIM	EPA 3545
WB/CB-Comp-D-Lower						
Arsenic	**1.73**		0.133	mg/kg	EPA 6020	EPA 3050B
Chromium	**4.69**		0.133	mg/kg	EPA 6020	EPA 3050B
Copper	**1.90**		0.133	mg/kg	EPA 6020	EPA 3050B
Lead	**0.682**		0.133	mg/kg	EPA 6020	EPA 3050B
Nickel	**1.86**		0.133	mg/kg	EPA 6020	EPA 3050B
Zinc	**7.94**		1.33	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**0.27**		0.13	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**1100**		670	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.59**		0.13	%	EPA 160.4M	N/A
Solids, Total	**75.1**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.019**		0.013	mg/kg	EPA 8270C SIM	EPA 3545

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-D**	**12/12/11 14:40**	**Sediment**	**N/A**	**12/19/11**	**12/19/11 14:00**	**B1219SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	1.1	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-D**	**12/12/11 14:55**	**Sediment**	**N/A**	**12/19/11**	**12/19/11 14:00**	**B1219SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	3.0	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-D**	**12/12/11 15:10**	**Sediment**	**N/A**	**12/19/11**	**12/19/11 14:00**	**B1219SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	2.3	0.15	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**N/A**	**12/19/11**	**12/19/11 14:00**	**B1219SB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	0.27	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-10-035-32**	**N/A**	**Solid**	**N/A**	**12/19/11**	**12/19/11 14:00**	**B1219SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-C**	**12/12/11 14:40**	**Sediment**	**N/A**	**12/13/11**	**12/13/11 10:35**	**B1213DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-C**	**12/12/11 14:55**	**Sediment**	**N/A**	**12/13/11**	**12/13/11 10:35**	**B1213DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-C**	**12/12/11 15:10**	**Sediment**	**N/A**	**12/13/11**	**12/13/11 10:35**	**B1213DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.15	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-C**	**12/12/11 15:20**	**Sediment**	**N/A**	**12/13/11**	**12/13/11 10:35**	**B1213DSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-095-26**	**N/A**	**Solid**	**N/A**	**12/13/11**	**12/13/11 10:35**	**B1213DSB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-B**	**12/12/11 14:40**	**Sediment**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	4200	680	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-B**	**12/12/11 14:55**	**Sediment**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	1000	650	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-B**	**12/12/11 15:10**	**Sediment**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	8500	730	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-B**	**12/12/11 15:20**	**Sediment**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	1100	670	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-672**	**N/A**	**Solid**	**TOC 5**	**12/28/11**	**12/28/11 18:39**	**B1228TOCL1**

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	ND	500	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	1.2	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-A**	**12/12/11 14:55**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.49	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-A**	**12/12/11 15:10**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	2.3	0.15	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.59	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-020-1,005**	**N/A**	**Solid**	**N/A**	**12/15/11**	**12/15/11 20:00**	**B1215VSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	ND	0.10	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	73.0	0.100	1		%

CB-Comp-D-Lower	**11-12-0898-2-A**	**12/12/11 14:55**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	77.0	0.100	1		%

WB/CB-Comp-D-Upper	**11-12-0898-3-A**	**12/12/11 15:10**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	68.2	0.100	1		%

WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	75.1	0.100	1		%

Method Blank	**099-05-019-1,798**	**N/A**	**Solid**	**N/A**	**12/15/11**	**12/15/11 15:00**	**B1215TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	ND	0.100	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: Extraction
Method: EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 11:00**	**111216L01**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	14	1		mg/kg

CB-Comp-D-Lower	11-12-0898-2-A	12/12/11 14:55	Sediment	IR 2	12/16/11	12/16/11 11:00	111216L01

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	13	1		mg/kg

WB/CB-Comp-D-Upper	11-12-0898-3-A	12/12/11 15:10	Sediment	IR 2	12/16/11	12/16/11 11:00	111216L01

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	15	1		mg/kg

WB/CB-Comp-D-Lower	11-12-0898-4-A	12/12/11 15:20	Sediment	IR 2	12/16/11	12/16/11 11:00	111216L01

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	13	1		mg/kg

Method Blank	099-07-019-110	N/A	Solid	IR 2	12/16/11	12/16/11 11:00	111216L01

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: Extraction
Method: EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	14	1		mg/kg

CB-Comp-D-Lower	**11-12-0898-2-A**	**12/12/11 14:55**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

WB/CB-Comp-D-Upper	**11-12-0898-3-A**	**12/12/11 15:10**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	15	1		mg/kg

WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

Method Blank	**099-07-015-1,818**	**N/A**	**Solid**	**IR 2**	**12/16/11**	**12/16/11 13:00**	**111216L02**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**GCTQ 2**	**12/13/11**	**12/17/11 01:08**	**111213L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	6.8	10		Fluvalinate	ND	6.8	10	
Bifenthrin	ND	6.8	10		Permethrin (cis/trans)	ND	14	10	
Cyfluthrin	ND	6.8	10		Phenothrin	ND	6.8	10	
Cypermethrin	ND	6.8	10		Resmethrin/Bioresmethrin	ND	6.8	10	
Deltamethrin/Tralomethrin	ND	6.8	10		Tetramethrin	ND	6.8	10	
Fenpropathrin	ND	6.8	10		lambda-Cyhalothrin	ND	6.8	10	
Fenvalerate/Esfenvalerate	ND	6.8	10						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	116	25-200	

CB-Comp-D-Lower	11-12-0898-2-A	12/12/11 14:55	Sediment	GCTQ 2	12/13/11	12/17/11 01:45	111213L01

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	6.5	10		Fluvalinate	ND	6.5	10	
Bifenthrin	ND	6.5	10		Permethrin (cis/trans)	ND	13	10	
Cyfluthrin	ND	6.5	10		Phenothrin	ND	6.5	10	
Cypermethrin	ND	6.5	10		Resmethrin/Bioresmethrin	ND	6.5	10	
Deltamethrin/Tralomethrin	ND	6.5	10		Tetramethrin	ND	6.5	10	
Fenpropathrin	ND	6.5	10		lambda-Cyhalothrin	ND	6.5	10	
Fenvalerate/Esfenvalerate	ND	6.5	10						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	116	25-200	

WB/CB-Comp-D-Upper	11-12-0898-3-A	12/12/11 15:10	Sediment	GCTQ 2	12/13/11	12/17/11 02:22	111213L01

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	7.3	10		Fluvalinate	ND	7.3	10	
Bifenthrin	ND	7.3	10		Permethrin (cis/trans)	ND	15	10	
Cyfluthrin	ND	7.3	10		Phenothrin	ND	7.3	10	
Cypermethrin	ND	7.3	10		Resmethrin/Bioresmethrin	ND	7.3	10	
Deltamethrin/Tralomethrin	ND	7.3	10		Tetramethrin	ND	7.3	10	
Fenpropathrin	ND	7.3	10		lambda-Cyhalothrin	ND	7.3	10	
Fenvalerate/Esfenvalerate	ND	7.3	10						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	114	25-200	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**GCTQ 2**	**12/13/11**	**12/17/11 02:59**	**111213L01**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	6.7	10		Fluvalinate	ND	6.7	10	
Bifenthrin	ND	6.7	10		Permethrin (cis/trans)	ND	13	10	
Cyfluthrin	ND	6.7	10		Phenothrin	ND	6.7	10	
Cypermethrin	ND	6.7	10		Resmethrin/Bioresmethrin	ND	6.7	10	
Deltamethrin/Tralomethrin	ND	6.7	10		Tetramethrin	ND	6.7	10	
Fenpropathrin	ND	6.7	10		lambda-Cyhalothrin	ND	6.7	10	
Fenvalerate/Esfenvalerate	ND	6.7	10						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	117	25-200	

Method Blank	099-14-403-11	N/A	Sediment	GCTQ 2	12/13/11	12/17/11 00:31	111213L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	5.0	10		Fluvalinate	ND	5.0	10	
Bifenthrin	ND	5.0	10		Permethrin (cis/trans)	ND	10	10	
Cyfluthrin	ND	5.0	10		Phenothrin	ND	5.0	10	
Cypermethrin	ND	5.0	10		Resmethrin/Bioresmethrin	ND	5.0	10	
Deltamethrin/Tralomethrin	ND	5.0	10		Tetramethrin	ND	5.0	10	
Fenpropathrin	ND	5.0	10		lambda-Cyhalothrin	ND	5.0	10	
Fenvalerate/Esfenvalerate	ND	5.0	10						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	114	25-200	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	12/13/11
4225 Executive Square, Suite 1600		Work Order No:	11-12-0898
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-C**	**12/12/11 14:40**	**Sediment**	**GC 51**	**12/15/11**	**12/19/11 17:03**	**111215L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	34	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	27	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	ND	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	ND	1.4	1		Mirex	ND	6.8	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	85	50-130			Decachlorobiphenyl	70	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-C**	**12/12/11 14:55**	**Sediment**	**GC 51**	**12/15/11**	**12/19/11 17:17**	**111215L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	32	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	26	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.5	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	89	50-130			Decachlorobiphenyl	70	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	12/13/11
4225 Executive Square, Suite 1600		Work Order No:	11-12-0898
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-C**	**12/12/11 15:10**	**Sediment**	**GC 51**	**12/15/11**	**12/19/11 17:31**	**111215L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	37	1		Endosulfan I	ND	1.5	1	
Aldrin	ND	1.5	1		Endosulfan II	ND	1.5	1	
Alpha-BHC	ND	1.5	1		Endosulfan Sulfate	ND	1.5	1	
Beta-BHC	ND	1.5	1		Endrin	ND	1.5	1	
Delta-BHC	ND	1.5	1		Endrin Aldehyde	ND	1.5	1	
Gamma-BHC	ND	1.5	1		Endrin Ketone	ND	1.5	1	
Chlordane	ND	15	1		Heptachlor	ND	1.5	1	
Dieldrin	ND	1.5	1		Heptachlor Epoxide	ND	1.5	1	
Trans-nonachlor	ND	1.5	1		Methoxychlor	ND	1.5	1	
2,4'-DDD	3.0	1.5	1		Toxaphene	ND	29	1	
2,4'-DDE	ND	1.5	1		Alpha Chlordane	ND	1.5	1	
2,4'-DDT	ND	1.5	1		Gamma Chlordane	ND	1.5	1	
4,4'-DDD	3.9	1.5	1		Cis-nonachlor	ND	1.5	1	
4,4'-DDE	5.7	1.5	1		Mirex	ND	7.3	1	
4,4'-DDT	ND	1.5	1		Oxychlordane	ND	1.5	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	96	50-130			Decachlorobiphenyl	75	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-C**	**12/12/11 15:20**	**Sediment**	**GC 51**	**12/15/11**	**12/19/11 17:46**	**111215L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	33	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	27	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.7	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	93	50-130			Decachlorobiphenyl	74	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-122**	**N/A**	**Solid**	**GC 51**	**12/15/11**	**12/19/11 16:34**	**111215L11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	25	1		Endosulfan I	ND	1.0	1	
Aldrin	ND	1.0	1		Endosulfan II	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endosulfan Sulfate	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin	ND	1.0	1	
Delta-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Chlordane	ND	10	1		Heptachlor	ND	1.0	1	
Dieldrin	ND	1.0	1		Heptachlor Epoxide	ND	1.0	1	
Trans-nonachlor	ND	1.0	1		Methoxychlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDE	ND	1.0	1		Alpha Chlordane	ND	1.0	1	
2,4'-DDT	ND	1.0	1		Gamma Chlordane	ND	1.0	1	
4,4'-DDD	ND	1.0	1		Cis-nonachlor	ND	1.0	1	
4,4'-DDE	ND	1.0	1		Mirex	ND	5.0	1	
4,4'-DDT	ND	1.0	1		Oxychlordane	ND	1.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	98	50-130			Decachlorobiphenyl	85	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**GC 31**	**12/15/11**	**12/19/11 18:17**	**111215L12**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	ND	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	96	50-130			Decachlorobiphenyl	89	50-130		

CB-Comp-D-Lower	11-12-0898-2-A	12/12/11 14:55	Sediment	GC 31	12/15/11	12/19/11 18:36	111215L12

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	ND	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	92	50-130			Decachlorobiphenyl	87	50-130		

WB/CB-Comp-D-Upper	11-12-0898-3-A	12/12/11 15:10	Sediment	GC 31	12/15/11	12/19/11 18:55	111215L12

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	15	1		Aroclor-1248	ND	15	1	
Aroclor-1221	ND	15	1		Aroclor-1254	ND	15	1	
Aroclor-1232	ND	15	1		Aroclor-1260	ND	15	1	
Aroclor-1242	ND	15	1		Aroclor-1262	ND	15	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	91	50-130			Decachlorobiphenyl	89	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**GC 31**	**12/15/11**	**12/19/11 19:33**	**111215L12**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	ND	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	100	50-130			Decachlorobiphenyl	99	50-130		

Method Blank	099-12-565-210	N/A	Solid	GC 31	12/15/11	12/19/11 17:01	111215L12

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	10	1		Aroclor-1248	ND	10	1	
Aroclor-1221	ND	10	1		Aroclor-1254	ND	10	1	
Aroclor-1232	ND	10	1		Aroclor-1260	ND	10	1	
Aroclor-1242	ND	10	1		Aroclor-1262	ND	10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	94	50-130			Decachlorobiphenyl	88	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-C**	**12/12/11 14:40**	**Sediment**	**GC/MS MM**	**12/15/11**	**12/21/11 17:01**	**111215L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Perylene	ND	0.014	1		Bis(2-Ethylhexyl) Phthalate	0.081	0.014	1	
Biphenyl	ND	0.014	1		Butyl Benzyl Phthalate	0.036	0.014	1	
Benzo (e) Pyrene	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	ND	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	ND	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	ND	0.014	1	
2,4-Dinitrophenol	ND	0.68	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.68	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.68	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.68	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	74	32-143			2-Fluorobiphenyl	75	14-146		
2-Fluorophenol	90	15-138			Nitrobenzene-d5	79	18-162		
p-Terphenyl-d14	74	34-148			Phenol-d6	68	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-C**	**12/12/11 14:55**	**Sediment**	**GC/MS MM**	**12/15/11**	**12/21/11 15:17**	**111215L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Biphenyl	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.048	0.013	1	
Perylene	ND	0.013	1		Butyl Benzyl Phthalate	0.027	0.013	1	
Benzo (e) Pyrene	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	ND	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	ND	0.013	1	
2,4-Dinitrophenol	ND	0.65	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.65	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.65	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.65	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	68	32-143		2-Fluorobiphenyl	77	14-146	
2-Fluorophenol	66	15-138		Nitrobenzene-d5	68	18-162	
p-Terphenyl-d14	77	34-148		Phenol-d6	54	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-C**	**12/12/11 15:10**	**Sediment**	**GC/MS MM**	**12/15/11**	**12/21/11 17:26**	**111215L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.015	1		Benzo (k) Fluoranthene	ND	0.015	1	
Benzo (e) Pyrene	ND	0.015	1		Bis(2-Ethylhexyl) Phthalate	0.054	0.015	1	
Perylene	ND	0.015	1		Butyl Benzyl Phthalate	0.021	0.015	1	
Biphenyl	ND	0.015	1		Chrysene	ND	0.015	1	
1-Methylnaphthalene	ND	0.015	1		Di-n-Butyl Phthalate	ND	0.015	1	
2,4,5-Trichlorophenol	ND	0.015	1		Di-n-Octyl Phthalate	ND	0.015	1	
2,4,6-Trichlorophenol	ND	0.015	1		Dibenz (a,h) Anthracene	ND	0.015	1	
2,4-Dichlorophenol	ND	0.015	1		Diethyl Phthalate	ND	0.015	1	
2,4-Dimethylphenol	ND	0.015	1		Dimethyl Phthalate	ND	0.015	1	
2,4-Dinitrophenol	ND	0.73	1		Fluoranthene	ND	0.015	1	
2-Chlorophenol	ND	0.015	1		Fluorene	ND	0.015	1	
2-Methylnaphthalene	ND	0.015	1		Indeno (1,2,3-c,d) Pyrene	ND	0.015	1	
2-Methylphenol	ND	0.015	1		Naphthalene	ND	0.015	1	
2-Nitrophenol	ND	0.015	1		Pentachlorophenol	ND	0.73	1	
3/4-Methylphenol	ND	0.015	1		Phenanthrene	ND	0.015	1	
4,6-Dinitro-2-Methylphenol	ND	0.73	1		Phenol	ND	0.015	1	
4-Chloro-3-Methylphenol	ND	0.015	1		Pyrene	ND	0.015	1	
4-Nitrophenol	ND	0.73	1		1,6,7-Trimethylnaphthalene	ND	0.015	1	
Acenaphthene	ND	0.015	1		2,3,4,6-Tetrachlorophenol	ND	0.015	1	
Acenaphthylene	ND	0.015	1		2,6-Dichlorophenol	ND	0.015	1	
Anthracene	ND	0.015	1		1-Methylphenanthrene	ND	0.015	1	
Benzo (a) Anthracene	ND	0.015	1		Benzoic Acid	ND	0.15	1	
Benzo (a) Pyrene	ND	0.015	1		DCPA	ND	0.015	1	
Benzo (b) Fluoranthene	ND	0.015	1		Dibenzothiophene	ND	0.015	1	
Benzo (g,h,i) Perylene	ND	0.015	1		Perthane	ND	0.015	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	83	32-143			2-Fluorobiphenyl	81	14-146		
2-Fluorophenol	85	15-138			Nitrobenzene-d5	81	18-162		
p-Terphenyl-d14	80	34-148			Phenol-d6	64	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-C**	**12/12/11 15:20**	**Sediment**	**GC/MS MM**	**12/15/11**	**12/21/11 16:35**	**111215L13**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Benzo (e) Pyrene	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.019	0.013	1	
Perylene	ND	0.013	1		Butyl Benzyl Phthalate	ND	0.013	1	
Biphenyl	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	ND	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	ND	0.013	1	
2,4-Dinitrophenol	ND	0.67	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.67	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.67	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.67	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	57	32-143			2-Fluorobiphenyl	72	14-146		
2-Fluorophenol	64	15-138			Nitrobenzene-d5	69	18-162		
p-Terphenyl-d14	80	34-148			Phenol-d6	44	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-413-354**	**N/A**	**Solid**	**GC/MS MM**	**12/15/11**	**12/21/11 14:00**	**111215L13**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzo (e) Pyrene	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.010	1	
Perylene	ND	0.010	1		Bis(2-Ethylhexyl) Phthalate	ND	0.010	1	
Biphenyl	ND	0.010	1		Butyl Benzyl Phthalate	ND	0.010	1	
2,6-Dimethylnaphthalene	ND	0.010	1		Chrysene	ND	0.010	1	
1-Methylnaphthalene	ND	0.010	1		Di-n-Butyl Phthalate	ND	0.010	1	
2,4,5-Trichlorophenol	ND	0.010	1		Di-n-Octyl Phthalate	ND	0.010	1	
2,4,6-Trichlorophenol	ND	0.010	1		Dibenz (a,h) Anthracene	ND	0.010	1	
2,4-Dichlorophenol	ND	0.010	1		Diethyl Phthalate	ND	0.010	1	
2,4-Dimethylphenol	ND	0.010	1		Dimethyl Phthalate	ND	0.010	1	
2,4-Dinitrophenol	ND	0.50	1		Fluoranthene	ND	0.010	1	
2-Chlorophenol	ND	0.010	1		Fluorene	ND	0.010	1	
2-Methylnaphthalene	ND	0.010	1		Indeno (1,2,3-c,d) Pyrene	ND	0.010	1	
2-Methylphenol	ND	0.010	1		Naphthalene	ND	0.010	1	
2-Nitrophenol	ND	0.010	1		Pentachlorophenol	ND	0.50	1	
3/4-Methylphenol	ND	0.010	1		Phenanthrene	ND	0.010	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Phenol	ND	0.010	1	
4-Chloro-3-Methylphenol	ND	0.010	1		Pyrene	ND	0.010	1	
4-Nitrophenol	ND	0.50	1		1,6,7-Trimethylnaphthalene	ND	0.010	1	
Acenaphthene	ND	0.010	1		2,3,4,6-Tetrachlorophenol	ND	0.010	1	
Acenaphthylene	ND	0.010	1		2,6-Dichlorophenol	ND	0.010	1	
Anthracene	ND	0.010	1		1-Methylphenanthrene	ND	0.010	1	
Benzo (a) Anthracene	ND	0.010	1		Benzoic Acid	ND	0.10	1	
Benzo (a) Pyrene	ND	0.010	1		DCPA	ND	0.010	1	
Benzo (b) Fluoranthene	ND	0.010	1		Dibenzothiophene	ND	0.010	1	
Benzo (g,h,i) Perylene	ND	0.010	1		Perthane	ND	0.010	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,6-Tribromophenol	75	32-143			2-Fluorobiphenyl	86	14-146		
2-Fluorophenol	77	15-138			Nitrobenzene-d5	76	18-162		
p-Terphenyl-d14	76	34-148			Phenol-d6	72	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-C**	**12/12/11 14:40**	**Sediment**	**GC/MS HHH**	**12/15/11**	**12/20/11 13:58**	**111215L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.68	1		PCB126	ND	0.68	1	
PCB008	16	0.68	1		PCB128	ND	0.68	1	
PCB018	34	0.68	1		PCB132	ND	0.68	1	
PCB028	24	0.68	1		PCB138/158	ND	1.4	1	
PCB031	28	0.68	1		PCB141	ND	0.68	1	
PCB033	23	0.68	1		PCB149	ND	0.68	1	
PCB037	8.3	0.68	1		PCB151	ND	0.68	1	
PCB044	19	0.68	1		PCB153	0.77	0.68	1	
PCB049	9.7	0.68	1		PCB156	ND	0.68	1	
PCB052	15	0.68	1		PCB157	ND	0.68	1	
PCB056	8.3	0.68	1		PCB167	ND	0.68	1	
PCB060	5.7	0.68	1		PCB168	ND	0.68	1	
PCB066	15	0.68	1		PCB169	ND	0.68	1	
PCB070	18	0.68	1		PCB170	ND	0.68	1	
PCB074	8.5	0.68	1		PCB174	ND	0.68	1	
PCB077	1.8	0.68	1		PCB177	ND	0.68	1	
PCB081	ND	0.68	1		PCB180	ND	0.68	1	
PCB087	2.4	0.68	1		PCB183	ND	0.68	1	
PCB095	4.5	0.68	1		PCB184	ND	0.68	1	
PCB097	2.8	0.68	1		PCB187	ND	0.68	1	
PCB099	2.7	0.68	1		PCB189	ND	0.68	1	
PCB101	5.5	0.68	1		PCB194	ND	0.68	1	
PCB105	2.8	0.68	1		PCB195	ND	0.68	1	
PCB110	4.7	0.68	1		PCB200	ND	0.68	1	
PCB114	ND	0.68	1		PCB201	ND	0.68	1	
PCB118	4.1	0.68	1		PCB203	ND	0.68	1	
PCB119	ND	0.68	1		PCB206	ND	0.68	1	
PCB123	ND	0.68	1		PCB209	ND	0.68	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	74	50-125		p-Terphenyl-d14	87	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-C**	**12/12/11 14:55**	**Sediment**	**GC/MS HHH**	**12/15/11**	**12/22/11 03:22**	**111215L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.65	1		PCB126	ND	0.65	1	
PCB008	0.73	0.65	1		PCB128	ND	0.65	1	
PCB018	2.0	0.65	1		PCB132	ND	0.65	1	
PCB028	1.5	0.65	1		PCB138/158	ND	1.3	1	
PCB031	1.5	0.65	1		PCB141	ND	0.65	1	
PCB033	1.3	0.65	1		PCB149	ND	0.65	1	
PCB037	ND	0.65	1		PCB151	ND	0.65	1	
PCB044	1.2	0.65	1		PCB153	ND	0.65	1	
PCB049	ND	0.65	1		PCB156	ND	0.65	1	
PCB052	0.99	0.65	1		PCB157	ND	0.65	1	
PCB056	ND	0.65	1		PCB167	ND	0.65	1	
PCB060	ND	0.65	1		PCB168	ND	0.65	1	
PCB066	1.0	0.65	1		PCB169	ND	0.65	1	
PCB070	1.1	0.65	1		PCB170	ND	0.65	1	
PCB074	ND	0.65	1		PCB174	ND	0.65	1	
PCB077	ND	0.65	1		PCB177	ND	0.65	1	
PCB081	ND	0.65	1		PCB180	ND	0.65	1	
PCB087	ND	0.65	1		PCB183	ND	0.65	1	
PCB095	ND	0.65	1		PCB184	ND	0.65	1	
PCB097	ND	0.65	1		PCB187	ND	0.65	1	
PCB099	ND	0.65	1		PCB189	ND	0.65	1	
PCB101	ND	0.65	1		PCB194	ND	0.65	1	
PCB105	ND	0.65	1		PCB195	ND	0.65	1	
PCB110	ND	0.65	1		PCB200	ND	0.65	1	
PCB114	ND	0.65	1		PCB201	ND	0.65	1	
PCB118	ND	0.65	1		PCB203	ND	0.65	1	
PCB119	ND	0.65	1		PCB206	ND	0.65	1	
PCB123	ND	0.65	1		PCB209	ND	0.65	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	71	50-125		p-Terphenyl-d14	97	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-C**	**12/12/11 15:10**	**Sediment**	**GC/MS HHH**	**12/15/11**	**12/20/11 14:54**	**111215L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.73	1		PCB126	ND	0.73	1	
PCB008	ND	0.73	1		PCB128	ND	0.73	1	
PCB018	ND	0.73	1		PCB132	ND	0.73	1	
PCB028	ND	0.73	1		PCB138/158	ND	1.5	1	
PCB031	ND	0.73	1		PCB141	ND	0.73	1	
PCB033	ND	0.73	1		PCB149	ND	0.73	1	
PCB037	ND	0.73	1		PCB151	ND	0.73	1	
PCB044	ND	0.73	1		PCB153	ND	0.73	1	
PCB049	ND	0.73	1		PCB156	ND	0.73	1	
PCB052	ND	0.73	1		PCB157	ND	0.73	1	
PCB056	ND	0.73	1		PCB167	ND	0.73	1	
PCB060	ND	0.73	1		PCB168	ND	0.73	1	
PCB066	ND	0.73	1		PCB169	ND	0.73	1	
PCB070	ND	0.73	1		PCB170	ND	0.73	1	
PCB074	ND	0.73	1		PCB174	ND	0.73	1	
PCB077	ND	0.73	1		PCB177	ND	0.73	1	
PCB081	ND	0.73	1		PCB180	ND	0.73	1	
PCB087	ND	0.73	1		PCB183	ND	0.73	1	
PCB095	ND	0.73	1		PCB184	ND	0.73	1	
PCB097	ND	0.73	1		PCB187	ND	0.73	1	
PCB099	ND	0.73	1		PCB189	ND	0.73	1	
PCB101	ND	0.73	1		PCB194	ND	0.73	1	
PCB105	ND	0.73	1		PCB195	ND	0.73	1	
PCB110	ND	0.73	1		PCB200	ND	0.73	1	
PCB114	ND	0.73	1		PCB201	ND	0.73	1	
PCB118	ND	0.73	1		PCB203	ND	0.73	1	
PCB119	ND	0.73	1		PCB206	ND	0.73	1	
PCB123	ND	0.73	1		PCB209	ND	0.73	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2-Fluorobiphenyl	68	50-125			p-Terphenyl-d14	73	50-125		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-C**	**12/12/11 15:20**	**Sediment**	**GC/MS HHH**	**12/15/11**	**12/20/11 15:21**	**111215L16**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.67	1		PCB126	ND	0.67	1	
PCB008	ND	0.67	1		PCB128	ND	0.67	1	
PCB018	ND	0.67	1		PCB132	ND	0.67	1	
PCB028	ND	0.67	1		PCB138/158	ND	1.3	1	
PCB031	ND	0.67	1		PCB141	ND	0.67	1	
PCB033	ND	0.67	1		PCB149	ND	0.67	1	
PCB037	ND	0.67	1		PCB151	ND	0.67	1	
PCB044	ND	0.67	1		PCB153	ND	0.67	1	
PCB049	ND	0.67	1		PCB156	ND	0.67	1	
PCB052	ND	0.67	1		PCB157	ND	0.67	1	
PCB056	ND	0.67	1		PCB167	ND	0.67	1	
PCB060	ND	0.67	1		PCB168	ND	0.67	1	
PCB066	ND	0.67	1		PCB169	ND	0.67	1	
PCB070	ND	0.67	1		PCB170	ND	0.67	1	
PCB074	ND	0.67	1		PCB174	ND	0.67	1	
PCB077	ND	0.67	1		PCB177	ND	0.67	1	
PCB081	ND	0.67	1		PCB180	ND	0.67	1	
PCB087	ND	0.67	1		PCB183	ND	0.67	1	
PCB095	ND	0.67	1		PCB184	ND	0.67	1	
PCB097	ND	0.67	1		PCB187	ND	0.67	1	
PCB099	ND	0.67	1		PCB189	ND	0.67	1	
PCB101	ND	0.67	1		PCB194	ND	0.67	1	
PCB105	ND	0.67	1		PCB195	ND	0.67	1	
PCB110	ND	0.67	1		PCB200	ND	0.67	1	
PCB114	ND	0.67	1		PCB201	ND	0.67	1	
PCB118	ND	0.67	1		PCB203	ND	0.67	1	
PCB119	ND	0.67	1		PCB206	ND	0.67	1	
PCB123	ND	0.67	1		PCB209	ND	0.67	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	97	50-125		p-Terphenyl-d14	105	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-29**	**N/A**	**Solid**	**GC/MS HHH**	**12/15/11**	**12/19/11 20:35**	**111215L16**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.50	1		PCB126	ND	0.50	1	
PCB008	ND	0.50	1		PCB128	ND	0.50	1	
PCB018	ND	0.50	1		PCB132	ND	0.50	1	
PCB028	ND	0.50	1		PCB138/158	ND	1.0	1	
PCB031	ND	0.50	1		PCB141	ND	0.50	1	
PCB033	ND	0.50	1		PCB149	ND	0.50	1	
PCB037	ND	0.50	1		PCB151	ND	0.50	1	
PCB044	ND	0.50	1		PCB153	ND	0.50	1	
PCB049	ND	0.50	1		PCB156	ND	0.50	1	
PCB052	ND	0.50	1		PCB157	ND	0.50	1	
PCB056	ND	0.50	1		PCB167	ND	0.50	1	
PCB060	ND	0.50	1		PCB168	ND	0.50	1	
PCB066	ND	0.50	1		PCB169	ND	0.50	1	
PCB070	ND	0.50	1		PCB170	ND	0.50	1	
PCB074	ND	0.50	1		PCB174	ND	0.50	1	
PCB077	ND	0.50	1		PCB177	ND	0.50	1	
PCB081	ND	0.50	1		PCB180	ND	0.50	1	
PCB087	ND	0.50	1		PCB183	ND	0.50	1	
PCB095	ND	0.50	1		PCB184	ND	0.50	1	
PCB097	ND	0.50	1		PCB187	ND	0.50	1	
PCB099	ND	0.50	1		PCB189	ND	0.50	1	
PCB101	ND	0.50	1		PCB194	ND	0.50	1	
PCB105	ND	0.50	1		PCB195	ND	0.50	1	
PCB110	ND	0.50	1		PCB200	ND	0.50	1	
PCB114	ND	0.50	1		PCB201	ND	0.50	1	
PCB118	ND	0.50	1		PCB203	ND	0.50	1	
PCB119	ND	0.50	1		PCB206	ND	0.50	1	
PCB123	ND	0.50	1		PCB209	ND	0.50	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	88	50-125		p-Terphenyl-d14	92	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-C**	**12/12/11 14:40**	**Sediment**	**GC/MS Y**	**12/15/11**	**12/21/11 13:47**	**111215L17**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.1	1		Tetrabutyltin	ND	4.1	1	
Monobutyltin	ND	4.1	1		Tributyltin	ND	4.1	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	119	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-C**	**12/12/11 14:55**	**Sediment**	**GC/MS Y**	**12/15/11**	**12/21/11 14:21**	**111215L17**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.9	1		Tetrabutyltin	ND	3.9	1	
Monobutyltin	ND	3.9	1		Tributyltin	ND	3.9	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	74	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-C**	**12/12/11 15:10**	**Sediment**	**GC/MS Y**	**12/15/11**	**12/21/11 14:56**	**111215L17**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.4	1		Tetrabutyltin	ND	4.4	1	
Monobutyltin	ND	4.4	1		Tributyltin	ND	4.4	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	110	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-C**	**12/12/11 15:20**	**Sediment**	**GC/MS Y**	**12/15/11**	**12/21/11 15:30**	**111215L17**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.0	1		Tetrabutyltin	ND	4.0	1	
Monobutyltin	ND	4.0	1		Tributyltin	ND	4.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	123	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-900**	**N/A**	**Solid**	**GC/MS Y**	**12/15/11**	**12/21/11 12:38**	**111215L17**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.0	1		Tetrabutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1		Tributyltin	ND	3.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	125	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**ICP/MS 04**	**12/14/11**	**12/14/11 18:39**	**111214L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.54	0.137	1		Nickel	5.03	0.137	1	
Cadmium	ND	0.137	1		Selenium	ND	0.137	1	
Chromium	11.8	0.137	1		Silver	ND	0.137	1	
Copper	8.90	0.137	1		Zinc	29.8	1.37	1	
Lead	3.24	0.137	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-A**	**12/12/11 14:55**	**Sediment**	**ICP/MS 04**	**12/14/11**	**12/14/11 16:57**	**111214L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	1.30	0.130	1		Nickel	1.59	0.130	1	
Cadmium	ND	0.130	1		Selenium	ND	0.130	1	
Chromium	4.22	0.130	1		Silver	ND	0.130	1	
Copper	3.19	0.130	1		Zinc	12.5	1.30	1	
Lead	0.818	0.130	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-A**	**12/12/11 15:10**	**Sediment**	**ICP/MS 04**	**12/14/11**	**12/14/11 18:49**	**111214L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.77	0.147	1		Nickel	4.18	0.147	1	
Cadmium	0.167	0.147	1		Selenium	0.233	0.147	1	
Chromium	9.45	0.147	1		Silver	ND	0.147	1	
Copper	14.0	0.147	1		Zinc	29.7	1.47	1	
Lead	10.2	0.147	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**ICP/MS 04**	**12/14/11**	**12/14/11 18:52**	**111214L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	1.73	0.133	1		Nickel	1.86	0.133	1	
Cadmium	ND	0.133	1		Selenium	ND	0.133	1	
Chromium	4.69	0.133	1		Silver	ND	0.133	1	
Copper	1.90	0.133	1		Zinc	7.94	1.33	1	
Lead	0.682	0.133	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**096-10-002-2,146**	**N/A**	**Solid**	**ICP/MS 04**	**12/14/11**	**12/14/11 13:55**	**111214L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.100	1	
Chromium	ND	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	
Lead	ND	0.100	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Upper	**11-12-0898-1-A**	**12/12/11 14:40**	**Sediment**	**Mercury**	**12/14/11**	**12/14/11 11:55**	**111214L01A**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0275	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-D-Lower	**11-12-0898-2-A**	**12/12/11 14:55**	**Sediment**	**Mercury**	**12/14/11**	**12/14/11 11:58**	**111214L01A**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0260	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Upper	**11-12-0898-3-A**	**12/12/11 15:10**	**Sediment**	**Mercury**	**12/14/11**	**12/14/11 12:00**	**111214L01A**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0294	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB/CB-Comp-D-Lower	**11-12-0898-4-A**	**12/12/11 15:20**	**Sediment**	**Mercury**	**12/14/11**	**12/14/11 12:02**	**111214L01A**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0267	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-257**	**N/A**	**Solid**	**Mercury**	**12/14/11**	**12/14/11 11:26**	**111214L01A**

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0200	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3050B
Method: EPA 6020

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-D-Lower	**Sediment**	**ICP/MS 04**	**12/14/11**	**12/14/11**	**111214S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	105	100	80-120	4	0-20	
Cadmium	25.00	109	103	80-120	5	0-20	
Chromium	25.00	102	106	80-120	3	0-20	
Copper	25.00	116	124	80-120	6	0-20	3
Lead	25.00	98	94	80-120	4	0-20	
Nickel	25.00	113	118	80-120	4	0-20	
Selenium	25.00	103	96	80-120	6	0-20	
Silver	12.50	109	104	80-120	5	0-20	
Zinc	25.00	102	97	80-120	4	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - PDS / PDSD

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3050B
Method: EPA 6020

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS / PDSD Batch Number
CB-Comp-D-Lower	**Sediment**	**ICP/MS 04**	**12/14/11**	**12/14/11**	**111214S02**

Parameter	SPIKE ADDED	PDS %REC	PDSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	104	103	75-125	0	0-20	
Cadmium	25.00	105	104	75-125	1	0-20	
Chromium	25.00	102	96	75-125	5	0-20	
Copper	25.00	107	105	75-125	2	0-20	
Lead	25.00	96	95	75-125	1	0-20	
Nickel	25.00	113	110	75-125	3	0-20	
Selenium	25.00	102	121	75-125	17	0-20	
Silver	12.50	94	92	75-125	2	0-20	
Zinc	25.00	96	93	75-125	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 9060A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-1015-1	**Solid**	**TOC 5**	**12/28/11**	**12/28/11**	**B1228TOCS1**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	30000	94	101	75-125	6	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB/CB-Comp-D-Lower	**Sediment**	**N/A**	**12/19/11**	**12/19/11**	**B1219SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	0.20	0.20	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB/CB-Comp-D-Lower	**Sediment**	**N/A**	**12/13/11**	**12/13/11**	**B1213DSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	NA	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB/CB-Comp-D-Lower	**Sediment**	**N/A**	**12/15/11**	**12/15/11**	**B1215TSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	75.1	76.4	2	0-10	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB/CB-Comp-D-Lower	**Sediment**	**N/A**	**12/15/11**	**12/15/11**	**B1215VSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Volatile	0.44	0.43	2	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation	Date Received: 12/13/11
4225 Executive Square, Suite 1600	Work Order No: 11-12-0898
La Jolla, CA 92037-1487	Preparation: Extraction
	Method: EPA 413.2M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0636-2	**Sediment**	**IR 2**	**12/16/11**	**12/16/11**	**111216S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Oil and Grease	100.0	102	98	55-135	5	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: Extraction
Method: EPA 418.1M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0378-34	**Solid**	**IR 2**	**12/16/11**	**12/16/11**	**111216S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	102	100	55-135	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-D-Lower	**Sediment**	**GCTQ 2**	**12/13/11**	**12/17/11**	**111213S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	50.00	61	62	25-200	1	0-25	
Cyfluthrin	50.00	140	139	25-200	1	0-25	
Cypermethrin	50.00	131	126	25-200	4	0-25	
Deltamethrin/Tralomethrin	50.00	108	104	25-200	4	0-25	
Fenvalerate/Esfenvalerate	50.00	157	152	25-200	3	0-25	
Fluvalinate	50.00	99	97	25-200	1	0-25	
Permethrin (cis/trans)	200.0	49	48	25-200	2	0-25	
Phenothrin	50.00	86	91	25-200	5	0-25	
Resmethrin/Bioresmethrin	50.00	62	68	25-200	8	0-25	
lambda-Cyhalothrin	50.00	105	109	25-200	4	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 7471A Total
Method: EPA 7471A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-0804-1	**Solid**	**Mercury**	**12/14/11**	**12/14/11**	**111214S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	120	119	71-137	1	0-14	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-D-Lower	**Sediment**	**GC/MS Y**	**12/15/11**	**12/21/11**	**111215S17**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	134	132	50-130	1	0-20	3
Tributyltin	100.0	143	147	50-130	3	0-20	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8082

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-D-Lower	**Sediment**	**GC 31**	**12/15/11**	**12/20/11**	**111215S12**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	82	78	50-135	4	0-25	
Aroclor-1260	20.00	82	78	50-135	6	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-D-Lower	**Sediment**	**GC/MS MM**	**12/15/11**	**12/21/11**	**111215S13**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	85	78	40-160	8	0-20	
2,4-Dichlorophenol	1.000	87	78	40-160	11	0-20	
2-Methylphenol	1.000	76	72	40-160	6	0-20	
2-Nitrophenol	1.000	74	72	40-160	3	0-20	
4-Chloro-3-Methylphenol	1.000	87	76	40-160	14	0-20	
Acenaphthene	1.000	81	72	40-106	13	0-20	
Benzo (a) Pyrene	1.000	92	81	17-163	12	0-20	
Chrysene	1.000	82	72	17-168	13	0-20	
Di-n-Butyl Phthalate	1.000	85	76	40-160	11	0-20	
Dimethyl Phthalate	1.000	77	74	40-160	4	0-20	
Fluoranthene	1.000	85	74	26-137	13	0-20	
Fluorene	1.000	85	75	59-121	12	0-20	
Naphthalene	1.000	82	73	21-133	11	0-20	
Phenanthrene	1.000	83	73	54-120	12	0-20	
Phenol	1.000	71	68	40-160	4	0-20	
Pyrene	1.000	79	70	6-156	13	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8081A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-D-Lower	**Sediment**	**GC 51**	**12/15/11**	**12/20/11**	**111215S11**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	68	67	50-135	2	0-25	
Alpha-BHC	5.000	72	69	50-135	6	0-25	
Beta-BHC	5.000	91	92	50-135	1	0-25	
Delta-BHC	5.000	61	65	50-135	6	0-25	
Gamma-BHC	5.000	72	71	50-135	2	0-25	
Dieldrin	5.000	67	66	50-135	1	0-25	
4,4'-DDD	5.000	68	73	50-135	6	0-25	
4,4'-DDE	5.000	79	75	50-135	5	0-25	
4,4'-DDT	5.000	70	76	50-135	9	0-25	
Endosulfan I	5.000	65	63	50-135	3	0-25	
Endosulfan II	5.000	70	69	50-135	1	0-25	
Endosulfan Sulfate	5.000	93	74	50-135	23	0-25	
Endrin	5.000	86	85	50-135	1	0-25	
Endrin Aldehyde	5.000	71	69	50-135	3	0-25	
Endrin Ketone	5.000	84	76	50-135	10	0-25	
Heptachlor	5.000	74	72	50-135	3	0-25	
Heptachlor Epoxide	5.000	70	63	50-135	11	0-25	
Methoxychlor	5.000	68	104	50-135	42	0-25	4
Alpha Chlordane	5.000	71	67	50-135	5	0-25	
Gamma Chlordane	5.000	57	68	50-135	17	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 12/13/11
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-D-Lower	**Sediment**	**GC/MS HHH**	**12/15/11**	**12/20/11**	**111215S16**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB018	25.00	113	113	50-125	1	0-30	
PCB028	25.00	117	117	50-125	0	0-30	
PCB044	25.00	116	115	50-125	0	0-30	
PCB052	25.00	112	112	50-125	0	0-30	
PCB066	25.00	117	116	50-125	1	0-30	
PCB077	25.00	117	116	50-125	1	0-30	
PCB101	25.00	119	118	50-125	1	0-30	
PCB105	25.00	115	115	50-125	0	0-30	
PCB118	25.00	123	123	50-125	0	0-30	
PCB126	25.00	106	107	50-125	0	0-30	
PCB128	25.00	110	110	50-125	0	0-30	
PCB153	25.00	113	112	50-125	1	0-30	
PCB170	25.00	116	117	50-125	0	0-30	
PCB180	25.00	112	112	50-125	0	0-30	
PCB187	25.00	112	111	50-125	1	0-30	
PCB206	25.00	117	119	50-125	1	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0898
Preparation: EPA 3050B
Method: EPA 6020

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-2,146	**Solid**	**ICP/MS 04**	**12/14/11**	**12/14/11**	**111214L02**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	115	105	80-120	9	0-20	
Cadmium	25.00	105	103	80-120	2	0-20	
Chromium	25.00	99	98	80-120	1	0-20	
Copper	25.00	112	112	80-120	1	0-20	
Lead	25.00	93	95	80-120	1	0-20	
Nickel	25.00	112	112	80-120	1	0-20	
Selenium	25.00	109	98	80-120	10	0-20	
Silver	12.50	93	92	80-120	1	0-20	
Zinc	25.00	103	103	80-120	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0898
La Jolla, CA 92037-1487		Preparation:	N/A
		Method:	EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-672	**Solid**	**TOC 5**	**12/28/11**	**12/28/11**	**B1228TOCL1**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	6000	113	108	80-120	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0898
Preparation: Extraction
Method: EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-019-110	**Solid**	**IR 2**	**12/16/11**	**NONE**	**111216L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Oil and Grease	100.0	99.02	99	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0898
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,818	**Solid**	**IR 2**	**12/16/11**	**NONE**	**111216L02**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100.0	99.36	99	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0898
Preparation: EPA 3540C
Method: Pyrethroids by 8270DM/TQ/EI

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-403-11	**Sediment**	**GCTQ 2**	**12/13/11**	**12/16/11**	**111213L01**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Bifenthrin	50.00	62	73	25-200	16	0-25	
Cyfluthrin	50.00	104	109	25-200	4	0-25	
Cypermethrin	50.00	97	98	25-200	1	0-25	
Deltamethrin/Tralomethrin	50.00	79	81	25-200	2	0-25	
Fenvalerate/Esfenvalerate	50.00	110	110	25-200	0	0-25	
Fluvalinate	50.00	75	82	25-200	9	0-25	
Permethrin (cis/trans)	200.0	43	47	25-200	9	0-25	
Phenothrin	50.00	85	97	25-200	13	0-25	
Resmethrin/Bioresmethrin	50.00	77	86	25-200	11	0-25	
lambda-Cyhalothrin	50.00	87	91	25-200	5	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0898
La Jolla, CA 92037-1487		Preparation:	EPA 7471A Total
		Method:	EPA 7471A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-257	**Solid**	**Mercury**	**12/14/11**	**12/14/11**	**111214L01A**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	97	99	82-124	2	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0898
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-900	**Solid**	**GC/MS Y**	**12/15/11**	**12/21/11**	**111215L17**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	116	122	50-130	5	0-20	
Tributyltin	100.0	85	102	50-130	18	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	11-12-0898
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-210	**Solid**	**GC 31**	**12/15/11**	**12/20/11**	**111215L12**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	85	84	50-135	2	0-25	
Aroclor-1260	20.00	93	89	50-135	4	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-413-354	**Solid**	**GC/MS MM**	**12/15/11**	**12/21/11**	**111215L13**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	82	81	40-160	20-180	1	0-20	
2,4-Dichlorophenol	1.000	88	87	40-160	20-180	2	0-20	
2-Methylphenol	1.000	79	81	40-160	20-180	2	0-20	
2-Nitrophenol	1.000	81	80	40-160	20-180	2	0-20	
4-Chloro-3-Methylphenol	1.000	85	84	40-160	20-180	2	0-20	
Acenaphthene	1.000	77	77	48-108	38-118	0	0-11	
Benzo (a) Pyrene	1.000	86	86	17-163	0-187	0	0-20	
Chrysene	1.000	76	76	17-168	0-193	1	0-20	
Di-n-Butyl Phthalate	1.000	78	79	40-160	20-180	1	0-20	
Dimethyl Phthalate	1.000	80	79	40-160	20-180	0	0-20	
Fluoranthene	1.000	77	76	26-137	8-156	1	0-20	
Fluorene	1.000	81	80	59-121	49-131	2	0-20	
Naphthalene	1.000	83	82	21-133	2-152	1	0-20	
Phenanthrene	1.000	78	77	54-120	43-131	1	0-20	
Phenol	1.000	77	79	40-160	20-180	2	0-20	
Pyrene	1.000	71	71	28-106	15-119	0	0-16	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8081A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-858-122	**Solid**	**GC 51**	**12/15/11**	**12/19/11**	**111215L11**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	81	84	50-135	36-149	4	0-25	
Alpha-BHC	5.000	81	86	50-135	36-149	6	0-25	
Beta-BHC	5.000	78	84	50-135	36-149	7	0-25	
Delta-BHC	5.000	75	79	50-135	36-149	6	0-25	
Gamma-BHC	5.000	82	86	50-135	36-149	5	0-25	
Dieldrin	5.000	81	85	50-135	36-149	5	0-25	
4,4'-DDD	5.000	75	78	50-135	36-149	4	0-25	
4,4'-DDE	5.000	82	86	50-135	36-149	5	0-25	
4,4'-DDT	5.000	90	96	50-135	36-149	6	0-25	
Endosulfan I	5.000	78	81	50-135	36-149	4	0-25	
Endosulfan II	5.000	77	81	50-135	36-149	4	0-25	
Endosulfan Sulfate	5.000	78	82	50-135	36-149	5	0-25	
Endrin	5.000	86	91	50-135	36-149	6	0-25	
Endrin Aldehyde	5.000	74	77	50-135	36-149	4	0-25	
Endrin Ketone	5.000	88	92	50-135	36-149	4	0-25	
Heptachlor	5.000	80	85	50-135	36-149	6	0-25	
Heptachlor Epoxide	5.000	67	70	50-135	36-149	4	0-25	
Methoxychlor	5.000	82	87	50-135	36-149	5	0-25	
Alpha Chlordane	5.000	82	85	50-135	36-149	4	0-25	
Gamma Chlordane	5.000	82	86	50-135	36-149	4	0-25	

Total number of LCS compounds : 20
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 11-12-0898
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-341-29	**Solid**	**GC/MS HHH**	**12/15/11**	**12/20/11**	**111215L16**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
PCB018	25.00	102	97	50-125	38-138	5	0-30	
PCB028	25.00	105	99	50-125	38-138	6	0-30	
PCB044	25.00	102	97	50-125	38-138	5	0-30	
PCB052	25.00	98	94	50-125	38-138	4	0-30	
PCB066	25.00	100	99	50-125	38-138	2	0-30	
PCB077	25.00	97	96	50-125	38-138	2	0-30	
PCB101	25.00	100	98	50-125	38-138	2	0-30	
PCB105	25.00	96	95	50-125	38-138	1	0-30	
PCB118	25.00	104	103	50-125	38-138	1	0-30	
PCB126	25.00	88	88	50-125	38-138	1	0-30	
PCB128	25.00	93	93	50-125	38-138	1	0-30	
PCB153	25.00	94	93	50-125	38-138	1	0-30	
PCB170	25.00	103	94	50-125	38-138	10	0-30	
PCB180	25.00	94	94	50-125	38-138	0	0-30	
PCB187	25.00	93	94	50-125	38-138	1	0-30	
PCB206	25.00	104	99	50-125	38-138	5	0-30	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 11-12-0898

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

Return to Contents

Calscience Environmental Laboratories, Inc.

☐ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

CHAIN OF CUSTODY RECORD

Date 12/12/11

Page 1 of 1

WO # / LAB USE ONLY: 11-12-0898

LABORATORY CLIENT: URS Corporation

ADDRESS: 4225 Executive Square Suite 1600

CITY: La Jolla STATE: CA ZIP: 92037

TEL: 619.888.0487 E-MAIL: David.Schug@urs.com / Derek.Rector@URS.com

CLIENT PROJECT NAME / NUMBER: San Elijo Lagoon / 27661119.10000

P.O. NO.:

PROJECT CONTACT: Derek Rector / David Schug

SAMPLER(S): (PRINT) Derek Rector

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

☐ COELT EDF GLOBAL ID LOG CODE

SPECIAL INSTRUCTIONS: Please begin ASAP - Samples represent composites of older samples from ~6 days ago.

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH (___)	BTEX / MTBE (8260) or (___)	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	San Elijo Lagoon - Vikas	Patel is the Calscience Pm.	
1	CB-Comp-D-upper	12/12/11	2:40 JR	Soil	4																			X		
2	CB-Comp-D-Lower	12/12/11	2:55	Soil	4																			X		
3	WB/CB-Comp-D-upper	12/12/11	3:10	Soil	4																			X		
4	WB/CB-Comp-D-Lower	12/12/11	3:20	Soil	4																			X		

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Derek Rector	[signature]	12/13/11	0920
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

06/01/10 Revision

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-12-0898 (8) 12/13/11 PS

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: URS CORP DATE: 12/13/11

TEMPERATURE: Thermometer ID: SC3 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 3.2 °C - 0.3 °C (CF) = 2.9 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: PS

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: PS

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: PS

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** PS

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** D.C

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:**_____

Return to Contents

Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 12-02-0901

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: URS Corporation

Client Project Name: San Elijo Lagoon / 27661119.10000

Attention: David Schug
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Vikas Patel

Approved for release on 03/6/2012 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: San Elijo Lagoon / 27661119.10000
Work Order Number: 12-02-0901

1 Detections Summary 3

2 Client Sample Data 5
2.1 EPA 376.2 (M) Total Sulfide (Solid) 5
2.2 EPA 376.2 (M) Dissolved Sulfide (Solid) 6
2.3 EPA 9060A Total Organic Carbon (Solid) 7
2.4 EPA 160.4 (M) Volatile Solids (Solid) 8
2.5 SM 2540 B Total Solids (Solid) 9
2.6 EPA 413.2 (M) Oil and Grease (Solid) 10
2.7 EPA 418.1 (M) TRPH (Solid) 11
2.8 Pyrethroids by EPA 8270D (M)/TQ/EI (Sediment) 12
2.9 EPA 8081A Organochlorine Pesticides (Solid) 14
2.10 EPA 8082 PCB Aroclors (Solid) 17
2.11 EPA 8270C SIM (Solid) 19
2.12 EPA 8270C SIM PCB Congeners (Solid) 24
2.13 Krone et al. Organotins (Solid) 29
2.14 EPA 6020 ICP/MS Metals (Solid) 31
2.15 EPA 7471A Mercury (Solid) 33

3 Quality Control Sample Data 34
3.1 MS/MSD and/or Duplicate 34
3.2 LCS/LCSD 49

4 Glossary of Terms and Qualifiers 60

5 Chain of Custody/Sample Receipt Form 61

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	12-02-0901
		Project Name:	San Elijo Lagoon / 27661119.10000
		Received:	02/14/12 19:15
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
CB-Comp-SB-Upper						
Arsenic	**2.51**		0.142	mg/kg	EPA 6020	EPA 3050B
Chromium	**16.4**		0.142	mg/kg	EPA 6020	EPA 3050B
Copper	**16.5**		0.142	mg/kg	EPA 6020	EPA 3050B
Lead	**6.56**		0.142	mg/kg	EPA 6020	EPA 3050B
Nickel	**6.45**		0.142	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.393**		0.142	mg/kg	EPA 6020	EPA 3050B
Zinc	**47.6**		1.42	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**11**		0.43	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**6400**		710	mg/kg	EPA 9060A	N/A
Solids, Volatile	**10**		0.14	%	EPA 160.4M	N/A
Solids, Total	**70.2**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.031**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Butyl Benzyl Phthalate	**0.017**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.071**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
CB-Comp-SB-Lower						
Arsenic	**1.58**		0.129	mg/kg	EPA 6020	EPA 3050B
Chromium	**6.76**		0.129	mg/kg	EPA 6020	EPA 3050B
Copper	**4.89**		0.129	mg/kg	EPA 6020	EPA 3050B
Lead	**1.67**		0.129	mg/kg	EPA 6020	EPA 3050B
Nickel	**2.63**		0.129	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.244**		0.129	mg/kg	EPA 6020	EPA 3050B
Zinc	**14.9**		1.29	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**9.3**		0.39	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**1400**		640	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.82**		0.13	%	EPA 160.4M	N/A
Solids, Total	**77.7**		0.100	%	SM 2540 B	N/A
Oil and Grease	**19**		13	mg/kg	EPA 413.2M	Extraction
Bis(2-Ethylhexyl) Phthalate	**0.013**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.062**		0.013	mg/kg	EPA 8270C SIM	EPA 3545

Return to Contents

*MDL is shown.

Calscience Environmental Laboratories, Inc.

Client:	URS Corporation 4225 Executive Square, Suite 1600 La Jolla, CA 92037-1487	Work Order:	12-02-0901
		Project Name:	San Elijo Lagoon / 27661119.10000
		Received:	02/14/12 19:15
Attn:	David Schug		

DETECTIONS SUMMARY

Client Sample ID Analyte	Result	Qualifiers	Reporting Limit	Units	Method	Extraction
WB-Comp-SB-Upper						
Arsenic	**2.42**		0.142	mg/kg	EPA 6020	EPA 3050B
Chromium	**11.6**		0.142	mg/kg	EPA 6020	EPA 3050B
Copper	**10.6**		0.142	mg/kg	EPA 6020	EPA 3050B
Lead	**8.90**		0.142	mg/kg	EPA 6020	EPA 3050B
Nickel	**4.35**		0.142	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.322**		0.142	mg/kg	EPA 6020	EPA 3050B
Zinc	**28.8**		1.42	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**18**		0.71	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**7700**		710	mg/kg	EPA 9060A	N/A
Solids, Volatile	**7.8**		0.14	%	EPA 160.4M	N/A
Solids, Total	**70.2**		0.100	%	SM 2540 B	N/A
4,4'-DDE	**2.2**		1.4	ug/kg	EPA 8081A	EPA 3545
Dimethyl Phthalate	**0.15**		0.014	mg/kg	EPA 8270C SIM	EPA 3545
WB-Comp-SB-Lower						
Arsenic	**2.17**		0.129	mg/kg	EPA 6020	EPA 3050B
Chromium	**8.04**		0.129	mg/kg	EPA 6020	EPA 3050B
Copper	**5.14**		0.129	mg/kg	EPA 6020	EPA 3050B
Lead	**4.30**		0.129	mg/kg	EPA 6020	EPA 3050B
Nickel	**2.98**		0.129	mg/kg	EPA 6020	EPA 3050B
Selenium	**0.186**		0.129	mg/kg	EPA 6020	EPA 3050B
Zinc	**17.1**		1.29	mg/kg	EPA 6020	EPA 3050B
Sulfide, Total	**8.3**		0.26	mg/kg	EPA 376.2M	N/A
Carbon, Total Organic	**2200**		650	mg/kg	EPA 9060A	N/A
Solids, Volatile	**0.89**		0.13	%	EPA 160.4M	N/A
Solids, Total	**77.3**		0.100	%	SM 2540 B	N/A
Bis(2-Ethylhexyl) Phthalate	**0.019**		0.013	mg/kg	EPA 8270C SIM	EPA 3545
Dimethyl Phthalate	**0.085**		0.013	mg/kg	EPA 8270C SIM	EPA 3545

Subcontracted analyses, if any, are not included in this summary.

*MDL is shown.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-D**	**02/14/12 10:00**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 12:30**	**C0218SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	11	0.43	3		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-D**	**02/14/12 10:10**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 12:30**	**C0218SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	9.3	0.39	3		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-D**	**02/14/12 10:20**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 12:30**	**C0218SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	18	0.71	5		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-D**	**02/14/12 10:30**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 12:30**	**C0218SB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	8.3	0.26	2		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-10-035-35**	**N/A**	**Solid**	**N/A**	**02/18/12**	**02/18/12 12:30**	**C0218SB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**N/A**	**02/15/12**	**02/15/12 09:50**	**C0215DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**N/A**	**02/15/12**	**02/15/12 09:50**	**C0215DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**N/A**	**02/15/12**	**02/15/12 09:50**	**C0215DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**N/A**	**02/15/12**	**02/15/12 09:50**	**C0215DSB2**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-095-30**	**N/A**	**Solid**	**N/A**	**02/15/12**	**02/15/12 09:50**	**C0215DSB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Dissolved	ND	0.10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-B**	**02/14/12 10:00**	**Sediment**	**TOC 5**	**02/16/12**	**02/17/12 12:58**	**C0216TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	6400	710	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-C**	**02/14/12 10:10**	**Sediment**	**TOC 5**	**02/16/12**	**02/17/12 12:58**	**C0216TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	1400	640	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-B**	**02/14/12 10:20**	**Sediment**	**TOC 5**	**02/16/12**	**02/17/12 12:58**	**C0216TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	7700	710	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-C**	**02/14/12 10:30**	**Sediment**	**TOC 5**	**02/16/12**	**02/17/12 12:58**	**C0216TOCL1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	2200	650	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-688**	**N/A**	**Solid**	**TOC 5**	**02/16/12**	**02/17/12 12:58**	**C0216TOCL1**

Parameter	Result	RL	DF	Qual	Units
Carbon, Total Organic	ND	500	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 18:00**	**C0218VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	10	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 18:00**	**C0218VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.82	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 18:00**	**C0218VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	7.8	0.14	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 18:00**	**C0218VSB1**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	0.89	0.13	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-020-1,006**	**N/A**	**Solid**	**N/A**	**02/18/12**	**02/18/12 18:00**	**C0218VSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Volatile	ND	0.10	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 14:00**	**C0218TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	70.2	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 14:00**	**C0218TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	77.7	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 14:00**	**C0218TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	70.2	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**N/A**	**02/18/12**	**02/18/12 14:00**	**C0218TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	77.3	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-1,851**	**N/A**	**Solid**	**N/A**	**02/18/12**	**02/18/12 14:00**	**C0218TSB1**

Parameter	Result	RL	DF	Qual	Units
Solids, Total	ND	0.100	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: Extraction
Method: EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-B**	**02/14/12 10:00**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 13:45**	**120220L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-B**	**02/14/12 10:10**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 13:45**	**120220L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	19	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-B**	**02/14/12 10:20**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 13:45**	**120220L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-C**	**02/14/12 10:30**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 13:45**	**120220L03**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-019-114**	**N/A**	**Solid**	**IR 2**	**02/20/12**	**02/20/12 13:45**	**120220L03**

Parameter	Result	RL	DF	Qual	Units
Oil and Grease	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: Extraction
Method: EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-B**	**02/14/12 10:00**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 16:20**	**120220L04**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-B**	**02/14/12 10:10**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 16:20**	**120220L04**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-B**	**02/14/12 10:20**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 16:20**	**120220L04**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	14	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-C**	**02/14/12 10:30**	**Sediment**	**IR 2**	**02/20/12**	**02/20/12 16:20**	**120220L04**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	13	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1,828**	**N/A**	**Solid**	**IR 2**	**02/20/12**	**02/20/12 16:20**	**120220L04**

Parameter	Result	RL	DF	Qual	Units
TRPH	ND	10	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-C**	**02/14/12 10:00**	**Sediment**	**GCTQ 2**	**02/17/12**	**02/22/12 19:53**	**120217L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.71	1		Fluvalinate	ND	0.71	1	
Bifenthrin	ND	0.71	1		Permethrin (cis/trans)	ND	1.4	1	
Cyfluthrin	ND	0.71	1		Phenothrin	ND	0.71	1	
Cypermethrin	ND	0.71	1		Resmethrin/Bioresmethrin	ND	0.71	1	
Deltamethrin/Tralomethrin	ND	0.71	1		Tetramethrin	ND	0.71	1	
Fenpropathrin	ND	0.71	1		lambda-Cyhalothrin	ND	0.71	1	
Fenvalerate/Esfenvalerate	ND	0.71	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	103	25-200	

CB-Comp-SB-Lower	12-02-0901-2-C	02/14/12 10:10	Sediment	GCTQ 2	02/17/12	02/22/12 20:29	120217L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.64	1		Fluvalinate	ND	0.64	1	
Bifenthrin	ND	0.64	1		Permethrin (cis/trans)	ND	1.3	1	
Cyfluthrin	ND	0.64	1		Phenothrin	ND	0.64	1	
Cypermethrin	ND	0.64	1		Resmethrin/Bioresmethrin	ND	0.64	1	
Deltamethrin/Tralomethrin	ND	0.64	1		Tetramethrin	ND	0.64	1	
Fenpropathrin	ND	0.64	1		lambda-Cyhalothrin	ND	0.64	1	
Fenvalerate/Esfenvalerate	ND	0.64	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	109	25-200	

WB-Comp-SB-Upper	12-02-0901-3-C	02/14/12 10:20	Sediment	GCTQ 2	02/17/12	02/22/12 21:06	120217L02

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.71	1		Fluvalinate	ND	0.71	1	
Bifenthrin	ND	0.71	1		Permethrin (cis/trans)	ND	1.4	1	
Cyfluthrin	ND	0.71	1		Phenothrin	ND	0.71	1	
Cypermethrin	ND	0.71	1		Resmethrin/Bioresmethrin	ND	0.71	1	
Deltamethrin/Tralomethrin	ND	0.71	1		Tetramethrin	ND	0.71	1	
Fenpropathrin	ND	0.71	1		lambda-Cyhalothrin	ND	0.71	1	
Fenvalerate/Esfenvalerate	ND	0.71	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	114	25-200	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-C**	**02/14/12 10:30**	**Sediment**	**GCTQ 2**	**02/17/12**	**02/22/12 21:43**	**120217L02**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.65	1		Fluvalinate	ND	0.65	1	
Bifenthrin	ND	0.65	1		Permethrin (cis/trans)	ND	1.3	1	
Cyfluthrin	ND	0.65	1		Phenothrin	ND	0.65	1	
Cypermethrin	ND	0.65	1		Resmethrin/Bioresmethrin	ND	0.65	1	
Deltamethrin/Tralomethrin	ND	0.65	1		Tetramethrin	ND	0.65	1	
Fenpropathrin	ND	0.65	1		lambda-Cyhalothrin	ND	0.65	1	
Fenvalerate/Esfenvalerate	ND	0.65	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	115	25-200	

Method Blank	099-14-403-13	N/A	Sediment	GCTQ 2	02/17/12	02/22/12 17:27	120217L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Allethrin	ND	0.50	1		Fluvalinate	ND	0.50	1	
Bifenthrin	ND	0.50	1		Permethrin (cis/trans)	ND	1.0	1	
Cyfluthrin	ND	0.50	1		Phenothrin	ND	0.50	1	
Cypermethrin	ND	0.50	1		Resmethrin/Bioresmethrin	ND	0.50	1	
Deltamethrin/Tralomethrin	ND	0.50	1		Tetramethrin	ND	0.50	1	
Fenpropathrin	ND	0.50	1		lambda-Cyhalothrin	ND	0.50	1	
Fenvalerate/Esfenvalerate	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual
trans-Permethrin(C13)	98	25-200	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	02/14/12
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**GC 44**	**02/17/12**	**02/22/12 16:17**	**120217L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	36	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	28	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	ND	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	ND	1.4	1		Mirex	ND	7.1	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	90	50-130			Decachlorobiphenyl	85	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**GC 44**	**02/17/12**	**02/22/12 16:31**	**120217L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	32	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	26	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.4	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	96	50-130			Decachlorobiphenyl	96	50-130		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	02/14/12
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**GC 44**	**02/17/12**	**02/22/12 16:46**	**120217L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	36	1		Endosulfan I	ND	1.4	1	
Aldrin	ND	1.4	1		Endosulfan II	ND	1.4	1	
Alpha-BHC	ND	1.4	1		Endosulfan Sulfate	ND	1.4	1	
Beta-BHC	ND	1.4	1		Endrin	ND	1.4	1	
Delta-BHC	ND	1.4	1		Endrin Aldehyde	ND	1.4	1	
Gamma-BHC	ND	1.4	1		Endrin Ketone	ND	1.4	1	
Chlordane	ND	14	1		Heptachlor	ND	1.4	1	
Dieldrin	ND	1.4	1		Heptachlor Epoxide	ND	1.4	1	
Trans-nonachlor	ND	1.4	1		Methoxychlor	ND	1.4	1	
2,4'-DDD	ND	1.4	1		Toxaphene	ND	28	1	
2,4'-DDE	ND	1.4	1		Alpha Chlordane	ND	1.4	1	
2,4'-DDT	ND	1.4	1		Gamma Chlordane	ND	1.4	1	
4,4'-DDD	ND	1.4	1		Cis-nonachlor	ND	1.4	1	
4,4'-DDE	2.2	1.4	1		Mirex	ND	7.1	1	
4,4'-DDT	ND	1.4	1		Oxychlordane	ND	1.4	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	88	50-130		Decachlorobiphenyl	93	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**GC 44**	**02/17/12**	**02/22/12 17:00**	**120217L09**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	32	1		Endosulfan I	ND	1.3	1	
Aldrin	ND	1.3	1		Endosulfan II	ND	1.3	1	
Alpha-BHC	ND	1.3	1		Endosulfan Sulfate	ND	1.3	1	
Beta-BHC	ND	1.3	1		Endrin	ND	1.3	1	
Delta-BHC	ND	1.3	1		Endrin Aldehyde	ND	1.3	1	
Gamma-BHC	ND	1.3	1		Endrin Ketone	ND	1.3	1	
Chlordane	ND	13	1		Heptachlor	ND	1.3	1	
Dieldrin	ND	1.3	1		Heptachlor Epoxide	ND	1.3	1	
Trans-nonachlor	ND	1.3	1		Methoxychlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1		Toxaphene	ND	26	1	
2,4'-DDE	ND	1.3	1		Alpha Chlordane	ND	1.3	1	
2,4'-DDT	ND	1.3	1		Gamma Chlordane	ND	1.3	1	
4,4'-DDD	ND	1.3	1		Cis-nonachlor	ND	1.3	1	
4,4'-DDE	ND	1.3	1		Mirex	ND	6.5	1	
4,4'-DDT	ND	1.3	1		Oxychlordane	ND	1.3	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	102	50-130		Decachlorobiphenyl	104	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-126**	**N/A**	**Solid**	**GC 44**	**02/17/12**	**02/22/12 13:09**	**120217L09**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
4,4'-Dichlorobenzophenone	ND	25	1		Total DDTs	ND	1.0	1	
Endosulfan II	ND	1.0	1		Aldrin	ND	1.0	1	
Total Chlordane	ND	1.0	1		Endosulfan Sulfate	ND	1.0	1	
Alpha-BHC	ND	1.0	1		Endrin	ND	1.0	1	
Beta-BHC	ND	1.0	1		Endrin Aldehyde	ND	1.0	1	
Delta-BHC	ND	1.0	1		Endrin Ketone	ND	1.0	1	
Gamma-BHC	ND	1.0	1		Heptachlor	ND	1.0	1	
Chlordane	ND	10	1		Heptachlor Epoxide	ND	1.0	1	
Dieldrin	ND	1.0	1		Methoxychlor	ND	1.0	1	
Trans-nonachlor	ND	1.0	1		Toxaphene	ND	20	1	
2,4'-DDD	ND	1.0	1		Alpha Chlordane	ND	1.0	1	
2,4'-DDE	ND	1.0	1		Gamma Chlordane	ND	1.0	1	
2,4'-DDT	ND	1.0	1		Cis-nonachlor	ND	1.0	1	
4,4'-DDD	ND	1.0	1		Mirex	ND	5.0	1	
4,4'-DDE	ND	1.0	1		Oxychlordane	ND	1.0	1	
4,4'-DDT	ND	1.0	1		Endosulfan I	ND	1.0	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	106	50-130			Decachlorobiphenyl	104	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	02/14/12
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**GC 58**	**02/17/12**	**02/22/12 13:17**	**120217L10**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	ND	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	81	50-130			Decachlorobiphenyl	86	50-130		

CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**GC 58**	**02/17/12**	**02/22/12 13:35**	**120217L10**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	ND	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	86	50-130			Decachlorobiphenyl	93	50-130		

WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**GC 58**	**02/17/12**	**02/22/12 13:53**	**120217L10**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	14	1		Aroclor-1248	ND	14	1	
Aroclor-1221	ND	14	1		Aroclor-1254	ND	14	1	
Aroclor-1232	ND	14	1		Aroclor-1260	ND	14	1	
Aroclor-1242	ND	14	1		Aroclor-1262	ND	14	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	83	50-130			Decachlorobiphenyl	91	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8082
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**GC 58**	**02/17/12**	**02/22/12 14:11**	**120217L10**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	13	1		Aroclor-1248	ND	13	1	
Aroclor-1221	ND	13	1		Aroclor-1254	ND	13	1	
Aroclor-1232	ND	13	1		Aroclor-1260	ND	13	1	
Aroclor-1242	ND	13	1		Aroclor-1262	ND	13	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	95	50-130			Decachlorobiphenyl	105	50-130		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-565-216**	**N/A**	**Solid**	**GC 58**	**02/17/12**	**02/22/12 12:23**	**120217L10**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Aroclor-1016	ND	10	1		Aroclor-1248	ND	10	1	
Aroclor-1221	ND	10	1		Aroclor-1254	ND	10	1	
Aroclor-1232	ND	10	1		Aroclor-1260	ND	10	1	
Aroclor-1242	ND	10	1		Aroclor-1262	ND	10	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
2,4,5,6-Tetrachloro-m-Xylene	87	50-130			Decachlorobiphenyl	91	50-130		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**GC/MS MM**	**02/17/12**	**02/21/12 19:28**	**120217L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Perylene	ND	0.014	1		Bis(2-Ethylhexyl) Phthalate	0.031	0.014	1	
Biphenyl	ND	0.014	1		Butyl Benzyl Phthalate	0.017	0.014	1	
Benzo (e) Pyrene	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	ND	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	ND	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	0.071	0.014	1	
2,4-Dinitrophenol	ND	0.71	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.71	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.71	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.71	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
2,4,6-Tribromophenol	70	32-143			2-Fluorobiphenyl	64	14-146		
2-Fluorophenol	67	15-138			Nitrobenzene-d5	61	18-162		
p-Terphenyl-d14	63	34-148			Phenol-d6	60	17-141		

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**GC/MS MM**	**02/17/12**	**02/21/12 20:45**	**120217L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Biphenyl	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.013	0.013	1	
Perylene	ND	0.013	1		Butyl Benzyl Phthalate	ND	0.013	1	
Benzo (e) Pyrene	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	ND	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	0.062	0.013	1	
2,4-Dinitrophenol	ND	0.64	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.64	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.64	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.64	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	67	32-143		2-Fluorobiphenyl	62	14-146	
2-Fluorophenol	61	15-138		Nitrobenzene-d5	56	18-162	
p-Terphenyl-d14	60	34-148		Phenol-d6	56	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**GC/MS MM**	**02/17/12**	**02/21/12 21:11**	**120217L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.014	1		Benzo (k) Fluoranthene	ND	0.014	1	
Benzo (e) Pyrene	ND	0.014	1		Bis(2-Ethylhexyl) Phthalate	ND	0.014	1	
Perylene	ND	0.014	1		Butyl Benzyl Phthalate	ND	0.014	1	
Biphenyl	ND	0.014	1		Chrysene	ND	0.014	1	
1-Methylnaphthalene	ND	0.014	1		Di-n-Butyl Phthalate	ND	0.014	1	
2,4,5-Trichlorophenol	ND	0.014	1		Di-n-Octyl Phthalate	ND	0.014	1	
2,4,6-Trichlorophenol	ND	0.014	1		Dibenz (a,h) Anthracene	ND	0.014	1	
2,4-Dichlorophenol	ND	0.014	1		Diethyl Phthalate	ND	0.014	1	
2,4-Dimethylphenol	ND	0.014	1		Dimethyl Phthalate	0.15	0.014	1	
2,4-Dinitrophenol	ND	0.71	1		Fluoranthene	ND	0.014	1	
2-Chlorophenol	ND	0.014	1		Fluorene	ND	0.014	1	
2-Methylnaphthalene	ND	0.014	1		Indeno (1,2,3-c,d) Pyrene	ND	0.014	1	
2-Methylphenol	ND	0.014	1		Naphthalene	ND	0.014	1	
2-Nitrophenol	ND	0.014	1		Pentachlorophenol	ND	0.71	1	
3/4-Methylphenol	ND	0.014	1		Phenanthrene	ND	0.014	1	
4,6-Dinitro-2-Methylphenol	ND	0.71	1		Phenol	ND	0.014	1	
4-Chloro-3-Methylphenol	ND	0.014	1		Pyrene	ND	0.014	1	
4-Nitrophenol	ND	0.71	1		1,6,7-Trimethylnaphthalene	ND	0.014	1	
Acenaphthene	ND	0.014	1		2,3,4,6-Tetrachlorophenol	ND	0.014	1	
Acenaphthylene	ND	0.014	1		2,6-Dichlorophenol	ND	0.014	1	
Anthracene	ND	0.014	1		1-Methylphenanthrene	ND	0.014	1	
Benzo (a) Anthracene	ND	0.014	1		Benzoic Acid	ND	0.14	1	
Benzo (a) Pyrene	ND	0.014	1		DCPA	ND	0.014	1	
Benzo (b) Fluoranthene	ND	0.014	1		Dibenzothiophene	ND	0.014	1	
Benzo (g,h,i) Perylene	ND	0.014	1		Perthane	ND	0.014	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	71	32-143		2-Fluorobiphenyl	62	14-146	
2-Fluorophenol	66	15-138		Nitrobenzene-d5	61	18-162	
p-Terphenyl-d14	65	34-148		Phenol-d6	56	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**GC/MS MM**	**02/17/12**	**02/21/12 21:37**	**120217L08**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
2,6-Dimethylnaphthalene	ND	0.013	1		Benzo (k) Fluoranthene	ND	0.013	1	
Benzo (e) Pyrene	ND	0.013	1		Bis(2-Ethylhexyl) Phthalate	0.019	0.013	1	
Perylene	ND	0.013	1		Butyl Benzyl Phthalate	ND	0.013	1	
Biphenyl	ND	0.013	1		Chrysene	ND	0.013	1	
1-Methylnaphthalene	ND	0.013	1		Di-n-Butyl Phthalate	ND	0.013	1	
2,4,5-Trichlorophenol	ND	0.013	1		Di-n-Octyl Phthalate	ND	0.013	1	
2,4,6-Trichlorophenol	ND	0.013	1		Dibenz (a,h) Anthracene	ND	0.013	1	
2,4-Dichlorophenol	ND	0.013	1		Diethyl Phthalate	ND	0.013	1	
2,4-Dimethylphenol	ND	0.013	1		Dimethyl Phthalate	0.085	0.013	1	
2,4-Dinitrophenol	ND	0.65	1		Fluoranthene	ND	0.013	1	
2-Chlorophenol	ND	0.013	1		Fluorene	ND	0.013	1	
2-Methylnaphthalene	ND	0.013	1		Indeno (1,2,3-c,d) Pyrene	ND	0.013	1	
2-Methylphenol	ND	0.013	1		Naphthalene	ND	0.013	1	
2-Nitrophenol	ND	0.013	1		Pentachlorophenol	ND	0.65	1	
3/4-Methylphenol	ND	0.013	1		Phenanthrene	ND	0.013	1	
4,6-Dinitro-2-Methylphenol	ND	0.65	1		Phenol	ND	0.013	1	
4-Chloro-3-Methylphenol	ND	0.013	1		Pyrene	ND	0.013	1	
4-Nitrophenol	ND	0.65	1		1,6,7-Trimethylnaphthalene	ND	0.013	1	
Acenaphthene	ND	0.013	1		2,3,4,6-Tetrachlorophenol	ND	0.013	1	
Acenaphthylene	ND	0.013	1		2,6-Dichlorophenol	ND	0.013	1	
Anthracene	ND	0.013	1		1-Methylphenanthrene	ND	0.013	1	
Benzo (a) Anthracene	ND	0.013	1		Benzoic Acid	ND	0.13	1	
Benzo (a) Pyrene	ND	0.013	1		DCPA	ND	0.013	1	
Benzo (b) Fluoranthene	ND	0.013	1		Dibenzothiophene	ND	0.013	1	
Benzo (g,h,i) Perylene	ND	0.013	1		Perthane	ND	0.013	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	74	32-143		2-Fluorobiphenyl	67	14-146	
2-Fluorophenol	72	15-138		Nitrobenzene-d5	65	18-162	
p-Terphenyl-d14	68	34-148		Phenol-d6	63	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-413-361**	**N/A**	**Solid**	**GC/MS MM**	**02/17/12**	**02/21/12 19:03**	**120217L08**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzo (e) Pyrene	ND	0.010	1		Benzo (k) Fluoranthene	ND	0.010	1	
Perylene	ND	0.010	1		Bis(2-Ethylhexyl) Phthalate	ND	0.010	1	
Biphenyl	ND	0.010	1		Butyl Benzyl Phthalate	ND	0.010	1	
2,6-Dimethylnaphthalene	ND	0.010	1		Chrysene	ND	0.010	1	
1-Methylnaphthalene	ND	0.010	1		Di-n-Butyl Phthalate	ND	0.010	1	
2,4,5-Trichlorophenol	ND	0.010	1		Di-n-Octyl Phthalate	ND	0.010	1	
2,4,6-Trichlorophenol	ND	0.010	1		Dibenz (a,h) Anthracene	ND	0.010	1	
2,4-Dichlorophenol	ND	0.010	1		Diethyl Phthalate	ND	0.010	1	
2,4-Dimethylphenol	ND	0.010	1		Dimethyl Phthalate	ND	0.010	1	
2,4-Dinitrophenol	ND	0.50	1		Fluoranthene	ND	0.010	1	
2-Chlorophenol	ND	0.010	1		Fluorene	ND	0.010	1	
2-Methylnaphthalene	ND	0.010	1		Indeno (1,2,3-c,d) Pyrene	ND	0.010	1	
2-Methylphenol	ND	0.010	1		Naphthalene	ND	0.010	1	
2-Nitrophenol	ND	0.010	1		Pentachlorophenol	ND	0.50	1	
3/4-Methylphenol	ND	0.010	1		Phenanthrene	ND	0.010	1	
4,6-Dinitro-2-Methylphenol	ND	0.50	1		Phenol	ND	0.010	1	
4-Chloro-3-Methylphenol	ND	0.010	1		Pyrene	ND	0.010	1	
4-Nitrophenol	ND	0.50	1		1,6,7-Trimethylnaphthalene	ND	0.010	1	
Acenaphthene	ND	0.010	1		2,3,4,6-Tetrachlorophenol	ND	0.010	1	
Acenaphthylene	ND	0.010	1		2,6-Dichlorophenol	ND	0.010	1	
Anthracene	ND	0.010	1		1-Methylphenanthrene	ND	0.010	1	
Benzo (a) Anthracene	ND	0.010	1		Benzoic Acid	ND	0.10	1	
Benzo (a) Pyrene	ND	0.010	1		DCPA	ND	0.010	1	
Benzo (b) Fluoranthene	ND	0.010	1		Dibenzothiophene	ND	0.010	1	
Benzo (g,h,i) Perylene	ND	0.010	1		Perthane	ND	0.010	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	60	32-143		2-Fluorobiphenyl	64	14-146	
2-Fluorophenol	66	15-138		Nitrobenzene-d5	63	18-162	
p-Terphenyl-d14	63	34-148		Phenol-d6	60	17-141	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	02/14/12
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**GC/MS HHH**	**02/17/12**	**02/24/12 13:18**	**120217L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.71	1		PCB126	ND	0.71	1	
PCB008	ND	0.71	1		PCB128	ND	0.71	1	
PCB018	ND	0.71	1		PCB132	ND	0.71	1	
PCB028	ND	0.71	1		PCB138/158	ND	1.4	1	
PCB031	ND	0.71	1		PCB141	ND	0.71	1	
PCB033	ND	0.71	1		PCB149	ND	0.71	1	
PCB037	ND	0.71	1		PCB151	ND	0.71	1	
PCB044	ND	0.71	1		PCB153	ND	0.71	1	
PCB049	ND	0.71	1		PCB156	ND	0.71	1	
PCB052	ND	0.71	1		PCB157	ND	0.71	1	
PCB056	ND	0.71	1		PCB167	ND	0.71	1	
PCB060	ND	0.71	1		PCB168	ND	0.71	1	
PCB066	ND	0.71	1		PCB169	ND	0.71	1	
PCB070	ND	0.71	1		PCB170	ND	0.71	1	
PCB074	ND	0.71	1		PCB174	ND	0.71	1	
PCB077	ND	0.71	1		PCB177	ND	0.71	1	
PCB081	ND	0.71	1		PCB180	ND	0.71	1	
PCB087	ND	0.71	1		PCB183	ND	0.71	1	
PCB095	ND	0.71	1		PCB184	ND	0.71	1	
PCB097	ND	0.71	1		PCB187	ND	0.71	1	
PCB099	ND	0.71	1		PCB189	ND	0.71	1	
PCB101	ND	0.71	1		PCB194	ND	0.71	1	
PCB105	ND	0.71	1		PCB195	ND	0.71	1	
PCB110	ND	0.71	1		PCB200	ND	0.71	1	
PCB114	ND	0.71	1		PCB201	ND	0.71	1	
PCB118	ND	0.71	1		PCB203	ND	0.71	1	
PCB119	ND	0.71	1		PCB206	ND	0.71	1	
PCB123	ND	0.71	1		PCB209	ND	0.71	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	69	50-125		p-Terphenyl-d14	89	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	02/14/12
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**GC/MS HHH**	**02/17/12**	**02/24/12 13:45**	**120217L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.64	1		PCB126	ND	0.64	1	
PCB008	ND	0.64	1		PCB128	ND	0.64	1	
PCB018	ND	0.64	1		PCB132	ND	0.64	1	
PCB028	ND	0.64	1		PCB138/158	ND	1.3	1	
PCB031	ND	0.64	1		PCB141	ND	0.64	1	
PCB033	ND	0.64	1		PCB149	ND	0.64	1	
PCB037	ND	0.64	1		PCB151	ND	0.64	1	
PCB044	ND	0.64	1		PCB153	ND	0.64	1	
PCB049	ND	0.64	1		PCB156	ND	0.64	1	
PCB052	ND	0.64	1		PCB157	ND	0.64	1	
PCB056	ND	0.64	1		PCB167	ND	0.64	1	
PCB060	ND	0.64	1		PCB168	ND	0.64	1	
PCB066	ND	0.64	1		PCB169	ND	0.64	1	
PCB070	ND	0.64	1		PCB170	ND	0.64	1	
PCB074	ND	0.64	1		PCB174	ND	0.64	1	
PCB077	ND	0.64	1		PCB177	ND	0.64	1	
PCB081	ND	0.64	1		PCB180	ND	0.64	1	
PCB087	ND	0.64	1		PCB183	ND	0.64	1	
PCB095	ND	0.64	1		PCB184	ND	0.64	1	
PCB097	ND	0.64	1		PCB187	ND	0.64	1	
PCB099	ND	0.64	1		PCB189	ND	0.64	1	
PCB101	ND	0.64	1		PCB194	ND	0.64	1	
PCB105	ND	0.64	1		PCB195	ND	0.64	1	
PCB110	ND	0.64	1		PCB200	ND	0.64	1	
PCB114	ND	0.64	1		PCB201	ND	0.64	1	
PCB118	ND	0.64	1		PCB203	ND	0.64	1	
PCB119	ND	0.64	1		PCB206	ND	0.64	1	
PCB123	ND	0.64	1		PCB209	ND	0.64	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	72	50-125		p-Terphenyl-d14	118	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**GC/MS HHH**	**02/17/12**	**02/24/12 14:12**	**120217L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.71	1		PCB126	ND	0.71	1	
PCB008	ND	0.71	1		PCB128	ND	0.71	1	
PCB018	ND	0.71	1		PCB132	ND	0.71	1	
PCB028	ND	0.71	1		PCB138/158	ND	1.4	1	
PCB031	ND	0.71	1		PCB141	ND	0.71	1	
PCB033	ND	0.71	1		PCB149	ND	0.71	1	
PCB037	ND	0.71	1		PCB151	ND	0.71	1	
PCB044	ND	0.71	1		PCB153	ND	0.71	1	
PCB049	ND	0.71	1		PCB156	ND	0.71	1	
PCB052	ND	0.71	1		PCB157	ND	0.71	1	
PCB056	ND	0.71	1		PCB167	ND	0.71	1	
PCB060	ND	0.71	1		PCB168	ND	0.71	1	
PCB066	ND	0.71	1		PCB169	ND	0.71	1	
PCB070	ND	0.71	1		PCB170	ND	0.71	1	
PCB074	ND	0.71	1		PCB174	ND	0.71	1	
PCB077	ND	0.71	1		PCB177	ND	0.71	1	
PCB081	ND	0.71	1		PCB180	ND	0.71	1	
PCB087	ND	0.71	1		PCB183	ND	0.71	1	
PCB095	ND	0.71	1		PCB184	ND	0.71	1	
PCB097	ND	0.71	1		PCB187	ND	0.71	1	
PCB099	ND	0.71	1		PCB189	ND	0.71	1	
PCB101	ND	0.71	1		PCB194	ND	0.71	1	
PCB105	ND	0.71	1		PCB195	ND	0.71	1	
PCB110	ND	0.71	1		PCB200	ND	0.71	1	
PCB114	ND	0.71	1		PCB201	ND	0.71	1	
PCB118	ND	0.71	1		PCB203	ND	0.71	1	
PCB119	ND	0.71	1		PCB206	ND	0.71	1	
PCB123	ND	0.71	1		PCB209	ND	0.71	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	85	50-125		p-Terphenyl-d14	109	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**GC/MS HHH**	**02/17/12**	**02/24/12 14:39**	**120217L07**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.65	1		PCB126	ND	0.65	1	
PCB008	ND	0.65	1		PCB128	ND	0.65	1	
PCB018	ND	0.65	1		PCB132	ND	0.65	1	
PCB028	ND	0.65	1		PCB138/158	ND	1.3	1	
PCB031	ND	0.65	1		PCB141	ND	0.65	1	
PCB033	ND	0.65	1		PCB149	ND	0.65	1	
PCB037	ND	0.65	1		PCB151	ND	0.65	1	
PCB044	ND	0.65	1		PCB153	ND	0.65	1	
PCB049	ND	0.65	1		PCB156	ND	0.65	1	
PCB052	ND	0.65	1		PCB157	ND	0.65	1	
PCB056	ND	0.65	1		PCB167	ND	0.65	1	
PCB060	ND	0.65	1		PCB168	ND	0.65	1	
PCB066	ND	0.65	1		PCB169	ND	0.65	1	
PCB070	ND	0.65	1		PCB170	ND	0.65	1	
PCB074	ND	0.65	1		PCB174	ND	0.65	1	
PCB077	ND	0.65	1		PCB177	ND	0.65	1	
PCB081	ND	0.65	1		PCB180	ND	0.65	1	
PCB087	ND	0.65	1		PCB183	ND	0.65	1	
PCB095	ND	0.65	1		PCB184	ND	0.65	1	
PCB097	ND	0.65	1		PCB187	ND	0.65	1	
PCB099	ND	0.65	1		PCB189	ND	0.65	1	
PCB101	ND	0.65	1		PCB194	ND	0.65	1	
PCB105	ND	0.65	1		PCB195	ND	0.65	1	
PCB110	ND	0.65	1		PCB200	ND	0.65	1	
PCB114	ND	0.65	1		PCB201	ND	0.65	1	
PCB118	ND	0.65	1		PCB203	ND	0.65	1	
PCB119	ND	0.65	1		PCB206	ND	0.65	1	
PCB123	ND	0.65	1		PCB209	ND	0.65	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	76	50-125		p-Terphenyl-d14	97	50-125	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-40**	**N/A**	**Solid**	**GC/MS HHH**	**02/17/12**	**02/24/12 12:50**	**120217L07**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
PCB003	ND	0.50	1		PCB126	ND	0.50	1	
PCB008	ND	0.50	1		PCB128	ND	0.50	1	
PCB018	ND	0.50	1		PCB132	ND	0.50	1	
PCB028	ND	0.50	1		PCB138/158	ND	1.0	1	
PCB031	ND	0.50	1		PCB141	ND	0.50	1	
PCB033	ND	0.50	1		PCB149	ND	0.50	1	
PCB037	ND	0.50	1		PCB151	ND	0.50	1	
PCB044	ND	0.50	1		PCB153	ND	0.50	1	
PCB049	ND	0.50	1		PCB156	ND	0.50	1	
PCB052	ND	0.50	1		PCB157	ND	0.50	1	
PCB056	ND	0.50	1		PCB167	ND	0.50	1	
PCB060	ND	0.50	1		PCB168	ND	0.50	1	
PCB066	ND	0.50	1		PCB169	ND	0.50	1	
PCB070	ND	0.50	1		PCB170	ND	0.50	1	
PCB074	ND	0.50	1		PCB174	ND	0.50	1	
PCB077	ND	0.50	1		PCB177	ND	0.50	1	
PCB081	ND	0.50	1		PCB180	ND	0.50	1	
PCB087	ND	0.50	1		PCB183	ND	0.50	1	
PCB095	ND	0.50	1		PCB184	ND	0.50	1	
PCB097	ND	0.50	1		PCB187	ND	0.50	1	
PCB099	ND	0.50	1		PCB189	ND	0.50	1	
PCB101	ND	0.50	1		PCB194	ND	0.50	1	
PCB105	ND	0.50	1		PCB195	ND	0.50	1	
PCB110	ND	0.50	1		PCB200	ND	0.50	1	
PCB114	ND	0.50	1		PCB201	ND	0.50	1	
PCB118	ND	0.50	1		PCB203	ND	0.50	1	
PCB119	ND	0.50	1		PCB206	ND	0.50	1	
PCB123	ND	0.50	1		PCB209	ND	0.50	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	64	50-125		p-Terphenyl-d14	75	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-A**	**02/14/12 10:00**	**Sediment**	**GC/MS JJJ**	**02/17/12**	**02/20/12 20:28**	**120217L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.3	1		Tetrabutyltin	ND	4.3	1	
Monobutyltin	ND	4.3	1		Tributyltin	ND	4.3	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	93	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-A**	**02/14/12 10:10**	**Sediment**	**GC/MS JJJ**	**02/17/12**	**02/20/12 20:59**	**120217L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.9	1		Tetrabutyltin	ND	3.9	1	
Monobutyltin	ND	3.9	1		Tributyltin	ND	3.9	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	96	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-A**	**02/14/12 10:20**	**Sediment**	**GC/MS JJJ**	**02/17/12**	**02/20/12 21:29**	**120217L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	4.3	1		Tetrabutyltin	ND	4.3	1	
Monobutyltin	ND	4.3	1		Tributyltin	ND	4.3	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	92	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-A**	**02/14/12 10:30**	**Sediment**	**GC/MS JJJ**	**02/17/12**	**02/20/12 22:00**	**120217L11**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.9	1		Tetrabutyltin	ND	3.9	1	
Monobutyltin	ND	3.9	1		Tributyltin	ND	3.9	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	81	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3550B
Method: Organotins by Krone et al.
Units: ug/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-913**	**N/A**	**Solid**	**GC/MS JJJ**	**02/17/12**	**02/21/12 11:50**	**120217L11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Dibutyltin	ND	3.0	1		Tetrabutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1		Tributyltin	ND	3.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	90	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-B**	**02/14/12 10:00**	**Sediment**	**ICP/MS 04**	**02/16/12**	**02/23/12 10:39**	**120216L01E**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.51	0.142	1		Nickel	6.45	0.142	1	
Cadmium	ND	0.142	1		Selenium	0.393	0.142	1	
Chromium	16.4	0.142	1		Silver	ND	0.142	1	
Copper	16.5	0.142	1		Zinc	47.6	1.42	1	
Lead	6.56	0.142	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-B**	**02/14/12 10:10**	**Sediment**	**ICP/MS 04**	**02/16/12**	**02/23/12 10:42**	**120216L01E**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	1.58	0.129	1		Nickel	2.63	0.129	1	
Cadmium	ND	0.129	1		Selenium	0.244	0.129	1	
Chromium	6.76	0.129	1		Silver	ND	0.129	1	
Copper	4.89	0.129	1		Zinc	14.9	1.29	1	
Lead	1.67	0.129	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-B**	**02/14/12 10:20**	**Sediment**	**ICP/MS 04**	**02/16/12**	**02/23/12 10:45**	**120216L01E**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.42	0.142	1		Nickel	4.35	0.142	1	
Cadmium	ND	0.142	1		Selenium	0.322	0.142	1	
Chromium	11.6	0.142	1		Silver	ND	0.142	1	
Copper	10.6	0.142	1		Zinc	28.8	1.42	1	
Lead	8.90	0.142	1						

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-C**	**02/14/12 10:30**	**Sediment**	**ICP/MS 04**	**02/16/12**	**02/23/12 10:48**	**120216L01E**

Comment(s): -Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	2.17	0.129	1		Nickel	2.98	0.129	1	
Cadmium	ND	0.129	1		Selenium	0.186	0.129	1	
Chromium	8.04	0.129	1		Silver	ND	0.129	1	
Copper	5.14	0.129	1		Zinc	17.1	1.29	1	
Lead	4.30	0.129	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Project: San Elijo Lagoon / 27661119.10000

Date Received:	02/14/12
Work Order No:	12-02-0901
Preparation:	EPA 3050B
Method:	EPA 6020
Units:	mg/kg
	Page 2 of 2

Client Sample Number	Lab Sample Number	Date /Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**096-10-002-2,188**	**N/A**	**Solid**	**ICP/MS 04**	**02/16/12**	**02/23/12 10:15**	**120216L01E**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Arsenic	ND	0.100	1		Nickel	ND	0.100	1	
Cadmium	ND	0.100	1		Selenium	ND	0.100	1	
Chromium	ND	0.100	1		Silver	ND	0.100	1	
Copper	ND	0.100	1		Zinc	ND	1.00	1	
Lead	ND	0.100	1						

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: San Elijo Lagoon / 27661119.10000

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Upper	**12-02-0901-1-B**	**02/14/12 10:00**	**Sediment**	**Mercury**	**02/16/12**	**02/16/12 13:50**	**120216L01E**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0285	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
CB-Comp-SB-Lower	**12-02-0901-2-B**	**02/14/12 10:10**	**Sediment**	**Mercury**	**02/16/12**	**02/16/12 13:53**	**120216L01E**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0258	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Upper	**12-02-0901-3-B**	**02/14/12 10:20**	**Sediment**	**Mercury**	**02/16/12**	**02/16/12 13:55**	**120216L01E**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0285	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
WB-Comp-SB-Lower	**12-02-0901-4-C**	**02/14/12 10:30**	**Sediment**	**Mercury**	**02/16/12**	**02/16/12 13:57**	**120216L01E**

-Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0259	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-271**	**N/A**	**Solid**	**Mercury**	**02/16/12**	**02/16/12 13:21**	**120216L01E**

Parameter	Result	RL	DF	Qual	Units
Mercury	ND	0.0200	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3050B
Method: EPA 6020

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-SB-Lower	**Sediment**	**ICP/MS 04**	**02/16/12**	**02/23/12**	**120216S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	106	108	80-120	2	0-20	
Cadmium	25.00	102	101	80-120	1	0-20	
Chromium	25.00	102	107	80-120	4	0-20	
Copper	25.00	105	107	80-120	2	0-20	
Lead	25.00	102	104	80-120	1	0-20	
Nickel	25.00	107	110	80-120	2	0-20	
Selenium	25.00	105	106	80-120	1	0-20	
Silver	12.50	103	106	80-120	2	0-20	
Zinc	25.00	109	114	80-120	3	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 9060A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-02-1071-2	**Sediment**	**TOC 5**	**02/16/12**	**02/16/12**	**C0216TOCS1**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	30000	94	95	75-125	1	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-SB-Lower	**Sediment**	**N/A**	**02/18/12**	**02/18/12**	**C0218SD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	6.4	6.2	3	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 376.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-SB-Lower	**Sediment**	**N/A**	**02/15/12**	**02/15/12**	**C0215DSD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	NA	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: SM 2540 B

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-SB-Lower	**Sediment**	**N/A**	**02/18/12**	**02/18/12**	**C0218TSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	77.3	78.3	1	0-10	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 160.4M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
WB-Comp-SB-Lower	**Sediment**	**N/A**	**02/18/12**	**02/18/12**	**C0218VSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Volatile	0.69	0.59	16	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: Extraction
Method: EPA 413.2M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-SB-Lower	**Sediment**	**IR 2**	**02/20/12**	**02/20/12**	**120220S03**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Oil and Grease	100.0	84	84	55-135	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: Extraction
Method: EPA 418.1M

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-SB-Lower	**Sediment**	**IR 2**	**02/20/12**	**02/20/12**	**120220S04**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	94	94	55-135	0	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-SB-Lower	**Sediment**	**GCTQ 2**	**02/17/12**	**02/22/12**	**120217S02**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Allethrin	1.000	240	227	25-200	6	0-25	
Bifenthrin	5.000	68	68	25-200	0	0-25	
Cyfluthrin	5.000	81	90	25-200	10	0-25	
Cypermethrin	5.000	84	92	25-200	8	0-25	
Deltamethrin/Tralomethrin	5.000	56	62	25-200	9	0-25	
Fenpropathrin	1.000	463	478	25-200	3	0-25	
Fenvalerate/Esfenvalerate	5.000	78	85	25-200	9	0-25	
Fluvalinate	5.000	61	63	25-200	4	0-25	
Permethrin (cis/trans)	20.00	51	52	25-200	3	0-25	
Phenothrin	5.000	128	131	25-200	2	0-25	
Resmethrin/Bioresmethrin	5.000	74	70	25-200	5	0-25	
Tetramethrin	1.000	556	579	25-200	4	0-25	
lambda-Cyhalothrin	5.000	56	60	25-200	6	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 7471A Total
Method: EPA 7471A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-02-0827-2	**Solid**	**Mercury**	**02/16/12**	**02/16/12**	**120216S01**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	103	101	80-120	2	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3550B
Method: Organotins by Krone et al.

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-02-0837-3	**Sediment**	**GC/MS JJJ**	**02/17/12**	**02/20/12**	**120217S11**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	121	113	50-130	7	0-20	
Tributyltin	100.0	106	97	50-130	9	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8082

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-SB-Upper	**Sediment**	**GC 58**	**02/17/12**	**02/22/12**	**120217S10**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	76	78	50-135	3	0-25	
Aroclor-1260	20.00	79	78	50-135	1	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-SB-Upper	**Sediment**	**GC/MS MM**	**02/17/12**	**02/21/12**	**120217S08**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	68	69	40-160	1	0-20	
2,4-Dichlorophenol	1.000	68	69	40-160	1	0-20	
2-Methylphenol	1.000	58	55	40-160	6	0-20	
2-Nitrophenol	1.000	61	61	40-160	0	0-20	
4-Chloro-3-Methylphenol	1.000	65	65	40-160	0	0-20	
Acenaphthene	1.000	64	65	40-106	1	0-20	
Benzo (a) Pyrene	1.000	65	66	17-163	1	0-20	
Chrysene	1.000	61	62	17-168	2	0-20	
Di-n-Butyl Phthalate	1.000	67	67	40-160	0	0-20	
Dimethyl Phthalate	1.000	69	68	40-160	1	0-20	
Fluoranthene	1.000	65	66	26-137	1	0-20	
Fluorene	1.000	69	69	59-121	0	0-20	
Naphthalene	1.000	63	63	21-133	1	0-20	
Phenanthrene	1.000	65	65	54-120	1	0-20	
Phenol	1.000	56	55	40-160	2	0-20	
Pyrene	1.000	60	61	6-156	1	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8081A

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
12-02-0837-3	**Sediment**	**GC 44**	**02/17/12**	**02/23/12**	**120217S09**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	79	80	50-135	0	0-25	
Alpha-BHC	5.000	102	85	50-135	18	0-25	
Beta-BHC	5.000	115	109	50-135	5	0-25	
Delta-BHC	5.000	112	122	50-135	9	0-25	
Gamma-BHC	5.000	86	88	50-135	3	0-25	
Dieldrin	5.000	87	86	50-135	1	0-25	
4,4'-DDD	5.000	95	94	50-135	1	0-25	
4,4'-DDE	5.000	103	105	50-135	1	0-25	
4,4'-DDT	5.000	93	91	50-135	2	0-25	
Endosulfan I	5.000	80	80	50-135	0	0-25	
Endosulfan II	5.000	86	85	50-135	2	0-25	
Endosulfan Sulfate	5.000	92	91	50-135	1	0-25	
Endrin	5.000	90	91	50-135	1	0-25	
Endrin Aldehyde	5.000	10	15	50-135	38	0-25	3,4
Endrin Ketone	5.000	98	96	50-135	2	0-25	
Heptachlor	5.000	82	83	50-135	2	0-25	
Heptachlor Epoxide	5.000	86	87	50-135	1	0-25	
Methoxychlor	5.000	88	85	50-135	3	0-25	
Alpha Chlordane	5.000	89	89	50-135	1	0-25	
Gamma Chlordane	5.000	84	84	50-135	0	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: 02/14/12
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
CB-Comp-SB-Upper	**Sediment**	**GC/MS HHH**	**02/17/12**	**02/24/12**	**120217S07**

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB018	25.00	79	78	50-125	1	0-30	
PCB028	25.00	84	84	50-125	0	0-30	
PCB044	25.00	82	81	50-125	0	0-30	
PCB052	25.00	79	78	50-125	0	0-30	
PCB066	25.00	86	85	50-125	1	0-30	
PCB077	25.00	87	87	50-125	1	0-30	
PCB101	25.00	86	85	50-125	1	0-30	
PCB105	25.00	87	87	50-125	0	0-30	
PCB118	25.00	92	92	50-125	0	0-30	
PCB126	25.00	84	84	50-125	1	0-30	
PCB128	25.00	81	81	50-125	1	0-30	
PCB153	25.00	87	87	50-125	0	0-30	
PCB170	25.00	70	69	50-125	2	0-30	
PCB180	25.00	94	93	50-125	1	0-30	
PCB187	25.00	90	90	50-125	0	0-30	
PCB206	25.00	80	79	50-125	1	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3050B
		Method:	EPA 6020

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-2,188	**Solid**	**ICP/MS 04**	**02/16/12**	**02/23/12**	**120216L01E**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	96	101	80-120	5	0-20	
Cadmium	25.00	94	96	80-120	2	0-20	
Chromium	25.00	96	100	80-120	4	0-20	
Copper	25.00	101	104	80-120	2	0-20	
Lead	25.00	94	98	80-120	4	0-20	
Nickel	25.00	100	103	80-120	3	0-20	
Selenium	25.00	95	99	80-120	4	0-20	
Silver	12.50	81	83	80-120	3	0-20	
Zinc	25.00	100	103	80-120	3	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 12-02-0901
Preparation: N/A
Method: EPA 9060A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-688	**Solid**	**TOC 5**	**02/16/12**	**02/17/12**	**C0216TOCL1**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	6000	101	99	80-120	2	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 12-02-0901
Preparation: Extraction
Method: EPA 413.2M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-019-114	**Solid**	**IR 2**	**02/20/12**	**NONE**	**120220L03**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Oil and Grease	100.0	23.90	24	70-130	X

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	Extraction
		Method:	EPA 418.1M

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-07-015-1,828	**Solid**	**IR 2**	**02/20/12**	**NONE**	**120220L04**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
TRPH	100.0	95.77	96	70-130	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 12-02-0901
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-403-13	**Sediment**	**GCTQ 2**	**02/17/12**	**02/22/12**	**120217L02**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Allethrin	1.000	340	342	25-200	0-229	1	0-30	
Bifenthrin	5.000	90	91	25-200	0-229	1	0-30	
Cyfluthrin	5.000	73	75	25-200	0-229	4	0-30	
Cypermethrin	5.000	72	74	25-200	0-229	3	0-30	
Deltamethrin/Tralomethrin	5.000	45	48	25-200	0-229	6	0-30	
Fenpropathrin	1.000	535	558	25-200	0-229	4	0-30	
Fenvalerate/Esfenvalerate	5.000	62	65	25-200	0-229	4	0-30	
Fluvalinate	5.000	60	64	25-200	0-229	6	0-30	
Permethrin (cis/trans)	20.00	49	51	25-200	0-229	4	0-30	
Phenothrin	5.000	145	149	25-200	0-229	3	0-30	
Resmethrin/Bioresmethrin	5.000	97	100	25-200	0-229	3	0-30	
Tetramethrin	1.000	610	632	25-200	0-229	4	0-30	
lambda-Cyhalothrin	5.000	62	63	25-200	0-229	2	0-30	

Total number of LCS compounds : 13
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 12-02-0901
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-271	**Solid**	**Mercury**	**02/16/12**	**02/16/12**	**120216L01E**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	100	100	82-124	0	0-16	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3550B
		Method:	Organotins by Krone et al.

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-913	**Solid**	**GC/MS JJJ**	**02/17/12**	**02/20/12**	**120217L11**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	114	115	50-130	1	0-20	
Tributyltin	100.0	91	91	50-130	0	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation		Date Received:	N/A
4225 Executive Square, Suite 1600		Work Order No:	12-02-0901
La Jolla, CA 92037-1487		Preparation:	EPA 3545
		Method:	EPA 8082

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-216	**Solid**	**GC 58**	**02/17/12**	**02/22/12**	**120217L10**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	84	69	50-135	20	0-25	
Aroclor-1260	20.00	82	67	50-135	20	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-413-361	**Solid**	**GC/MS MM**	**02/17/12**	**02/21/12**	**120217L08**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1.000	68	65	40-160	20-180	3	0-20	
2,4-Dichlorophenol	1.000	73	70	40-160	20-180	4	0-20	
2-Methylphenol	1.000	64	63	40-160	20-180	1	0-20	
2-Nitrophenol	1.000	48	46	40-160	20-180	4	0-20	
4-Chloro-3-Methylphenol	1.000	71	71	40-160	20-180	1	0-20	
Acenaphthene	1.000	69	70	48-108	38-118	1	0-11	
Benzo (a) Pyrene	1.000	74	74	17-163	0-187	1	0-20	
Chrysene	1.000	65	67	17-168	0-193	3	0-20	
Di-n-Butyl Phthalate	1.000	70	71	40-160	20-180	2	0-20	
Dimethyl Phthalate	1.000	75	74	40-160	20-180	1	0-20	
Fluoranthene	1.000	69	69	26-137	8-156	0	0-20	
Fluorene	1.000	73	73	59-121	49-131	0	0-20	
Naphthalene	1.000	69	68	21-133	2-152	1	0-20	
Phenanthrene	1.000	67	68	54-120	43-131	1	0-20	
Phenol	1.000	58	57	40-160	20-180	2	0-20	
Pyrene	1.000	62	63	28-106	15-119	2	0-16	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8081A

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-858-126	**Solid**	**GC 44**	**02/17/12**	**02/22/12**	**120217L09**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	79	90	50-135	36-149	13	0-25	
Alpha-BHC	5.000	82	96	50-135	36-149	16	0-25	
Beta-BHC	5.000	84	97	50-135	36-149	14	0-25	
Delta-BHC	5.000	82	98	50-135	36-149	18	0-25	
Gamma-BHC	5.000	85	99	50-135	36-149	15	0-25	
Dieldrin	5.000	81	96	50-135	36-149	16	0-25	
4,4'-DDD	5.000	81	94	50-135	36-149	15	0-25	
4,4'-DDE	5.000	87	100	50-135	36-149	14	0-25	
4,4'-DDT	5.000	85	99	50-135	36-149	15	0-25	
Endosulfan I	5.000	78	93	50-135	36-149	17	0-25	
Endosulfan II	5.000	81	95	50-135	36-149	16	0-25	
Endosulfan Sulfate	5.000	80	93	50-135	36-149	15	0-25	
Endrin	5.000	78	93	50-135	36-149	17	0-25	
Endrin Aldehyde	5.000	81	95	50-135	36-149	15	0-25	
Endrin Ketone	5.000	89	102	50-135	36-149	14	0-25	
Heptachlor	5.000	84	97	50-135	36-149	14	0-25	
Heptachlor Epoxide	5.000	78	89	50-135	36-149	13	0-25	
Methoxychlor	5.000	85	98	50-135	36-149	14	0-25	
Alpha Chlordane	5.000	82	96	50-135	36-149	15	0-25	
Gamma Chlordane	5.000	82	95	50-135	36-149	15	0-25	

Total number of LCS compounds : 20
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037-1487

Date Received: N/A
Work Order No: 12-02-0901
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project: San Elijo Lagoon / 27661119.10000

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-341-40	**Solid**	**GC/MS HHH**	**02/17/12**	**02/23/12**	**120217L07**

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
PCB018	25.00	110	109	50-125	38-138	1	0-30	
PCB028	25.00	113	113	50-125	38-138	0	0-30	
PCB044	25.00	112	112	50-125	38-138	1	0-30	
PCB052	25.00	108	107	50-125	38-138	1	0-30	
PCB066	25.00	116	115	50-125	38-138	1	0-30	
PCB077	25.00	104	106	50-125	38-138	2	0-30	
PCB101	25.00	117	116	50-125	38-138	1	0-30	
PCB105	25.00	118	118	50-125	38-138	0	0-30	
PCB118	25.00	119	119	50-125	38-138	0	0-30	
PCB126	25.00	111	110	50-125	38-138	1	0-30	
PCB128	25.00	109	107	50-125	38-138	2	0-30	
PCB153	25.00	117	117	50-125	38-138	0	0-30	
PCB170	25.00	105	105	50-125	38-138	0	0-30	
PCB180	25.00	124	124	50-125	38-138	0	0-30	
PCB187	25.00	120	120	50-125	38-138	0	0-30	
PCB206	25.00	118	120	50-125	38-138	1	0-30	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

ACCREDITED IN ACCORDANCE WITH nelac

Work Order Number: 12-02-0901

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
MPN - Most Probable Number

Return to Contents

Calscience Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

☐ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

WO # / LAB USE ONLY
12-02-0901

Date 2/14/12

Page _____ of _____

LABORATORY CLIENT: URS Corporation

ADDRESS: 4225 Executive Square Suite 1600

CITY La Jolla STATE CA ZIP 92037

TEL: 858 812 9292 E-MAIL: derek.rector@URS.com, david.schug@URS.com

CLIENT PROJECT NAME / NUMBER: SEL / 27661119.10000

P.O. NO.:

PROJECT CONTACT: Derek Rector / David Schug

SAMPLER(S): (PRINT) Derek Rector

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

☐ COELT EDF

GLOBAL ID

LOG CODE

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO	TPH (d) or DRO or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260) or ( )	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270)	T22 Metals (6010/747X)	Cr(VI) [7196 or 7199 or 218.6]	Air - VOCs (TO-14A) or (TO-15)	Air - TPH (g) [TO-3]	SEL full suite of tests See Vik Patel for instructions
1	CB-Comp-SB-Upper	2/14/12	10:00	Soil	4																			X
2	CB-Comp-SB-Lower	"	10:10	"	4																			X
3	WB-Comp-SB-Upper	"	10:20	"	4																			X
4	WB-Comp-SB-Lower	"	10:30	"	4																			X

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date	Time
	CEL	2/14/12	1249
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
	CEL	2/14/12	1915
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

06/01/10 Revision

Return to Contents

APPENDIX N

SURFING STUDY

SAN ELIJO LAGOON

RESTORATION PROJECT

SURFING STUDY

Prepared for:

THE SAN ELIJO LAGOON CONSERVANCY

January 2015

Prepared by

Moffatt & Nichol

moffatt & nichol

1660 Hotel Circle North
Suite 500
San Diego, CA 92108

Everest International Consultants

EVEREST

444 West Ocean Blvd.
Suite 1104
Long Beach, CA 90802

TABLE OF CONTENTS

1. INTRODUCTION 1

2. DEFINITIONS 5

3. SCOPE OF WORK 7

4. PROJECT DESCRIPTION 8

4.1 No Project – Existing Conditions 8

4.2 Alternative 1A – Minimum Changes 8

4.3 Alternative 1B – Maximum Habitat Diversity, Existing Inlet location 11

4.4 Alternative 2A – Maximum Habitat Diversity, New Inlet location 11

4.4.1 Cobble-Blocking Features 11

4.5 Material Beneficial Re-use 17

5. COASTAL SETTING 23

5.1 Tides 23

5.2 geomorphology and Bathymetry 23

5.3 Wave Exposure / Wave Climate 24

5.4 Prevailing Winds 25

5.5 Public Use 26

6. EXISTING SURFING CONDITIONS 28

6.1 Cardiff Reach 28

6.2 San Elijo Reach 32

6.3 Solana Beach Reach 33

6.4 Surfing Monitoring program 34

6.4.1 Non-Surfer Beach Use 34

6.4.2 Surfer Use 36

6.4.3 Wave Conditions 38

6.4.4 Public Opinion Surveys 38

7. ANALYSES 39

7.1 Methodology 39

7.1.1 Quantitative Analyses 39

7.1.2 Qualitative Analyses 40

7.2 Quantitative impacts 40

7.2.1 Construction Impacts 40

7.2.2 Impacts from Modified Grain Size and Nearshore Slope 45

7.2.3 Sedimentation Impacts at Reef Breaks 45

7.2.4 Currents at Surf Sites 50

7.2.5 Currents at Beach Breaks 51

7.2.6 Changes to Surf Break Location and Surfing Frequency 51

7.3 QUALITATIVE IMPACTS 52
7.3.1 Closing the Existing Inlet and Creating a New Inlet – Alternative 2A *52*
7.3.2 An Existing Open Lagoon Mouth With Increased Flows – Alternatives 1A and 1B *60*
7.3.3 New and Relocated Lagoon Mouth– Alternative 2A *62*
7.3.4 New Nearshore Mound– Alternatives 1B and 2A *63*
7.3.5 Effects on Surfing at Other New Inlet Locations *65*
8. CONCLUSIONS **76**
9. RECOMMENDATIONS **79**
10. REFERENCES **81**

FIGURES

Figure 1-1: Project Vicinity Map 2
Figure 1-2: Project Study Area 3
Figure 4-1: No Project - Existing Habitat 9
Figure 4-2: Alternative 1A - Minimum Change 10
Figure 4-3: Alternative 1B - Maximum Habitat Diversity, Existing Inlet Location 12
Figure 4-4: Alternative 2A - Maximum Habitat Diversity, New Inlet Location 13
Figure 4-5: Cobble Blocking Feature Concept Plan 15
Figure 4-6: Concept CBF Design 16
Figure 4-7: Concept CBF Profile 17
Figure 4-8: Potential Sand Re-Use Locations for the Littoral Zone 20
Figure 4-9: Cardiff Beach and Nearshore Placement Locations for Alternative 1B 21
Figure 4-10: Cardiff Beach and Nearshore Placement Locations for Alternative 2A 22
Figure 5-1: San Diego Wave Exposure 25
Figure 5-2: City of Encinitas Annual Attendance (City of Encinitas 2007) 26
Figure 6-1: The Reaches and Surf Spots in the Study Area (study locations enlarged in white) 29
Figure 6-2: Kelp Distribution in the Study Reach 30
Figure 6-3: Overall Beach Use Over the Monitoring Period 35
Figure 6-4: Beach Use Over the Monitoring Period by Reach 36
Figure 6-5: Overall Surfer Use Over the Monitoring Period 37
Figure 6-6: Surfer Counts Over the Monitoring Period by Reach 37
Figure 6-7: Surfer Count by Surf Break on an Average to Good Day 38
Figure 7-1: Select Profiles at SD-600 41
Figure 7-2: Existing Inlet, Ebbing Spring Tidal Flow Velocities at High Tide 53
Figure 7-3: Inlet Closed, 1972 54
Figure 7-4: Inlet Closed, 1986 55
Figure 7-5: Inlet Closed, 2002 56
Figure 7-6: Inlet Closed, 2006 57
Figure 7-7: Inlet Open, 1993 58
Figure 7-8: Inlet Open, 2009 59
Figure 7-9: Ebb Tidal Flow Velocities at Cardiff Reef 61
Figure 7-10: Tidal Inlet Location for Alternative 2A Relative to George's 62
Figure 7-11: The H.B Freak Peak Above and Below in 2010 64
Figure 7-12: Batiquitos Lagoon Before Restoration 67
Figure 7-13: Batiquitos Lagoon After Restoration 68
Figure 7-14: Bolsa Chica Wetlands Before Restoration 69
Figure 7-15: Bolsa Chica Wetlands After Restoration 70
Figure 7-16: Huntington Beach Wetlands Before Restoration 72
Figure 7-17: Huntington Beach Wetlands After Restoration 73
Figure 7-18: San Dieguito Lagoon Before Restoration 74
Figure 7-19: San Dieguito Lagoon After Restoration 75

TABLES

Table 4-1: Sand Quantities Proposed Under Each Alternative 19
Table 5-1. Tidal Characteristics at Scripps Pier in La Jolla, California 23
Table 7-1: Beach Slopes and Reflection Coefficients 44
Table 7-2: Impacts to Reef Breaks Under the Calm Wave Climate, Alternative 2A, Scenario II 47
Table 7-3: Impacts to Reef Breaks Under the Calm Wave Climate, Alternative 2A, Scenario III 48
Table 7-4: Impacts to Reef Breaks Under the Calm Wave Climate, Alternative 2A, Scenario IV 48
Table 7-5: Impacts to Reef Breaks Under the High Wave Climate, Alternative 2A, Scenario II 49
Table 7-6: Impacts to Reef Breaks Under the High Wave Climate, Alternative 2A, Scenario III 49
Table 7-7: Impacts to Reef Breaks Under the High Wave Climate, Alternative 2A, Scenario IV 50
Table 7-8: Project Induced Changes to Surfing Frequency 52
Table 7-9: Ebbing Spring Tidal Peak Flow Velocities at Cardiff Reef for Mid-Tides As Predicted by the Hydrologic Model (in Feet Per Second) 60

ATTACHMENTS

Appendix A: Surfing Monitoring Program Results

Appendix B: Surfing Monitoring Data Form

Appendix C: Public Surveys

Appendix D: Surf Spot Detail and Photos

1. INTRODUCTION

The study was commissioned by the San Elijo Lagoon Conservancy (SELC) to attempt to quantify the potential surfing impacts that may result from the San Elijo Lagoon Restoration Project (SELRP or Project). Three alternatives, described in Section 3.0, are being considered for the Project and each were identified as having the potential to impact surfing through:

1. Increasing tidal flows through the existing tidal inlet (Alternatives 1A and 1B);
2. The possible creation of a modified or relocated tidal inlet (Alternative 2A), and
3. The deposition of export sand generated from the Project on the beach or in the nearshore waters of the adjacent Cardiff State Beach (Alternatives 1B and 2A).

The San Elijo Lagoon (Lagoon) is located approximately 20 miles north of the City of San Diego, between the Cities of Solana Beach and Encinitas, as shown in Figure 1-1. The California Department of Fish and Game generally owns the San Elijo Lagoon west of Interstate 5 (I-5), the County of San Diego generally owns the Lagoon east of I-5, and the SELC owns smaller areas west of I-5. The SELRP area boundary is illustrated in Figure 1-2.

The Lagoon is a coastal wetland with significant biological and ecological resources. The SELRP is an effort to restore the Lagoon functions and values given the constraints placed on it by surrounding current and historic development activities. The Project aims to enhance the tidal prism of the Lagoon by proposing modifications to known infrastructure "choke points" such as Highway 101, the North County Transit District (NCTD) railroad, and the I-5 freeway. The approximate target construction start date of the SELRP is the year 2015.

The overarching goal of the SELRP is to protect, restore, and then maintain, via adaptive management, the Lagoon ecosystem and the adjacent uplands to perpetuate native flora and fauna characteristics of Southern California, as well as to restore, then maintain estuarine and brackish marsh hydrology (EDAW 2009). A clear challenge of this Project is a design that will protect and promote biodiversity by protecting habitat types over a very long period of time.

The Project goal can be further refined into three categories of objectives:

- Physical restoration of Lagoon estuarine hydrologic functions;
- Biological restoration of habitat and species within the Lagoon; and
- Management and maintenance to ensure long-term viability of the restoration efforts.

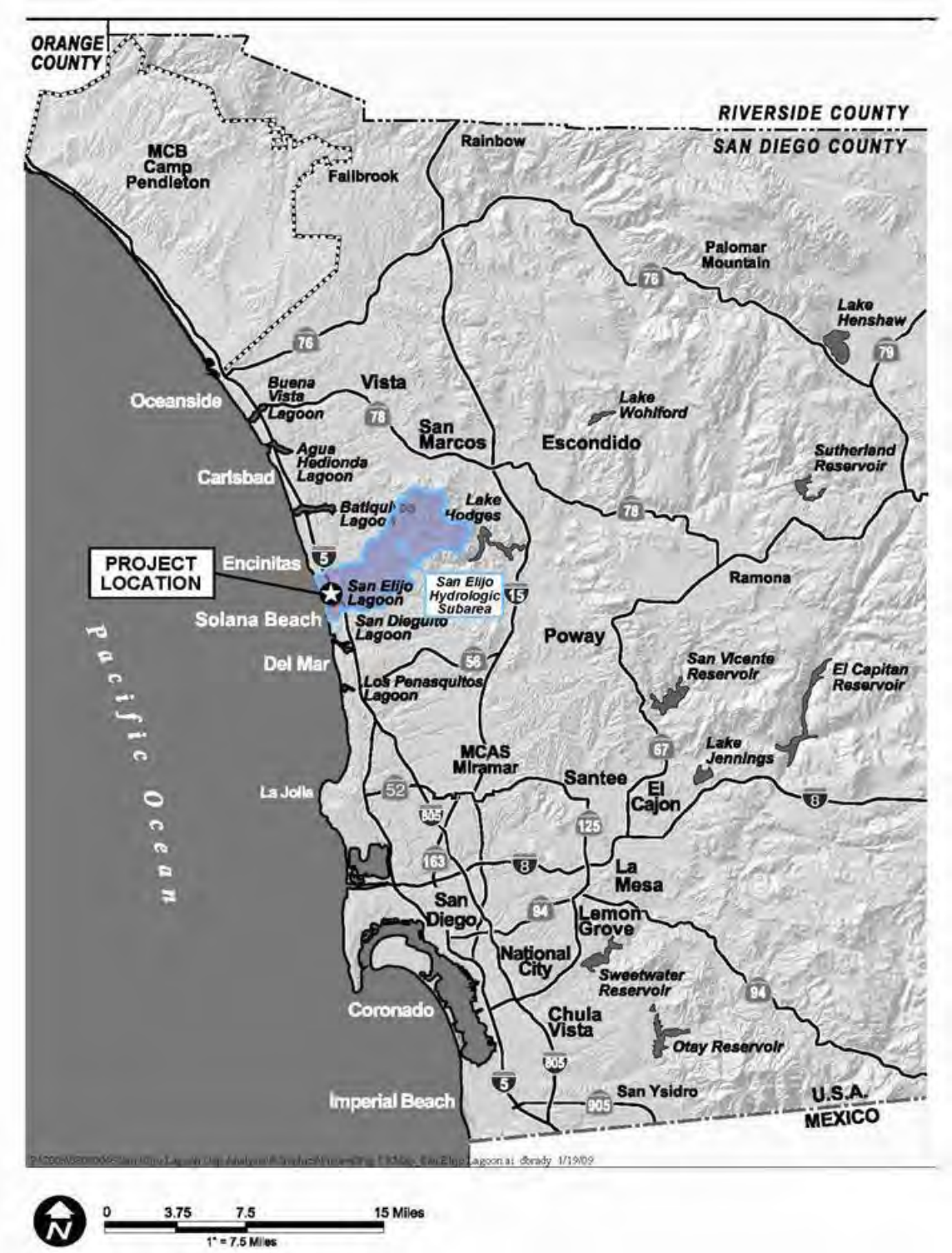


Figure 1-1: Project Vicinity Map
(Source: EDAW/AECOM 2008)

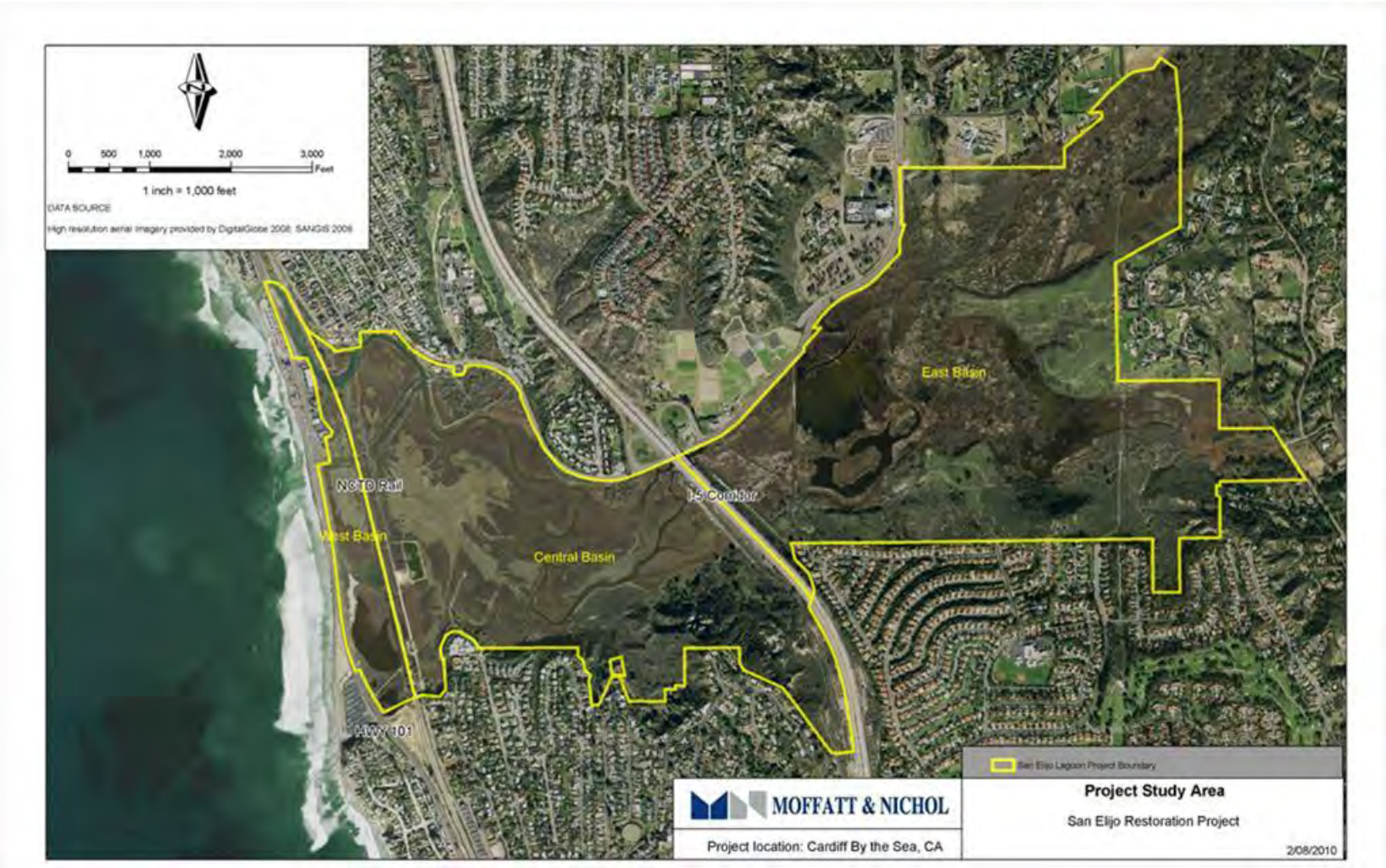


Figure 1-2: Project Study Area

The Surfing Study area extends from the Batiquitos Lagoon mouth to Torrey Pines State Beach, a length of approximately 16 miles. The study area bounds were determined considering the surfing resources with the highest likelihood to be affected by the Project.

This study presents results of analyses of potential Project effects on surfing. Results are compared to existing conditions, as determined by an existing conditions study for a 6-month period. The study was a bi-weekly surfing-monitoring program to establish an objective baseline condition of the study area. This baseline condition data were used to:

1. Determine where the most valuable (highest utilized) surfing resources are in the study area; and
2. Establish a baseline data set for later comparisons with post-Project conditions at these same locations.

2. DEFINITIONS

The terms listed below are commonly used in the sport of surfing to qualitatively describe wave conditions and were used in this study for the same purpose. Definitions are provided to facilitate understanding by a general audience.

- **Backwash**: Waves generated from the reflection of incoming wave energy off of a fixed feature (e.g., bluff or seawall) or a steep beach face that result in waves that propagate in the seaward direction.
- **Channel**: Refers to specific areas at a surf spot where deeper water exists, which prohibits wave from breaking. Allows for easy access into the line-up.
- **Fast**: A wave that peels quickly either to the left or right when viewed from shore. This results when a wave crest is typically approaching the shore at an angle close to shore-parallel. Can be a negative connotation if referred to as "too fast."
- **High tide**: Considered to be tides greater than three feet in height.
- **Hollow**: Plunging breakers caused as a result of the ocean floor having a steep slope or sudden depth change seaward of the break. The crest of the wave will become vertical and then curl over and drop to the trough of the wave. Generally preferable to shortboarders.
- **Line-up**: Where the majority of surfers sit to wait for waves to ride. Located seaward of breaking waves. Also known as the take-off zone.
- **Longboard**: Larger and more buoyant surfboards that are more conducive to riding smaller and lower power waves than shortboards. However, are ridden in all conditions and are popular at many of the breaks in the study areas due to the length of rides.
- **Low tide**: Considered to be tides less than three feet in height.
- **Mushy**: Spilling breakers that are generally a result of a gradual slope of the ocean floor seaward of the break. The wave will gradually steepen as the wave approaches the shore until the crest becomes unstable and whitewater spills down the face of the wave. Generally preferable to longboarders.
- **Peak(or Peaky)**: Refers to waves that break from a particular high point along the wave crest toward adjacent "shoulders," either to the left or right of the peak when viewed from shore. Peaks break in sections; as opposed to the wave crest breaking all at the same time with no peel. Generally a result of non-contiguous sandbars, wave refraction, or a combination of swells.
- **Peel (or Peel Angle)**: A wave breaking at an angle to shore with crest spilling or plunging in a constant direction, either to the left or right when viewed from shore.
- S**ection (or Sectiony)**: A wave that does not peel evenly, but experiences a portion of the wave crest breaking out of place in front of the rider, thus interrupting the ride

and potentially “closing out” the wave (rendering it unrideable any farther from that point).

- **Shadow(ed)**: Refers to an area that receives less swell (smaller wave heights) during a particular swell direction. Can be due to refraction, reflection or shoaling properties of the break or in areas in the immediate vicinity.
- **Shortboard**: Specific to a type of surfboard that is designed for higher performance surfing. The boards have a much lower overall volume than longboards and the decrease in buoyancy requires a different style of surfing and preference of waves. Generally ridden by more experienced surfers and typically prefer plunging or fast spilling breakers.
- **Shoulder(s)**: The areas to either side of the “peak”that constitute a more gently sloping portion of the wave where it is not yet breaking.
- **Slow**: A wave that peels slowly either to the left or right when viewed from shore. This is typically a mushy, spilling breaker. Wave generally allows for long rides and multiple maneuvers; however, is generally considered an unexciting ride by more experienced surfers.

3. SCOPE OF WORK

The scope of work for this Surfing Study includes the following tasks:

1. Describe the proposed project (i.e., proposed alternatives with any modifications to the tidal inlet location and configuration);
2. Characterize the existing physical environment;
3. Evaluate the proposed project impacts on surfing;
4. Identify recommendations for resource protection and project optimization; and
5. Prepare draft and final reports.

This report constitutes Task 5 in the form of the draft report.

4. PROJECT DESCRIPTION

Three proposed Project restoration action alternatives have been identified by the San Elijo Lagoon Conservancy (SELC) and the Stakeholder Committee of public and resource agencies as candidates for consideration. A fourth alternative of no action is also being considered, and will be included in the environmental document. The alternatives to move forward for evaluation include:

- No Project – Existing Conditions;
- Alternative 1A – Minimum Changes;
- Alternative 1B – Maximum Habitat Diversity, Existing Inlet Location; and
- Alternative 2A – Maximum Habitat Diversity, New Inlet Location.

The conceptual design of these alternatives is required to perform engineering analyses and numerical modeling of their performance. Brief descriptions of the alternatives are provided below, and habitat graphics of all alternatives are provided in this section. Detailed descriptions of the alternatives are provided in the Final Alternatives Assessment Report (Nordby et al. 2012).

4.1 NO PROJECT – EXISTING CONDITIONS

No Project assumes no changes are made to the Project site and existing conditions remain into perpetuity. The Lagoon presently experiences mouth constriction and manual re-opening annually, and sometimes more frequently. Tidal flushing is restricted and water quality conditions are impaired for nutrients and sediment. Habitat is distributed at elevations and locations that are related to relic, closed-mouth conditions, and are progressively transitioning to distributions more reflective of managed-mouth conditions. For example, mudflat habitat is located too high for a full tidal lagoon because it formed when the mouth was closed and Lagoon water levels were higher from impoundment. Now that the mouth is managed to remain open, the mudflat is converting to vegetated marsh because hydrologic conditions are favorable for salt marsh plant growth. Figure 4-1 shows existing conditions.

4.2 ALTERNATIVE 1A – MINIMUM CHANGES

Alternative 1A provides minimal physical changes to the site, with the exception of enlarging the main feeder channel throughout the site and redirecting its course just west of I-5. The main tidal channel is also extended farther into the East Basin and existing constricted channel connections are cleared and enlarged. Existing habitat areas will essentially remain intact. The tidal prism of Alternative 1A will be slightly increased compared to existing conditions. A relatively small area of transitional habitat above tidal elevations will be placed in the northwest portion of the Central Basin. Figure 4-2 shows Alternative 1A.

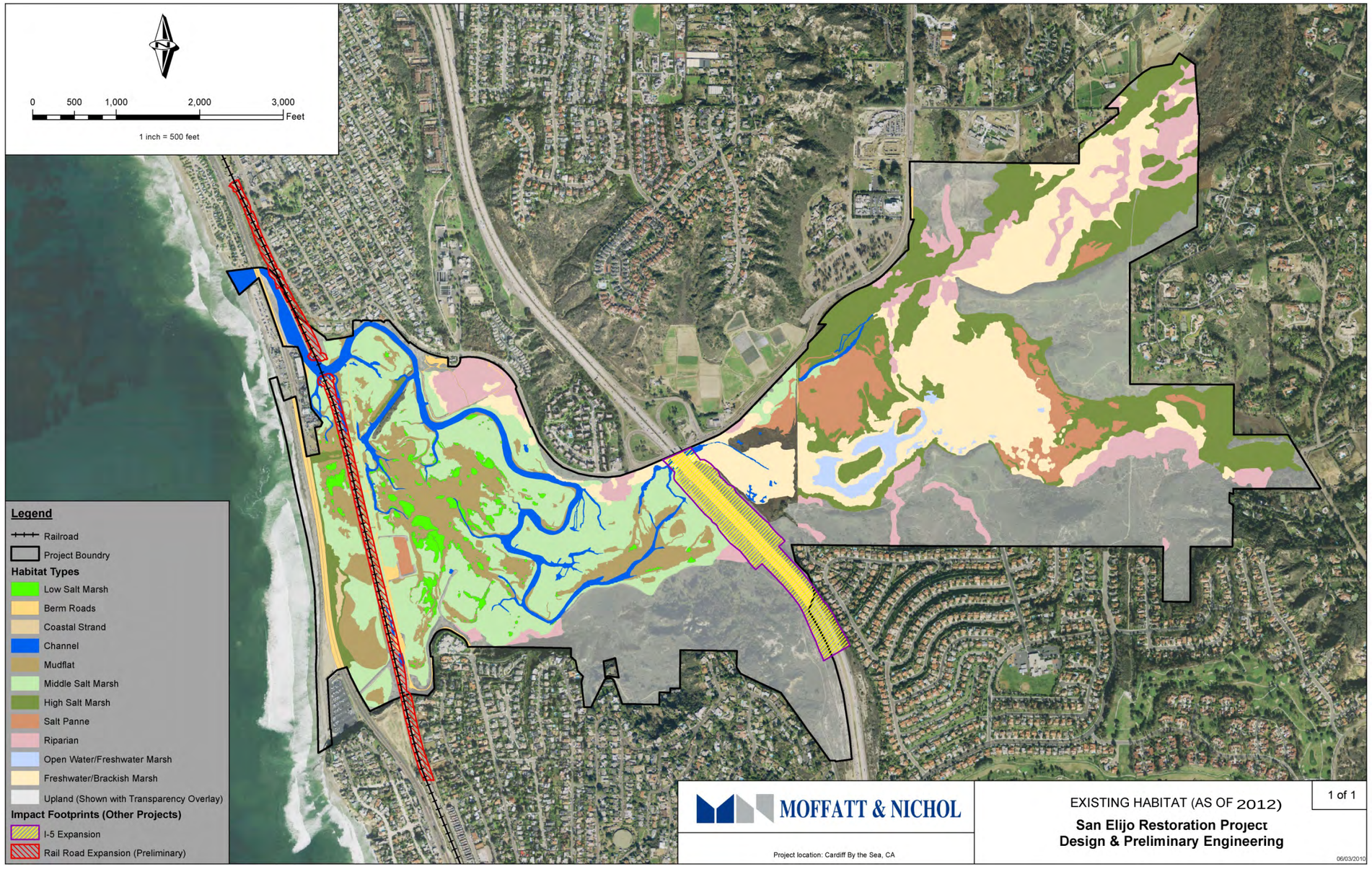


Figure 4-1: No Project - Existing Habitat

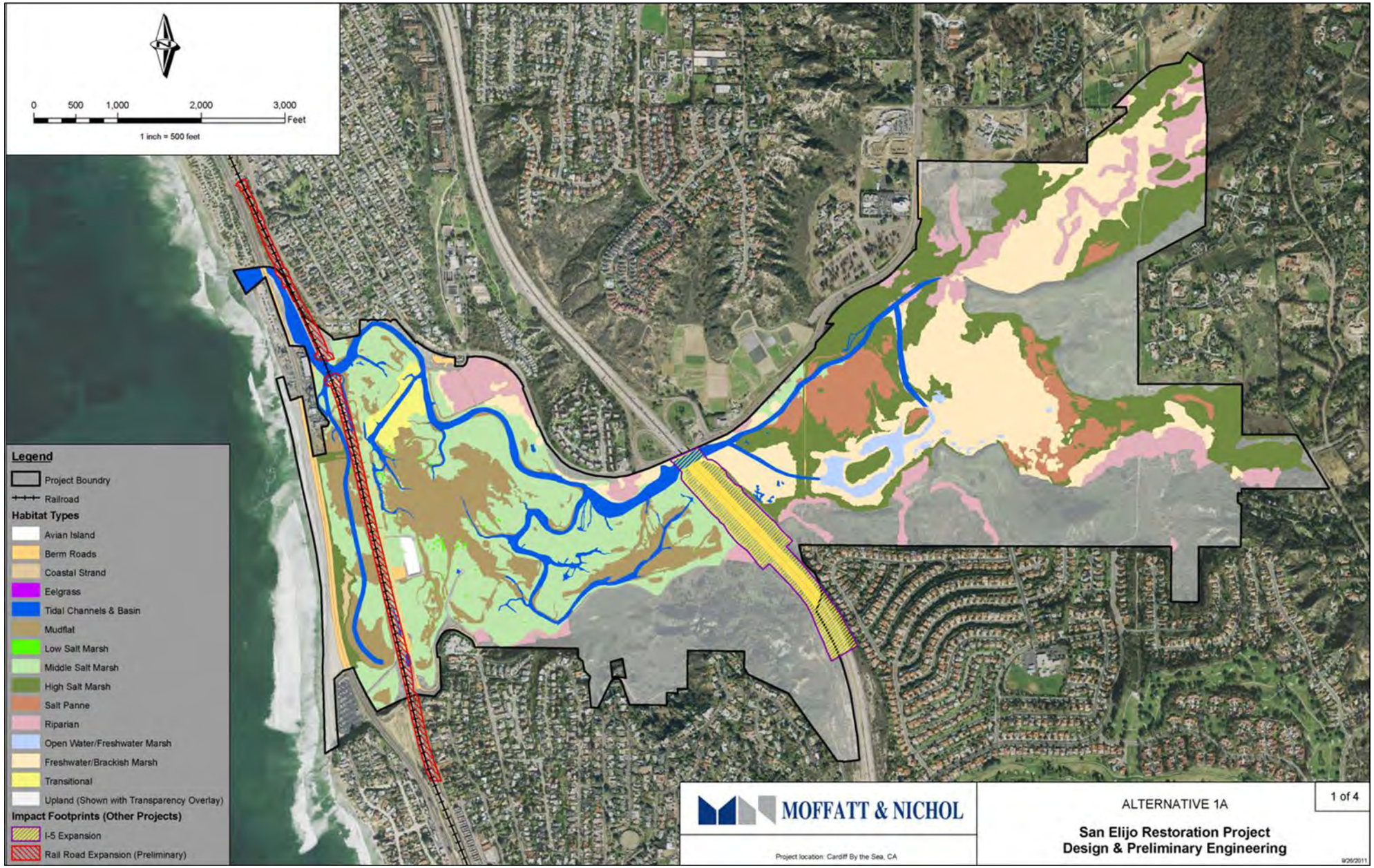


Figure 4-2: Alternative 1A - Minimum Change

4.3 ALTERNATIVE 1B – MAXIMUM HABITAT DIVERSITY, EXISTING INLET LOCATION

Alternative 1B provides a more substantial change to the existing site to create a greater diversity of habitats than currently exist. The existing tidal inlet remains the source of seawater and the main tidal channel extends throughout the Lagoon. A new subtidal basin off the main channel is created in the Central Basin. The main feeder channel is redirected just west of I-5, and extended farther into the East Basin. The channel in the East Basin is significantly enlarged in cross-sectional area to promote more tidal exchange east of I-5. The tidal prism of Alternative 1B will be significantly increased compared to Alternative 1A. Non-tidal habitat areas will still exist in the East Basin. Several areas of transitional habitat above tidal elevations will be placed in the western portion of the Central Basin. Figure 4-3 shows Alternative 1B.

4.4 ALTERNATIVE 2A – MAXIMUM HABITAT DIVERSITY, NEW INLET LOCATION

Alternative 2A also provides changes to the existing site to create a greater diversity of habitats than presently exist. Seawater would enter the Lagoon via a new tidal inlet located south of the existing inlet and a new subtidal basin would be created just landward of the new inlet in the West and Central Basins. The main tidal channel would extend throughout the Lagoon and be redirected just west of I-5, and extend into the East Basin. The channel in the East Basin is identical to that for Alternative 1B. The tidal prism of Alternative 2A will increase compared to Alternative 1B. Non-tidal habitat areas remain in the East Basin. Transitional habitat areas above tidal elevations will also be included in the Central Basin, as with Alternative 1B. Figure 4-4 shows Alternative 2A.

4.4.1 Cobble-Blocking Features

The tidal inlet feature of SELRP Alternative 2A will not possess jetties. Inlets without jetties are vulnerable to sand and cobble entering the channel to clog it and restrict tidal exchange. Sand cannot be effectively blocked from entering an inlet without jetties. Therefore, this inlet will experience significant sand shoaling and tidal muting.

Cobble can be blocked from entering an inlet more effectively than sand because it comprises a smaller volume of material than sand. It also typically moves along the upper portion of the beach profile (between mean sea level and extreme higher high water) and deposits in a layer below the summer beach profile. The cobble layer becomes exposed in winter when the summer beach profile erodes as sand is stripped from the beach. To reduce inlet infilling with cobble, the Project includes two relatively short and low rock features along the outer reach of the tidal inlet channel for Alternative 2A. These proposed rock features are called Cobble Blocking Features, or CBFs, and are intended to block cobble from freely entering the non-jettied tidal inlet.

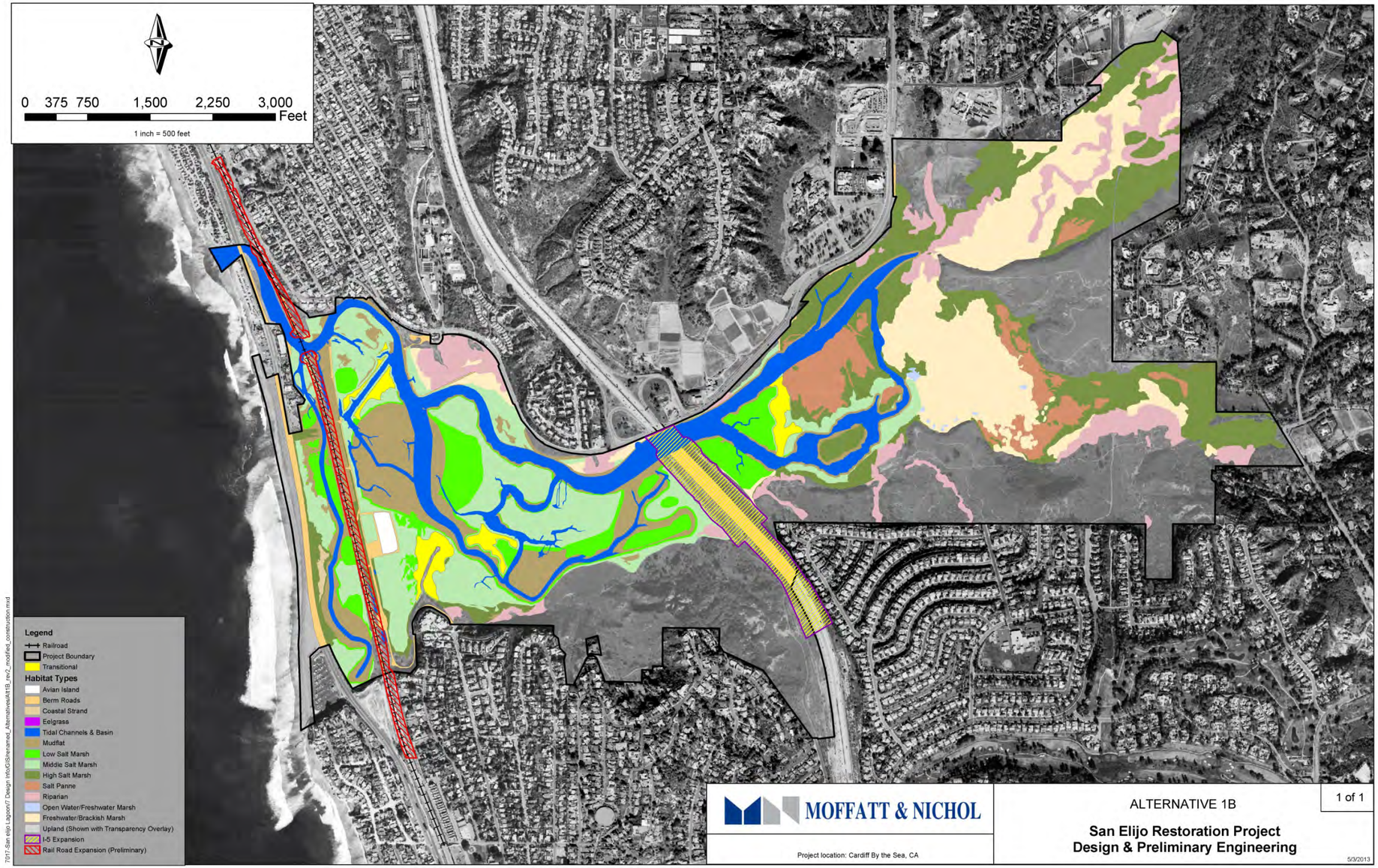


Figure 4-3: Alternative 1B - Maximum Habitat Diversity, Existing Inlet Location

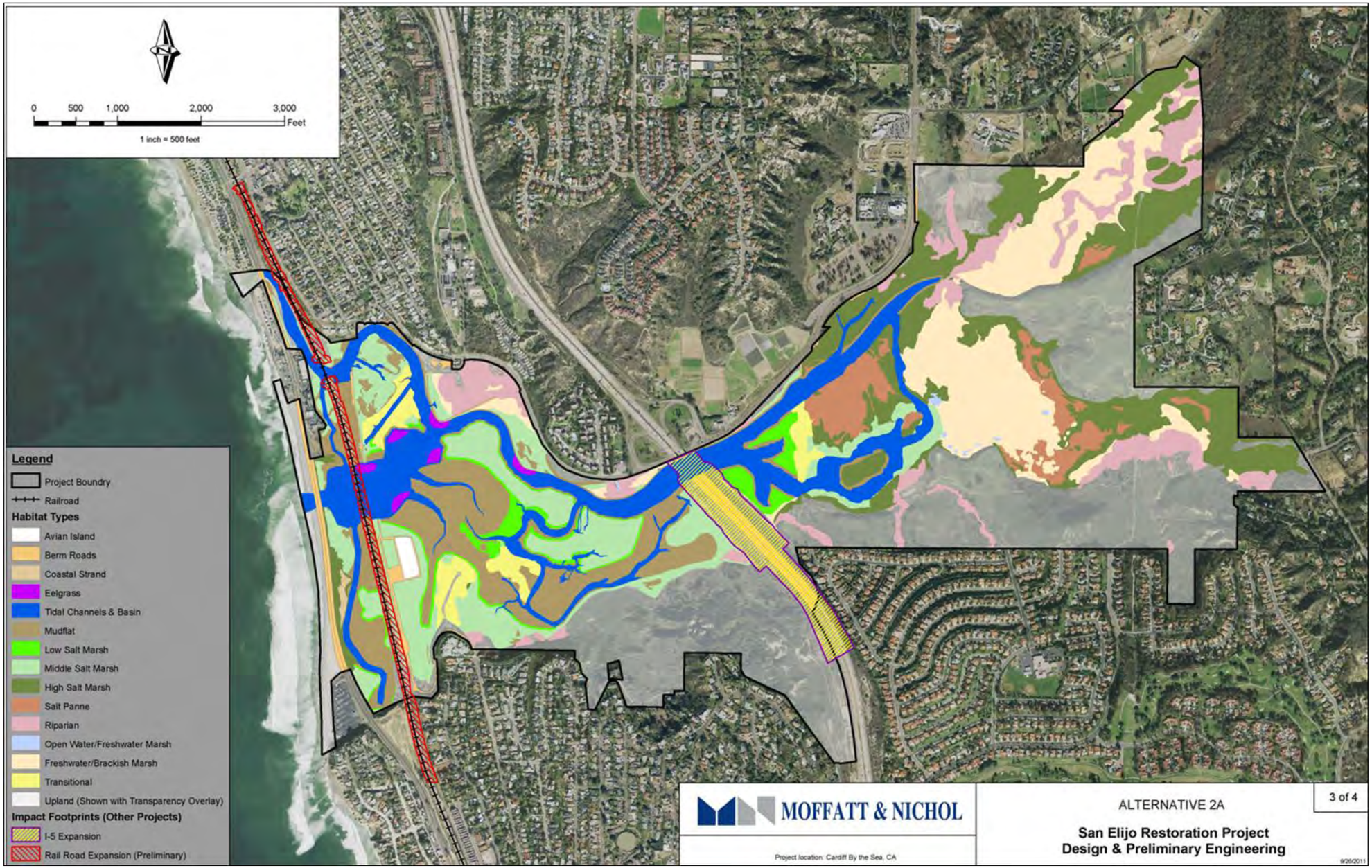


Figure 4-4: Alternative 2A - Maximum Habitat Diversity, New Inlet Location

The CBFs are intended to partially block cobble from entering the tidal inlet channel and to protect the base of the bridge abutment from direct wave attack. The objective is for a significant portion of the cobble to be blocked, and keep any that moves past the CBFs to within the downstream end of the inlet channel. Cobble will then have less opportunity to migrate upstream into the inlet channel, and may continue to move beyond the inlet location to the adjacent downcoast beach. The CBFs should be slightly visible above the beach profile in winter, and then naturally buried completely in summer.

Their design is like very short and stubby jetty-like features. Figure 4-5 shows the feature concept in planform, Figure 4-6 shows it as an engineering diagram, and Figure 4-7 shows it in cross-section.

The planform of the CBFs shows them attached to the bridge abutments and extending seaward approximately 150 feet to the +3 foot mean lower low water (MLLW) contour on the beach. They are approximately 100 feet wide, such as typical jetties (e.g., at Batiquitos Lagoon inlet), and then extend laterally along the highway bridge approach for a distance of 220 feet. Their appearance is similar to a wide grand piano.

In profile, the CBFs are relatively thin, with a foundation elevation reaching down to -5 feet MLLW to remain embedded and stable during significant beach erosion conditions. The footing of the CBFs will be level and extend from the bridge abutment to the -5 foot MLLW contour. The crest of the CBFs will slope upward from the seaward end toward the landward end at an elevation that falls between the typical summer and winter beach profile. The maximum elevation will reach approximately +9 feet MLLW on the highest portion of the landward end of the CBFs.

Construction materials will consist of riprap stone that is large enough to be stable during extreme storm wave events. Rock sizes may consist of 3- to 5-ton stones that are several feet in diameter, nested together to increase the structural integrity of the structure. If desired for aesthetics, the exposed “face” of the CBFs along the inside bank of the tidal inlet channel can be made to look like natural bedrock with a faux cover. This naturalized faux cover could be made to appear like sandstone or other sedimentary features, similar to the treatment on the seawall at south Cardiff State Beach.

Figure 4-5: Cobble Blocking Feature Concept Plan

Figure 4-6: Concept CBF Design

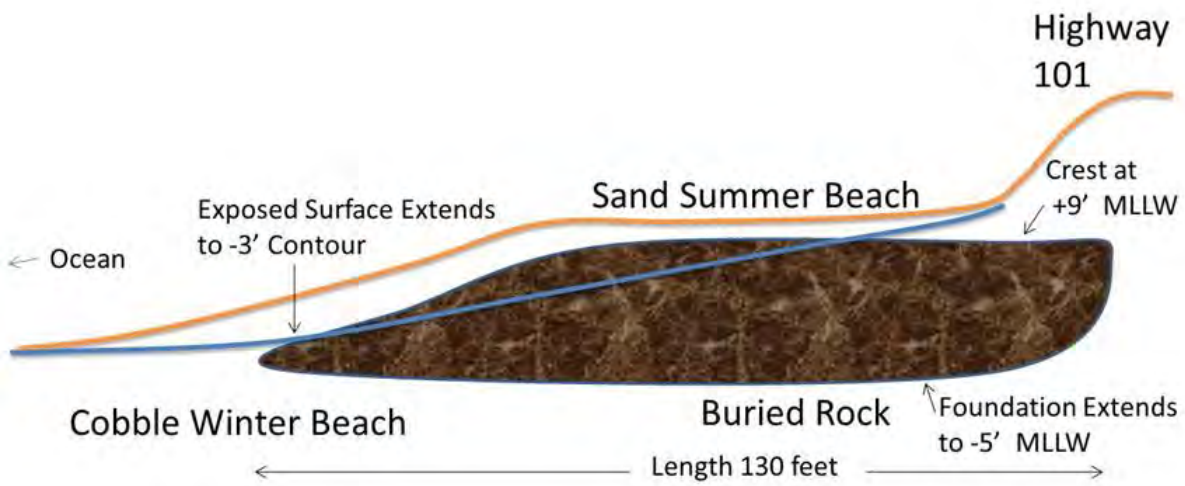


Figure 4-7: Concept CBF Profile

4.5 MATERIAL BENEFICIAL RE-USE

Four sand re-use scenarios are analyzed in this report for the SELRP. Alternatives 1B and 2A include replenishing several San Diego County beaches with up to 1.4 million cubic yards (mcy) of sand. The difference between the alternatives is that:

- Alternative 1B yields 1.2 mcy of sand, and
- Alternative 2A yields 1.4 mcy of sand.

The materials were tested for physical and chemical parameters in accordance with the Inland Testing Manual (ITM) by the Project team. Portions of the export were determined conditionally compatible for on-beach and nearshore beach placement by the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE) (Moffatt & Nichol 2013), pending additional review during the permitting phase of the project.

The replenishment sites are located from Torrey Pines Beach in the south to Batiquitos Beach in the north. Sand is proposed to be dredged from within the lagoon and placed on the beach, in the nearshore (at one site – Cardiff Beach), and offshore in former dredge borrow pits created by the first two San Diego Regional Beach Sand Projects by SANDAG. A brief description of each restoration alternative is provided below.

Three scenarios for materials disposal are being carried forward for further analysis in this EIR/EIS. The four materials disposal alternatives include:

- Proximity: Material would be placed as close as possible to the site to maximize beneficial re-use of the material consistent with the Coastal Regional Sediment Management Plan (RSM Plan) for San Diego (M&N et al. 2009).

- Lowest cost: Material would be placed based on lowest possible costs rather than emphasizing goals of the RSM Plan. This would require as much material as possible to be disposed of in former SANDAG borrow pits, except sand placement at Cardiff Beach and in the nearshore, to provide a stable ebb bar for the relocated inlet under Alternative 2A.
- Low cost hybrid: Material would be placed to meet the RSM Plan goals, taking into account economic considerations that may make transport of sand to locations further from the Lagoon too expensive.

It should be noted that other potential uses for dredged materials include the creation of a concrete batch plant onsite. The dredged materials would then be used for supplying fill material for transportation infrastructure projects, such as improvements being made to the Los Angeles-San Diego (LOSSAN) Rail Corridor and Highway 101. Highway 101 can utilize approximately 10,000 cy of fill for raising associated with Alternative 2A, and the LOSSAN corridor may be able to use up to 70,000 cy for raising and widening the railway (Smith 2012).

Dredging and beach fill quantities for each scenario are presented in Table 4-1. Beaches will be formed by deposition of sand from the dredge discharge line. The sand will be initially pumped into training dikes to control placement and reduce turbidity. The sand will then be shaped to the desired dimensions (elevation, width, and slope) with bulldozers, as indicated in the construction drawings and specifications. Generally, beaches will be constructed to elevations up to +12 feet above MLLW. The post-construction upper slope will be steeper than the pre-construction profile, but will quickly and naturally evolve toward an equilibrium average nearshore slope, which is a function of sediment grain size and wave characteristics. The beach fill will naturally disperse over a wider portion of the beach and nearshore zone, resulting in a flatter profile. Flattening of the slope and adjustment of the beach profile causes reduction of the berm width from the post-construction profile.

The configurations of the beach fills (length, width, and slope) were tailored to each site, depending on the quantity of sand to be placed and environmental constraints. A number of the beach fill footprints are the same as those developed for the previous SANDAG Regional Beach Sand Projects I and II. Figure 4-8 shows the beach and nearshore placement locations proposed for consideration as part of the Project, and Figure 4-9 and Figure 4-10 show the specific footprints proposed at Cardiff Beach and nearshore for Alternatives 1B and 2A, respectively.

Table 4-1: Sand Quantities Proposed Under Each Alternative

Potential Disposal Locations			Annual Max Disposal Amount (cy)	Potential Scenarios						
				I. Alternative 1A	II. Proximity (Assumes previously permitted volumes/sites)		III. Lowest Cost		IV. Low Cost Hybrid	
				Alt 1A	Alt 1B	Alt 2A	Alt 1B	Alt 2A	Alt 1B	Alt 2A
Offshore Placement Sites		LA 5		150,000						
		SO-5/SO-6			Alternative site to Cardiff nearshore (300,000 cy)		600,000	600,000	300,000	300,000
Nearshore (inside littoral zone)		Cardiff			300,000	500,000	300,000	500,000	300,000	500,000
On-beach Placement Sites	Non-RBSP site	Cardiff			300,000	300,000	300,000	300,000	300,000	300,000
	RBPS II Sites	Leucadia	117,000		117,000	117,000			117,000	117,000
		Moonlight Beach	105,000		105,000	105,000			105,000	105,000
		Solana Beach	146,000		146,000	146,000			146,000	146,000
		Torrey Pines	245,000		245,000	245,000				
Disposal Option Capacity (cy)				**150,000**	**1,213,000**	**1,413,000**	**1,200,000**	**1,400,000**	**1,268,000**	**1,468,000**

Figure 4-8: Potential Sand Re-Use Locations for the Littoral Zone

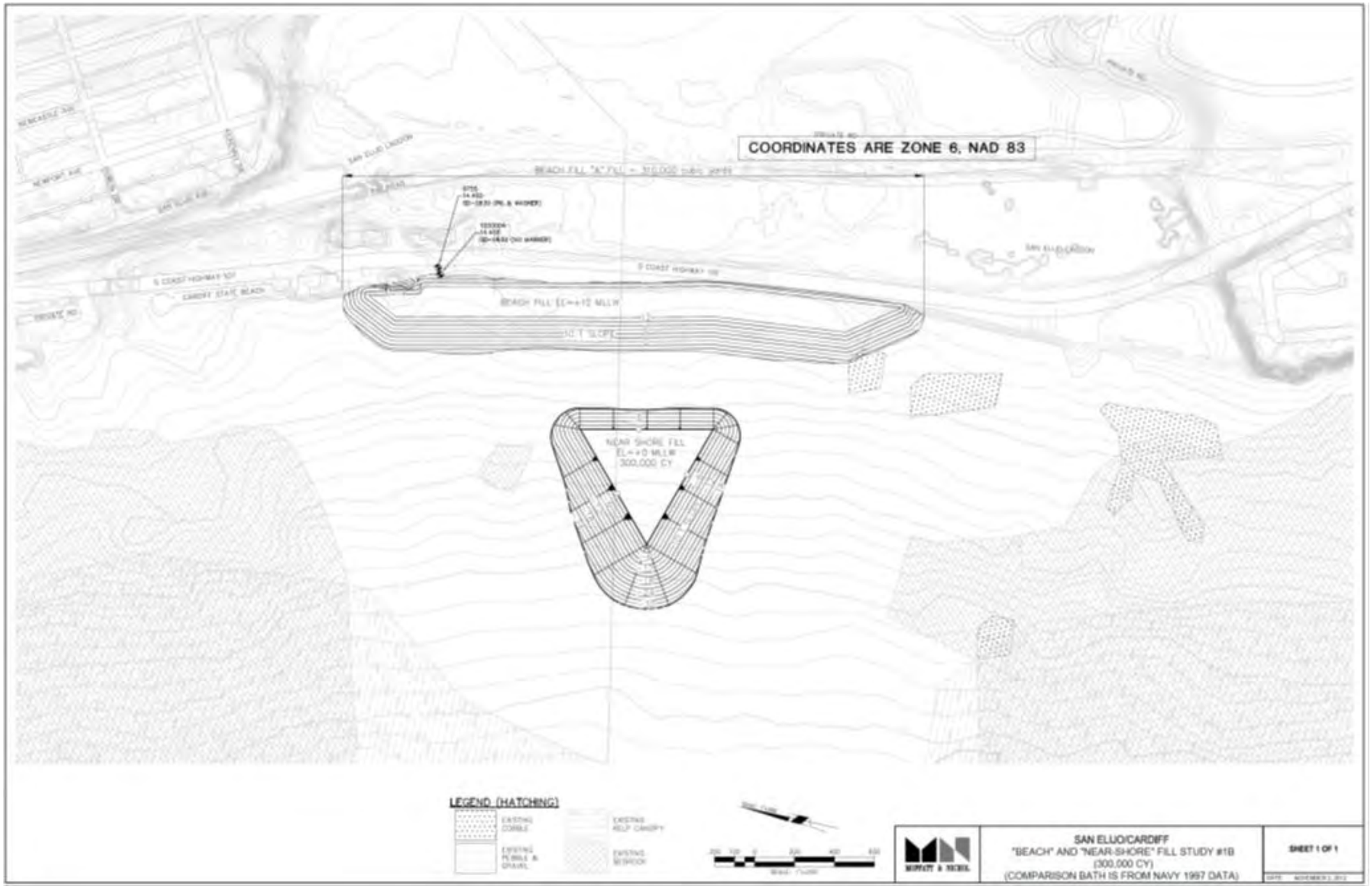


Figure 4-9: Cardiff Beach and Nearshore Placement Locations for Alternative 1B

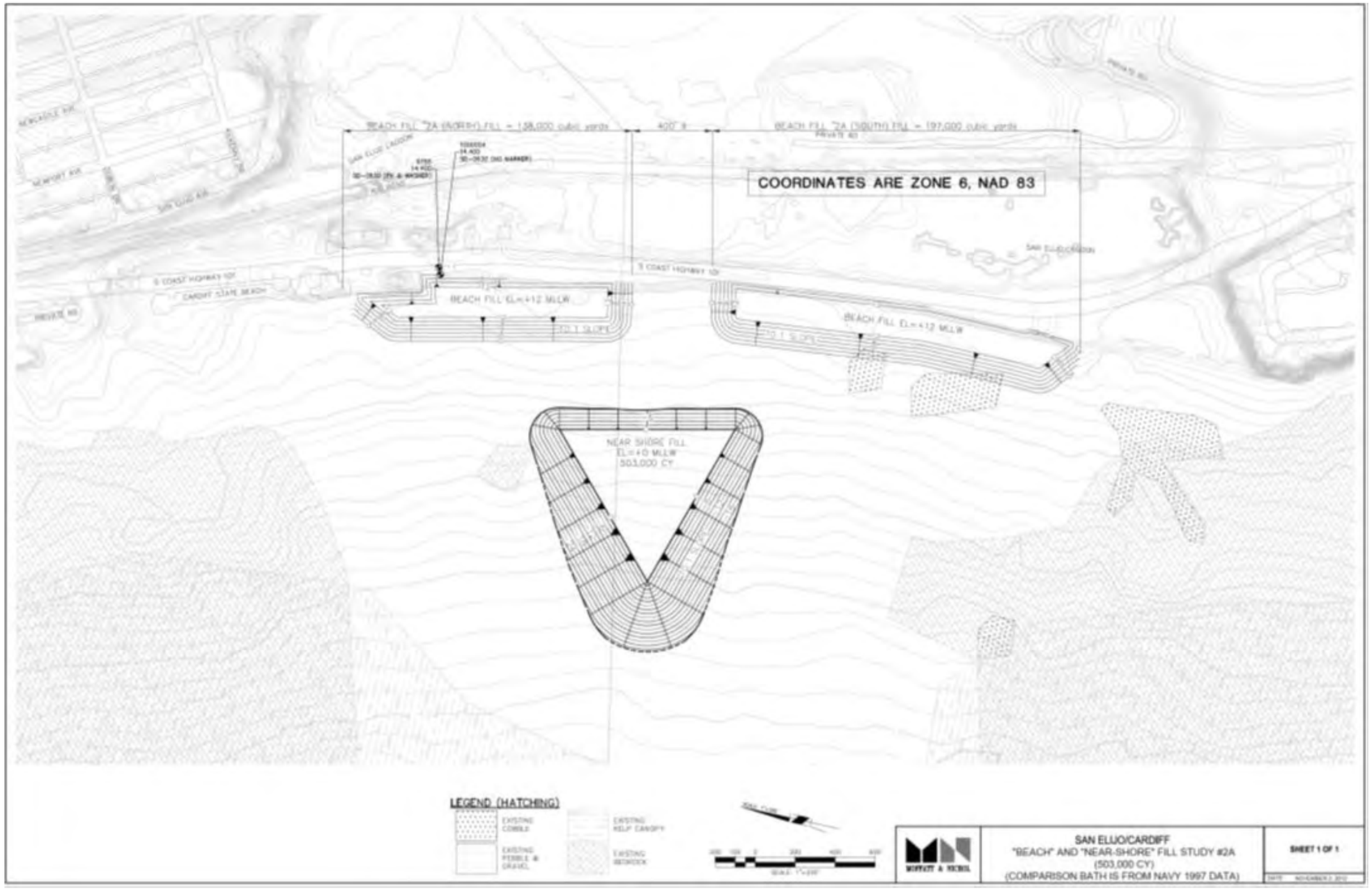


Figure 4-10: Cardiff Beach and Nearshore Placement Locations for Alternative 2A

5. COASTAL SETTING

The coastal setting of the project area is described below. It consists of tides, bathymetry, waves, geomorphology, water quality, wind, and public use.

5.1 TIDES

Tides in Southern California are mixed semi-diurnal type, which means during a typical lunar day (about 24 hours) there will be two high and two low tides, each of different magnitudes. Tidal peaks typically occur during the winter season that can exacerbate the coastal impacts of winter storms.

Tidal characteristics measured in La Jolla (Station ID: 9410230) are considered representative of the tides within the study area. NOAA has established a tidal datum for La Jolla based on 18 years of collected measurements from 1983 to 2001 tidal epoch. Table 5-1 presents the tidal characteristics of the La Jolla tidal station, referenced to the MLLW vertical datum. The highest recorded sea level recorded at the gauge was 7.65 feet measured on November 13, 1997.

Table 5-1. Tidal Characteristics at Scripps Pier in La Jolla, California

Datum	Elevation (feet, MLLW)	Description
MHHW	5.33	Mean Higher High Water
MHW	4.60	Mean High Water
MTL	2.75	Mean Tide Level
MSL	2.73	Mean Sea Level
DTL	2.66	Mean Diurnal Tide Level
MWL	0.90	Mean Low Water
NAVD88	0.19	North American Vertical Datum of 1988
MLLW	0	Mean Lower-Low Water

Source: NOAA Tides & Currents (http://tidesandcurrents.noaa.gov)

5.2 GEOMORPHOLOGY AND BATHYMETRY

The Project area possesses variable geomorphology, with a series of uplifted seacliffs interspersed with river valleys that form lagoons. The coastal reaches fronting seacliffs form wave-cut terraces at the base of the bluffs, resulting in shallow bedrock reefs along significant stretches of this coast. Shallow reefs exist along north Encinitas, San Elijo State Beach, and throughout Solana Beach. Sand channels and sand bars exist off lagoon mouths and between reefs. One of the main attractions is the reef breaks that typify this area.

As a result, bathymetry can be quite variable throughout this Project reach. No large-scale bathymetric depressions, such as submarine canyons, exist along this shore. Bathymetric promontories exist at Swami's Point in southern Encinitas and at Tabletops Reef in northern

Solana Beach. Cardiff Reef is another significant bathymetric feature protruding into the nearshore zone.

The more subtle bathymetric variations represented by the reefs (combined with ocean swell) generate the abundance of well-shaped ridable surf throughout the year.

5.3 WAVE EXPOSURE / WAVE CLIMATE

Four main categories of ocean waves occur off the coast of Southern California: 1) northern hemisphere swell, 2) tropical swell, 3) southern hemisphere swell, and 4) seas generated by local winds. Each wave type is described below.

- Northern hemisphere swell includes the most severe waves reaching the San Diego County coast. Deepwater significant wave heights rarely exceed 10 feet, with wave periods ranging from 12 to 18 seconds. However, during extreme northern hemisphere storms, wave heights may exceed 20 feet with periods ranging from 18 to 22 seconds.
- Tropical storms develop off the west coast of Mexico during the summer and early fall. The resulting swell rarely exceeds 6 feet, but a strong hurricane in September 1939 passed directly over the Southern California area and generated waves recorded at 26.9 feet.
- Southern hemisphere swell is generated by winds associated with winter storms in the South Pacific. Typical southern hemisphere swell rarely exceeds 4 feet in height in deep water, but with periods ranging up to 18 to 21 seconds, they can break at over twice that height.
- Sea is the term applied to steep, short-period waves which are generated either from local storms, strong pressure gradients over the area of the Eastern Pacific Ocean (Pacific High), or from the diurnal sea breezes. Wave heights are usually between 2 and 5 feet with an average period of 7 to 9 seconds.

A wave exposure diagram is shown in Figure 5-1. The San Diego region is directly exposed to ocean swell entering from three main windows (M&N 2000; USACE 1989). The northernmost window extends from approximately 310 to 280 degrees (relative to true North), where wind waves cause local seas in the Santa Barbara Channel that can travel to San Diego County. The northwest window, where severe northern hemisphere storms enter, extends from 290 to 250 degrees. The Channel Islands (San Miguel, Santa Rosa, Santa Cruz, and Anacapa) and Santa Catalina Island provide some sheltering from the higher waves associated with these two windows, depending on the approach direction. The other major exposure window opens to the south from 250 to 150 degrees, allowing swell from southern hemisphere storms, tropical storms (hurricanes), and pre-frontal seas.

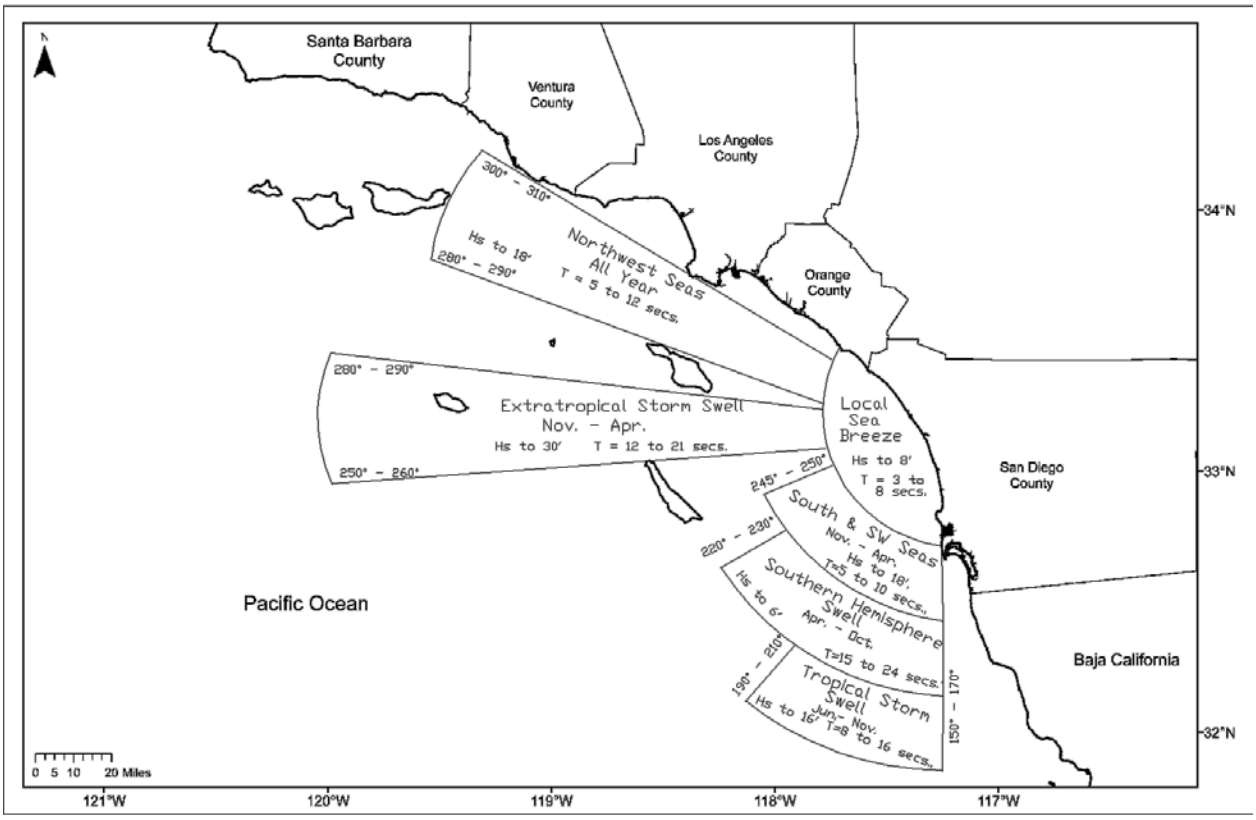


Figure 5-1: San Diego Wave Exposure

5.4 PREVAILING WINDS

Southern California experiences a prevailing land breeze at night and in the early morning from thermal cooling of land versus water. The region also experiences the opposite effect in the afternoon, a prevailing sea breeze in the daytime from thermal heating of land versus water. The sea breeze in the region is typically out of the northwest and its formation results in locally generated wind-waves. These wind-waves are responsible for "blowing-out" or causing poor surfing conditions in many locations. Blown-out conditions occur at various times depending on the strength, fetch, and duration of the sea-breeze; however, chop typically occurs by late-morning to early afternoon.

Other wind conditions can exist, such as onshore winds in the fall and winter months following storms, and a pre-frontal southwest wind during an approaching storm. "Santa Ana Winds" blow offshore and can form from establishment of a large-scale, high atmospheric pressure system inland causing airflow toward lower pressure areas along the coast.

This Project reach is characterized with bluffs and kelp that both serve to shelter this coast from wind, so conditions can remain clean longer than other areas along the coast. Winds are less of

a factor within this study reach than at other areas, although they are still a very important consideration.

5.5 PUBLIC USE

Public use of the coast consists of various user groups. These groups are lumped into the two main groups of surfers and non-surfers for the purposes of this study. Non-surfers are referred to as recreational beach users in this report. The City of Encinitas estimated beach visitation to local beaches for a number of years using electronic sensors at eight popular beach access points (City of Encinitas 2008). Data from these points were extrapolated to other beaches within the City to gain annual beach visitation estimates. Estimates of the City of Encinitas beach visitation from 2000 to 2007 are shown in Figure 9. A trend in increased beach use over time appears to exist from the data.

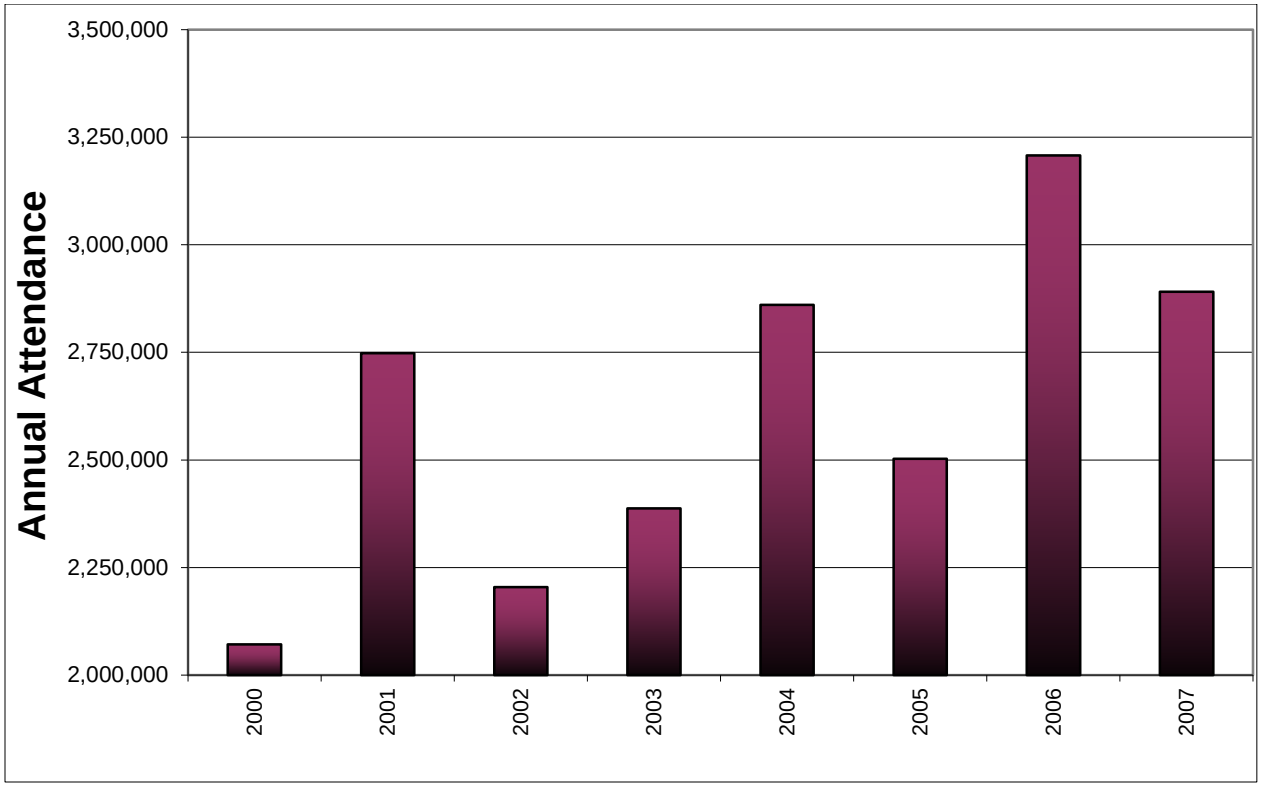


Figure 5-2: City of Encinitas Annual Attendance (City of Encinitas 2007)

Based on these data, annual beach attendance in the City was 2.9 million in 2007. This value includes Cardiff State Beach as an extrapolated value from the eight counting locations. Cardiff was considered a medium-frequency-of-use beach, with an annual visitation of approximately 250,000 people.

The annual attendance within the City of Solana Beach is estimated at 124,700 people (CIC 2010) based on attendance counts from July 2008 to July 2009.

Clearly, the coast attracts many users. This coast is popular and intensely used during normal daylight hours. The Monitoring Results section of this report presents more detail on beach and surfing public use along the study area.

6. EXISTING SURFING CONDITIONS

Surfing is an important resource for recreation in the study area. The study area contains over 14 distinct sites that are frequently surfed and have unique characteristics, as described in this section.

The study area was divided into three reaches (Cardiff, San Elijo, and Solana Beach) for the purposes of this discussion. The extent of these reaches and surf spot names within them are shown in Figure 6-1. Bold name labels correspond to the surf spots that were included in the detailed monitoring program by the SELC.

In terms of rating the surf spots for recreational value, the following metrics were used relative to wave quality and frequency of use:

- Wave Quality
  - Excellent: Long rides, can be ridden by both longboards and shortboards.
  - Good: Slightly lower quality, but still high quality for riding.
  - Moderate: Average quality that can exist on the majority of days and provides rideable conditions.
  - Poor: Below average in quality, presents a poor and potentially frustrating riding experience.
- Frequency of Use:
  - Highly – Surfed >300 calendar days a year
  - Moderate – Surfed 150-300 calendar days a year
  - Low – Surfed <150 calendar days per year

6.1 CARDIFF REACH

This stretch of coastline is 1.7 miles long and extends from Swami's to Cardiff Reef and consists mostly of reef breaks, however, sandy areas and beach breaks do exist. The abundance of surf spots suitable for any surfing skill level, year-round swell exposure, and kelp protection make this area one of the most popular surfing areas in San Diego County. Although this area is generally considered better during the winter (Fall / Winter /Spring) due to direct exposure to northern hemisphere swells, the reach is also exposed to swells out of both the southwest direction and can continue to provide surfing through the summer season.

Offshore kelp beds persist year-round approximately 0.5 miles offshore along the majority of this reach. This offshore feature is favorable to surfing because it can significantly reduce water surface texture (or chop) created by onshore winds, allowing for cleaner surface conditions inboard of the kelp than other areas. Although the kelp bed density varies from year to year,

generally the thickest areas exist offshore of Swami's and the San Elijo State Campground area as shown in Figure 6-2.

Figure 6-1: The Reaches and Surf Spots in the Study Area (study locations enlarged in white)

Figure 6-2: Kelp Distribution in the Study Reach

The reach is made up of the following surf spots:

- **Boneyards:** Moderate reef-break peaks immediately north of Swami's. Scattered left and right-hand peaks along a large outside reef. The wave breaks approximately 500 feet offshore and most waves are fairly mushy with occasional hollow sections contingent on tide and swell. Fairly consistently surfed, but has a low over-all crowd volume. Can become moderately crowded when Swami's is extremely crowded.
- **Swami's:** Excellent right-hand, reef point break. One of the most popular and heavily surfed breaks in the region due to the length of ride and ability to hold the largest winter swells. It is rideable at most any size but is considered better with size when rights connect through the entire length of the reef. The large deep channel to the south allows an easy paddle out even during the largest swells. Can offer hollow sections on the inside on larger swells. A short left also exists off the tip of the point. Highly surfed and excellent wave quality.
- **Dabbers:** Left and right-hand, reef and sand bottom wave. Spot is said to break during big north swells but has not worked for quite some time. Therefore, the wave is infrequently surfed and overall wave quality is low at this time.
- **Brown House:** Scattered left and right-hand peaks. Mostly sand with some scattered reef. The spot is frequently surfed and is a moderate to low wave quality.
- **Pipes:** Primarily a fast and semi-long left-hand reef break, though shorter rights off the peak also exist. Reef break with some scattered sand throughout the inside section. Works on both northwest and southwest swells. The wave quality is good and is consistently surfed. The wave is generally on the mushy-side through can be hollow dependent on swell size and direction.
- **Traps:** A-frame reef break with some sand scattered throughout. Short right and longer left that allows a few maneuvers in either direction. After breaking on the outside, the right slows down when it hits a deep spot and then reforms and typically closes out on the inside. Consistently surfed due to wave form and channels. Spot is more shadowed to southwest swells than some of the other breaks in this region. Moderate wave quality.
- **Barneys:** Scattered peaks along a broad stretch of reef whose form can vary significantly based on wave direction(s) and tide. Best during northwest swells and is typically surfed by less experienced surfers. Spot is more shadowed to southwest swells than some of the other breaks in this region. Highly surfed and moderate wave quality.
- **Turtles:** Defined and fairly long left and right-hand reef break. Can hold significant sized swells, however, it cannot hold waves as big as those held by Swami's and Cardiff Reef. During large northwest swells, it can produce a short and very hollow right-hand wave. Spot offers good wave quality and is heavily surfed due to its consistency and ability to

handle a variety of conditions and tides. Spot is more shadowed to southwest swells than some of the other breaks in this region.

- **85's:** Right hand reef break. Works primarily in the winter with northwest swells under approximately 8 feet. Wave can be fast and very maneuverable, therefore, is typically ridden by short boarders. Spot is more shadowed to southwest swells than some of the other breaks in this region. Moderately surfed and good wave quality.
- **Tippers:** Left and right hand reef break. Is best during winter northwest swells, however, is exposed to and breaks during both northwest and southwest swells. The left is generally longer with better form than the right. The left can offer a hollow section during the right swell and tide condition. Highly surfed and good wave quality.

6.2 SAN ELIJO REACH

This stretch of coastline is 1 mile long, extends from Cardiff Reef to Seaside Reef (inclusive), and consists of mostly beach break with distinct reef features at each end of the reach. Offshore kelp is scarcer in this area and wind has a more direct and detrimental effect on this section of coastline. This stretch is also at the head of a canyon through the river valley serves to funnel breezes in both directions, both to and from the sea leading to increased sea and land breezes. Thus, this stretch is the most susceptible reach in this study area to the effects of wind. This reach is made up of the following surf spots:

- **Cardiff Reef:** Long left and right-hand point break. Due to its size, the area is divided into two sub-breaks (namely South Peak and Suckouts). The position of South Peak varies depending on swell direction, however is generally located directly off of the river mouth. The wave is right-hand, reef point-break with some scattered sand (mostly on the inside). The wave offers a long and typically slow ride, which makes it very popular with long boarders, riders with fun-board shapes, and stand-up paddleboards during average wave conditions. During above average conditions, and especially during larger swells from the southwest and northwest, the wave becomes faster and sometimes hollow and can allow for waves with multiple maneuvers for shortboards. The spot can hold the largest waves of the season and also provides a channel on the south side of the break. Suckouts is a fast, hollow, left- and right-hand reef break located immediately seaward of the river mouth. The wave is known as the hollowest in the reach. The wave is highly surfed by short boarders because of its power compared to some of the other breaks in the region. Works during both northwest and southwest swell directions and typically maxes out around 8 foot. Both breaks are highly surfed and have excellent quality.
- **Georges:** Long stretch of beach break with scattered peaks. While often plagued with waves that are too fast or closeouts, the stretch can produce fast left and rights at times with favorable tides and swell. The reach is not protected by kelp, so afternoon sea

breezes can be problematic. Typically prefers mid to high tides and a mix of swells in the water. It is also popular during cleaned-up storm surf days during the winter.

- **Parking Lots:** Inside beach break located just north and on the inside of Seaside Reef. Smaller (generally less than 6 foot) left and right peaks during right swell and tide combinations. Typically best during small, short-period northwest swell. Highly surfed and moderate quality when breaking.
- **Seaside Reef:** Offshore, shallow reef feature creates a fairly long right and left-hand wave. The left is more consistent, longer and is considered the better wave. Works during both southwest and northwest swells. The wave breaks fairly abruptly over a shallow reef offering hollow waves at times.

6.3 SOLANA BEACH REACH

This stretch of coastline is 1.5 miles long and extends from Tabletops in the north down to the cliff edge north of Del Mar River Mouth in the south. Solana Beach has a very similar swell exposure as the Cardiff and San Elijo reaches, however, the surf break density is lower in this reach. Similar to Cardiff, the reach is protected by offshore kelp. However, the kelp bed density is lower than that of the Cardiff reach; therefore, the site is more susceptible to blown out conditions.

The Solana Beach region offers many beach breaks, which allow surfers to spread out over the reach. However, the qualities of these beach breaks are much lower than that of the nearby reefs. The reef breaks that exist in Solana Beach (with the exception of Tabletops) are less defined than those to the north are, and the general form is not as high quality as some of the breaks in the Cardiff reach. However, with the right sand, swell, and tide, these breaks can be very good. Due to the fair quality of the majority of these breaks, they are less heavily surfed than breaks within the Cardiff reach.

Solana Beach sea cliffs are closer to the waterline than Cardiff and the backwash from high tides have a more noticeable effect on the waves in this reach. Solana Beach surf spots are generally susceptible to backwash when high tides approach the cliff face, which can significantly degrade wave quality. Beach conditions dictate the extent of this phenomenon. The reach is made up of the following surf spots:

- **Tabletops:** Left and right-hand reef break that breaks approximately 1,000 feet offshore. A short right breaks off of the far southern fringe of the reef and a longer left breaks in the central portion. Works during both southwest and northwest swells but is generally considered best during southwest swells. The left can be long. Frequently surfed and good quality.

- **Pillbox:** Left and right-hand reef break. Wave breaks on a fairly shallow, offshore reef feature that then connects to an inside beach break section. Dependent on swell direction, the wave can be a longer left or right. The wave is sensitive to changes in sand and also tide. Tides greater than about 3 feet results in backwash as the waves approach the adjacent bluff face. The wave is good quality when breaking and yields moderate crowds due to its form and central location.
- **Cherry Hill:** Scatted reef and beach break with right- and left-hand waves. The offshore reef offers sections to an otherwise walled swell. Frequently surfed and moderate wave quality.
- **Rockpile:** Left and right A-frame reef break. Wave breaks offshore and breaks relatively slowly in both directions. Allows for few maneuvers and is popular with longboards because of its slow nature. The inside section can be faster and is surfed by shortboards. Highly surfed and good quality.
- **Secrets:** Left and right offshore reef break. Generally requires a larger swell out of the northwest and medium to low tide. Can offer long and sometimes hollow rights that allow for multiple maneuvers. Good quality and moderate to low surf frequency.
- **Del Mar River Mouth:** Fast left and right beach break. Breaks during both southwest and northwest swells; however, is generally best during a northwest swell. Fast, hollow right-hand waves. Is most frequently surfed in the winter and is relatively inconsistent. Moderate quality and moderate surf frequency.

6.4 SURFING MONITORING PROGRAM

A surf-monitoring program was conducted to objectively characterize and quantify existing conditions for use in analyses. All site observations were conducted by SELC staff, Tim Stillinger, a long-time surfer and resident of Cardiff by the Sea. Data were collected between 8 am and 12 pm twice a week for six months from October 1, 2011 through March 31, 2012. A total of 48 days of observations were collected at each of the 10 monitoring sites. The sites span a 4-mile stretch of coastline and were collected from north to south or from south to north each day (direction chosen at random to minimize effect of differences in conditions between early and late morning). Data generated by the program are presented in Appendix A.

General beach use data (both people on-beach and surfing) were collected along three segments of coast within the study area. Data from these reaches are presented in this section.

6.4.1 Non-Surfer Beach Use

Non-surfer beach usage data collected during the study show the numbers of people who used each stretch of coast. The data are presented below and are shown in Figure 6-3 and Figure 6-4. Spikes can be seen at all locations around the holidays (e.g., Thanksgiving, last week of the year).

The Cardiff Reach consistently had the most beach goers, as shown in Figure 6-4. Multiple factors may be the cause of this trend. This reach is directly below the San Elijo State Beach Campground and sees added foot traffic from the campground. The Solana Beach reach showed the least foot traffic of the reaches, partially because of decreased access at high tides. Many days during the study, the water level was too high in Solana Beach to access the beach, with breakers crashing aginst the cliff. On these same days, there was still dry beach for people to walk on along the San Elijo and Cardiff Reaches. More specific data by reach are provided in Appendix A.

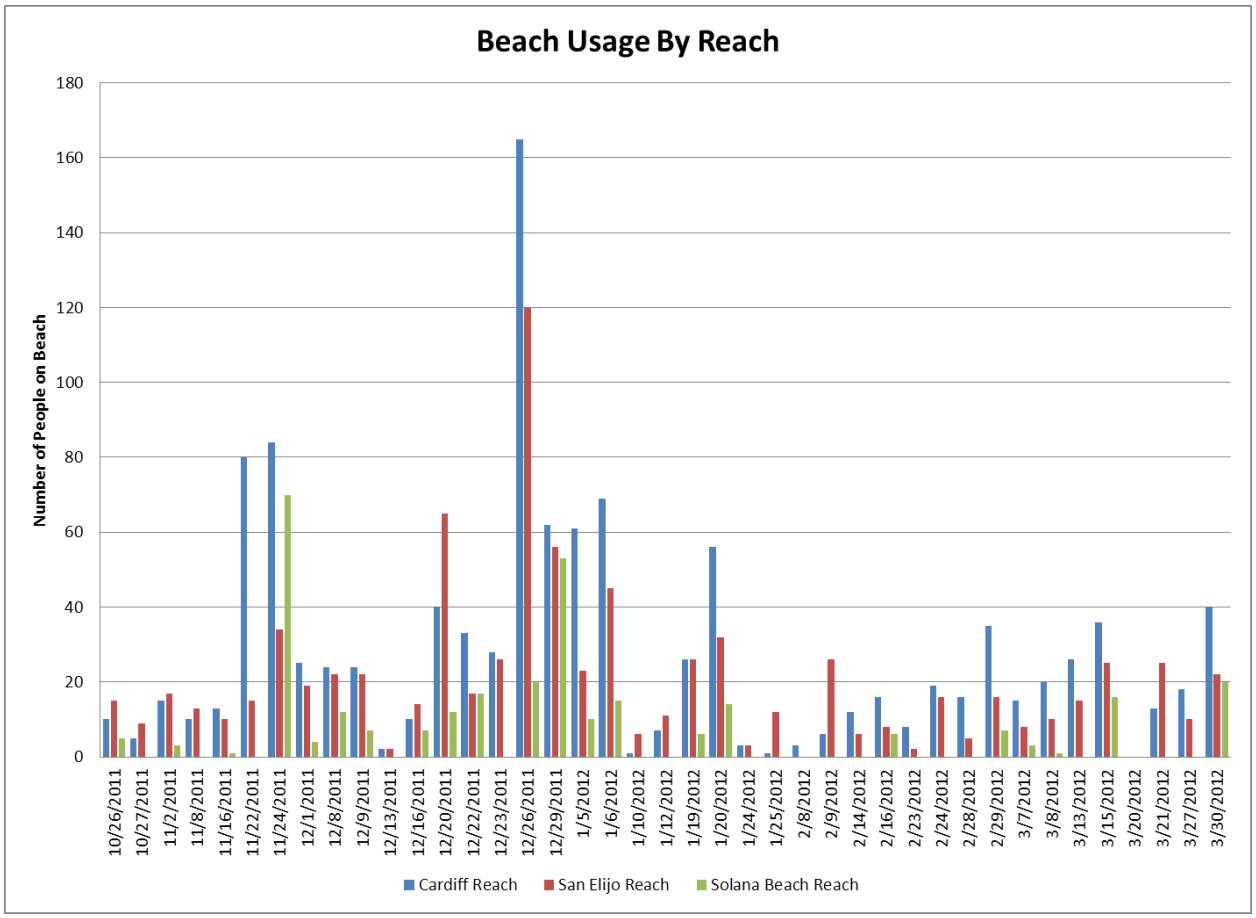


Figure 6-3: Overall Beach Use Over the Monitoring Period

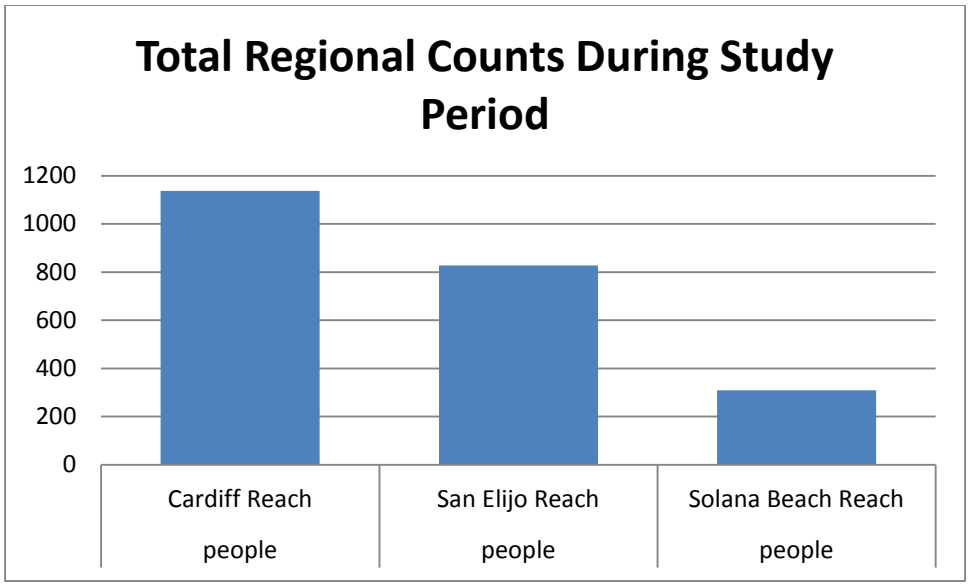


Figure 6-4: Beach Use Over the Monitoring Period by Reach

6.4.2 Surfer Use

The surfer counts by reach for the study period are presented below and shown in Figure 6-5 and Figure 6-6. The Cardiff Reach consistently was attended by more surfers than any other reach. Several reasons may exist for the increased attendance at the Cardiff Reach. While the reaches are all similar lengths of beach, there are more surf spots along the Cardiff reach than in the other reaches. Also, the Cardiff reach sees use from the State Campground as well as beach visitors, and benefits from multiple public parking lots, easy beach access, and good waves. In terms of absolute area available for visitation, the Cardiff reach is the longest of the reaches, so this could be an additional reason for increased surf usage.

Comparing surfer use to general public use, the number of surfers using the Cardiff Reach is approximately threefold the number of general beach users. The numbers of surfers and general beach users along the other reaches are similar to each other. Surfing appears to be the "big draw" of visitors to the Cardiff Reach over the study period.

The distribution of surfers over the study reach varies depending on wave conditions. Figure 6-7 shows the number of surfers observed during fair to good conditions, and each site is shown to host up to a dozen surfers.

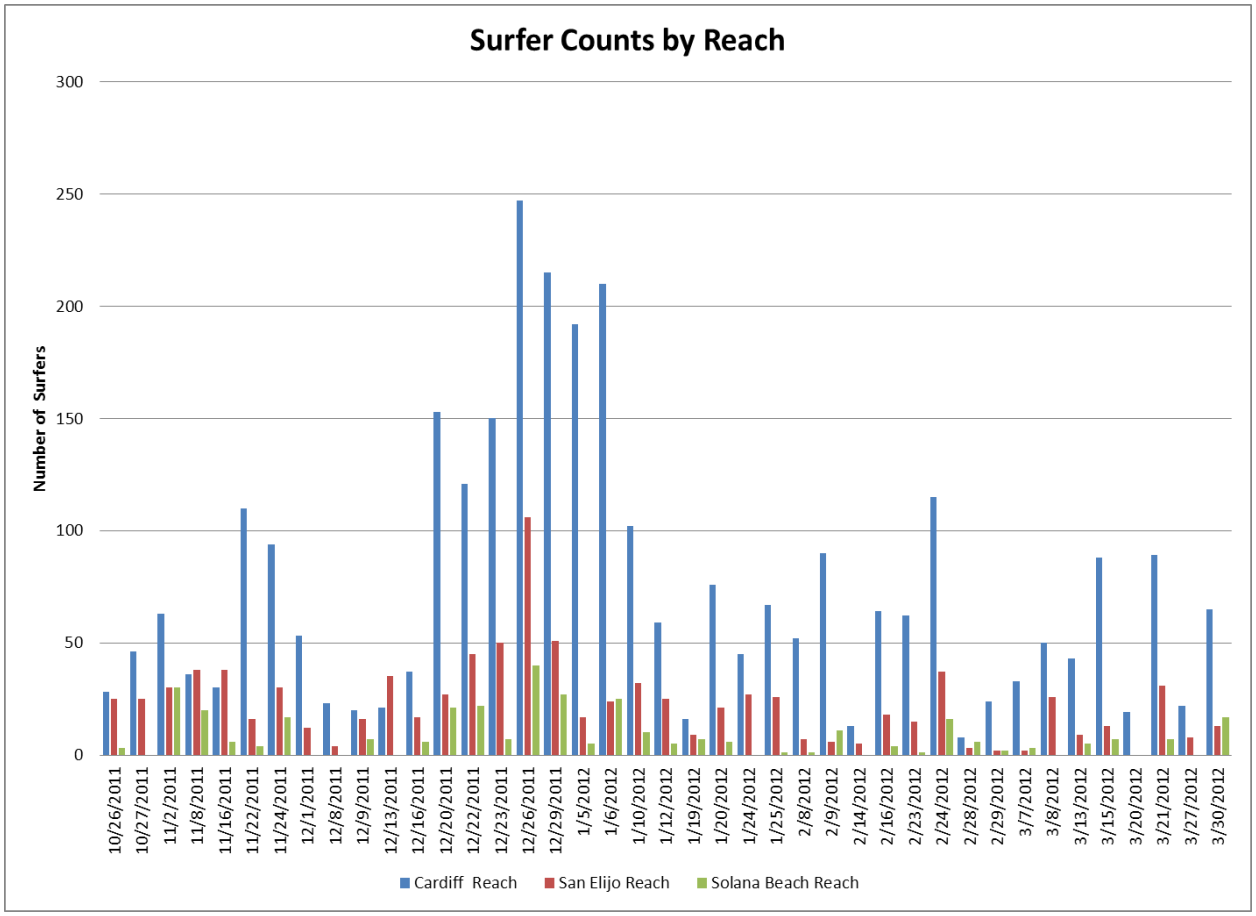


Figure 6-5: Overall Surfer Use Over the Monitoring Period

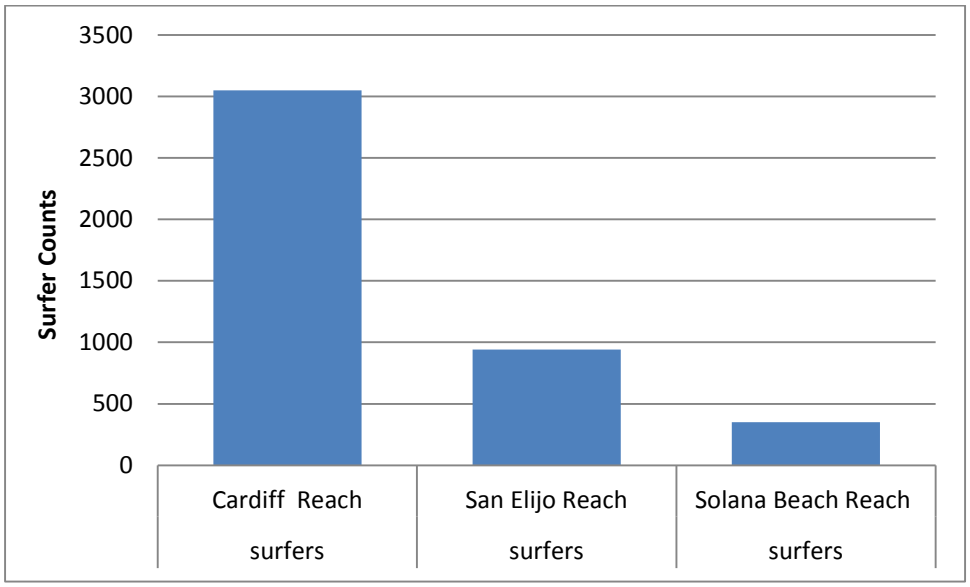


Figure 6-6: Surfer Counts Over the Monitoring Period by Reach

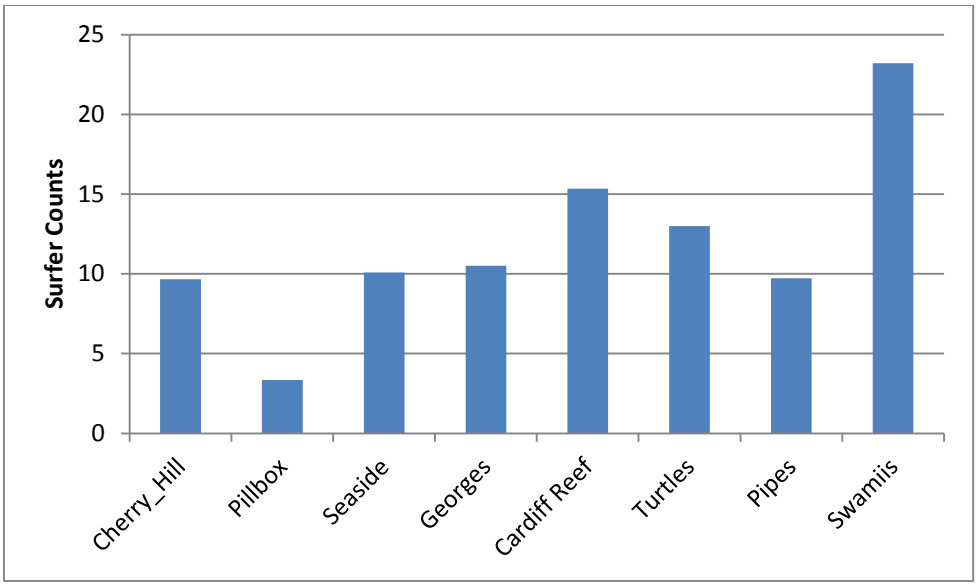


Figure 6-7: Surfer Count by Surf Break on an Average to Good Day

6.4.3 Wave Conditions

The study also included documenting wave conditions at each site during each observation. The data collection form is shown in Appendix B.

6.4.4 Public Opinion Surveys

Finally, the study included a questionnaire of public opinion on experiences surfing within the study area. The questionnaire is shown in Appendix C. Results show the expected mix of experiences and tastes. The clear conclusion is that surfing is a high priority resource to the public within each reach.

7. ANALYSES

The purpose of the analyses will be to evaluate some of the potential impacts of these Project components on surfing resources in the vicinity of the Project area. Analytical models will be used to perform this work for a range of existing conditions and Project alternatives. The proposed tasks to accomplish this work are summarized below.

7.1 METHODOLOGY

Conducting the surfing study analyses involved the methods described below. Methods consisted of quantitative and qualitative analyses. The study was supplemented by site visits to each surf spot, surfing each spot, and meeting and interviewing stakeholders and old-time locals to learn more about the spots.

7.1.1 Quantitative Analyses

Quantitative analyses were performed for various surfing parameters, and methods recently developed for the USACE Encinitas and Solana Beach Shoreline Protection Project (USACE 2012). For the three project material re-use scenarios (II, III, and IV), project-induced changes were analyzed for each surf site for the following parameters:

- wave backwash;
- wave breaking intensity;
- reef burial;
- wave breaker location;
- peel angle;
- ride length;
- surfer type (e.g., beginner, advanced, shortboard, longboard); and
- wave breaking frequency.

Sub-tasks within the analyses included:

1. Creating a surf site database within the Project impact area between Torrey Pines and Batiquitos Lagoon using published information, recent studies, grey literature, and information gained from the site visit. Primary emphasis was on analyzing the reach from Swami's to Cherry Hill because more sand is proposed for placement in that area than in other areas. Reaches beyond this area were analyzed in less detail due to less sand being proposed for placement.

2. Calculating short-term changes in backwash coming from the constructed beach berm for surf sites fronting beach nourishment sites.
3. Calculating changes to wave breaking intensity derived from changes in grain sizes resulting from the Project for beach breaks within the Project impact area.
4. Calculating changes in backwash resulting from changes in grain sizes resulting from the Project for beach breaks within the Project impact area.
5. Calculating Project-induced burial for the reefs within the Project impact area. Key inputs to this analysis were Project-induced sand thickness changes developed from GENESIS model results.

7.1.2 Qualitative Analyses

Qualitative analyses pertain to changes in surfing near tidal inlets that may occur from restoration. These analyses rely on historic anecdotal evidence and interviews with locals. Specific examples of possible changes in the Cardiff and George's surf breaks from changes in the lagoon mouth associated with restoration alternatives include:

- A closed existing lagoon mouth from Alternative 2A – Impacts could be caused by reduced tidal flow, lack of scour along reef edge, and any adverse effects on bathymetry; and
- An open existing lagoon mouth from Alternatives 1A and 1B – Impacts could be caused by current/wave interaction.

Another analysis can include documentation of effects to surfing at existing and new inlets associated with restoration projects such as Batiquitos Lagoon, Bolsa Chica Wetlands, Huntington Beach Wetlands, and San Dieguito Lagoon.

7.2 QUANTITATIVE IMPACTS

Results of all analyses are presented below.

7.2.1 Construction Impacts

(a) Backwash

The beach profile can be expected to differ from a natural shape immediately after construction of the beach nourishments. Changes in beach profile can induce backwash, which is commonly understood to negatively impact surfing. Backwash is frequently developed as waves reflect off a steep beach, bluff face, or seawall. Beach profiles built during construction are expected to be short lived, evolving to equilibrium profiles within six months after construction.

When estimating project-induced changes to post construction backwash it is useful to review empirical data from previous projects. For Regional Beach Sand Project I (RBSP I), beach profiles at fill sites were designed to be built with a somewhat steep 10:1 (run/rise) slope. Within four months after construction, post-construction beach slopes low in the profile (during low tides) tended to be mild due to a nearshore bar, and they tended to be steep higher in the profile (during high tides) as compared to the long-term average fall beach slope. Calculating backwash from these slopes, it was found that during low tides, the post construction backwash was either the same or less than the long-term average. During high tides, the post construction backwash was found to be either the same or higher than the long-term average. Measuring beach slopes across the entire beach averages out these differences, resulting in negligible changes in beach slopes and backwash. To estimate the worst case changes, the design and post-construction change in backwash from the long-term condition is quantified in the following paragraphs during a high tide condition.

As previously mentioned, backwash during low tides should be less than average due to the lower relative water level. As shown in Figure 7-1, this is evidenced by a milder October 2001 slope extending seaward from MLLW than for the average fall profile at SD-600 in Solana Beach (Fletcher Cove). This milder post-construction nearshore slope was also found at other profile locations.

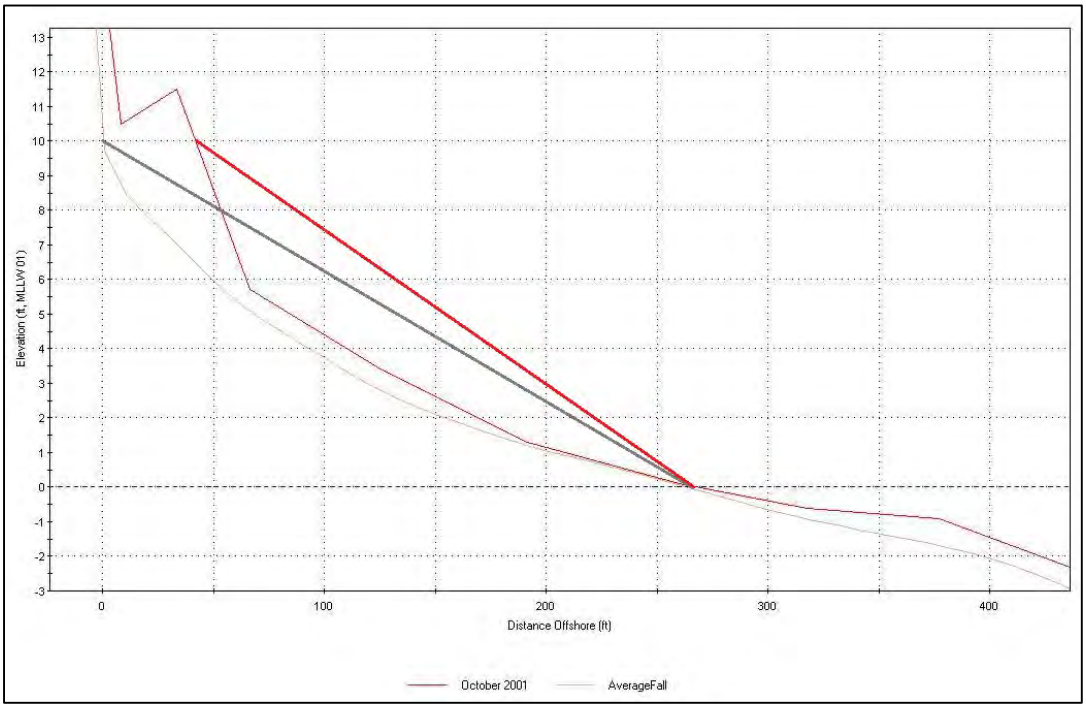


Figure 7-1: Select Profiles at SD-600

The nourishment sand used in the RBSPI was from offshore borrow pits and had median grain sizes slightly larger than the receiving beaches. The disposal grain sizes from the SELRP are

smaller than those used in RBSPI and RBSPII, so any beach berms constructed for the SELRP can be expected to have milder constructed and equilibrium slopes than those found in RBSPI or RBSPII. Using empirical evidence of beach slopes and backwash estimates from RBSPI is conservative in that slopes and backwash expected from the SELRP are expected to be milder. RBSPII data was unavailable at the time of this analysis.

Wave backwash was calculated for the two beach fill sites fronting surf sites (George's and Fletcher Cove). Backwash was calculated using the proxy term "reflection," commonly used in coastal engineering. The degree of wave reflection is defined by the reflection coefficient, $C_r=H_r/H_i$, where H_r and H_i are the reflected and incident wave heights, respectively. Changes in backwash intensity can be estimated by changes in the reflection coefficient as defined by the USACE (2002):

$$C_r= a\xi_o^2/(b+ \xi_o^2) \quad \text{(Equation 1)}$$

Where a=0.5, b=5.5, and ξ_o is the surf similarity parameter at the structure face. The surf similarity parameter is calculated as:

$$\xi_o = \tan \beta/(H_o/L_0)^{1/2} \quad \text{(Equation 2)}$$

Where β is the angle of the seabed slope (tan β=rise/run), H_o is the deep water wave height, and L_0 is the deep water wave length as described by $L_0 = gT^2/2\pi$, g is the acceleration due to gravity and T is the wave period. Combining terms results in:

$$C_r = 0.5L_o/[H_o\, m^2(5.5+L_o/(H_o m^2))]. \quad \text{(Equation 3)}$$

Where m is the horizontal component of the beach slope (run/rise).

Beach slopes were estimated from beach profile survey data between elevations of +10 ft MLLW down to 0 ft MLLW. A uniform elevation was chosen for the top of the beach berm at 10 ft, MLLW for consistency of method. This is below the plateau of most beach berms in the project area, but high enough to capture most wave runup and backwash. The bottom of the range was chosen as 0 ft, MLLW since this is a common location for the bottom of the dry beach and the lower limit of the swash zone. Reflection coefficients were calculated from these beach slopes using Equation 3. Goda (2000) reports reflection coefficients for natural beaches ranging from 0.05 to 0.2 and the *Shore Protection Manual* (USACE 1984) reports reflection coefficients for beaches ranging from 0.01 to 0.45. Design beach slopes, measured beach slopes and calculated reflection coefficients during and after construction of the RBSPI were assumed to be similar to what will be expected during and several months after construction of the SELRP. An example calculation of this backwash is provided below for one surf site.

To solve the surf similarity parameter in Equation 2 and 3, the long-term average wave conditions were developed as follows. The Del Mar wave gage (#051) was assumed to be indicative of wave conditions along the study area. This gage is located in 30 feet of water (CDIP 2012). The average long-term conditions were calculated by averaging the annual average wave conditions for this gage with the significant wave height being 3.0 feet and the peak wave period being 11.8 seconds. The following parameters were calculated using the ACES/CEDAS (Veri-Tech 2008) software assuming straight and parallel bottom contours:

- deep water significant wave height is 2.87 feet,
- deep water wave length is 707 feet,
- breaking wave height is 5.9 ft (assuming 40:1 slope),
- breaking wave depth is 6.3 feet, and
- wavelength at breaking is 166 feet.

Beach construction is assumed to occur at any point in time during the year. As such, empirical data from Fall surveys before and after the RBSPI project were used to draw conclusions. Fall and Spring beach profiles are expected to be different, but the assumption is that general trends and differences between pre- and post-construction profiles should be maintained, regardless of which season construction occurs. The long-term average fall beach profile (Average Fall) and slope are shown in Figure 7-1 for profile location SD-600, which runs through the Fletcher Cove beach fill site. The average Fall profile contains all measured Fall profiles, except October 2001. At this location, the average Fall beach slope was 27:1 (run/rise) as shown with a grey line. Also shown in Figure 7-1 are the post-construction beach profile (October 2001) and slope measured after the RBSPI (red line). The RBSPI nourishment at this site ended on June 24, 2001 and the post-construction profile occurred in October of that year, thus there was a 4 month interval between construction and profile measurement. The design beach slope was 10:1 (SANDAG 2000) and the post-construction beach slope from Figure 7-1 is 23:1. The calculated reflection coefficient changed from an average Fall value of 0.03, to a design value of 0.15, and a post-construction value of 0.04. In other words the long-term average Fall backwash during high tides was approximately 3 percent. This increased to 15 percent during and immediately after construction, and dropped back to 4 percent within 4 months after construction. These values are summarized in Table 7-1.

Table 7-1 shows beach slopes and reflection coefficients for average Fall, design, and post-construction conditions for profiles that occurred at RBSPI fill sites. These are fill sites for the current SELRP and are known surf sites. Only RBSPI fill sites showed steep beach slopes after construction. Beach slopes upcoast and downcoast from RBSPI fill sites remained relatively unchanged by the construction of beach nourishment. This is assumed to be the case for the

SELRP as well, so surf sites upcoast and downcoast of the fill sites are assumed to not be changed in this way.

Table 7-1: Beach Slopes and Reflection Coefficients

Surf Sites	Profile	Beach Fill Site	Beach Slope, m			Reflection Coefficient, C_r		
			Avg Fall	Design	Post Const	Avg Fall	Design	Post Const
Georges	SD-630	Cardiff	24	10	13	0.04	0.15	0.07
Fletcher Cove Beach	SD-600	Fletcher Cove	27	10	23	0.03	0.15	0.04

All the surf sites within the SELRP fill footprints can expect to have increased backwash during high tide immediately during and after construction due to the increased steepness of the design berm. Changes in high tide, post-construction backwash are expected to be negligible at surf sites away from the fill sites.

If the beach nourishment is built to the design slope of 10:1 then Georges can expect to have a constructed, high tide, increase in backwash of approximately 11 percent (i.e., the backwash would increase from 4 to 15 percent) during each nourishment construction episode. Immediately after construction, the beach slope and backwash will start to become milder. By approximately 4 months after construction the increase in backwash during high tide is expected to be approximately 3 percent. By 6 months after construction, any Project-induced signal in the beach profile slopes would be lost in the seasonal profile changes, which are much greater than those calculated in Table 7-1. These post-construction changes are expected to occur after each nourishment interval. Fletcher Cove can expect a similar one-time increase in backwash of approximately 12 percent during construction, and an increase of 1 percent lasting for 4 months after nourishment.

Any short term Project-induced surfing impacts due to construction of the beach berm should be weighed against potential beneficial impacts resulting from the construction of the ebb bar. As discussed in Section 7.3.4 of this report, the ebb bar is expected to significantly improve surfing resources near Georges.

(b) Direct Burial

The fill site in Imperial Beach for the RBSPII was built out into the surf zone with 450,000 cy of sand. This was identified to have temporarily negative impacts to surfing in that area. This fill volume was large for the available fill site length, thus the as-built beach width was 250 feet wider than the pre-project beach, much wider than other fill sites within RBSP II or the current

SELRP. No similar volumes or design beach widths are proposed for the SELRP. In fact, the widest SELRP beach width is proposed to be 150 feet. Thus, no direct burial of surf sites is expected from the Project.

7.2.2 Impacts from Modified Grain Size and Nearshore Slope

It is possible to calculate long-term changes in backwash, wave breaking intensity, and wave vortex ratio from changes in sediment grain sizes in the surf zone. This has recently been performed by the USACE (2012) for another project near the Project area. Since the sediment grain sizes to be disposed under the current Project are equal to the existing grain sizes within the littoral zone, no long-term changes in backwash, wave breaking intensity, and wave vortex ratio are expected.

7.2.3 Sedimentation Impacts at Reef Breaks

Adding sand to the vicinity of reef breaks has the potential to make them behave more like beach breaks. Beach breaks are not included in this analysis since adding more sand on top of beach breaks does not change them significantly. The most common surfing impact expected as a result of changing reef breaks to more beach break-like conditions would be reduced peel angles, reduced section lengths, reduced ride times, and increased close outs, especially during larger swells.

Many of the surf sites in the study area neither break like pure reef breaks nor pure beach breaks, but rather somewhere on a scale between the two. Where the local breaks lie on that scale depends on the time of year, breaking wave height, swell combination, swell direction, sand coverage, tide, and surfer perception. For example, Fletcher Cove is mostly a beach break, but during large winter swells it can break more like a reef break either due to waves refracting and breaking over the reef or simply from waves refracting over the reef and breaking over the sandy beach. Changes in sand elevation can change the extent to which any reef behaves like a reef break, whether or not the reef is entirely covered, partially covered, or its vertical elevation contrast (relief) simply lowered relative to the surrounding sandy seafloor. Raising the sandy seafloor surrounding a reef reduces the relief between the reef and sandy seafloor. This results in less refraction shoaling at the reef and less definition to the surf site. So any change in the sand thickness surrounding a reef could potentially change how that surf site breaks.

There are at least three ways to analyze Project induced changes to these reef surf sites described as follows:

1. Detailed wave modeling would require multiple sets of bathymetric data, wave data, and surf observations, ideally measured while the surf sites were behaving like beach breaks and while they were behaving like reef breaks. This would allow for

development of a graded scale upon which the sand thickness changes could be applied to determine extent of change. However, this level of data does not exist.

2. Lacking this data, numerical modeling could be performed driven by one bathymetric data set and a broad group of assumptions about how and when the surf site behaves in different ways and what bathymetric and wave conditions drive those breaks. Due to the assumptions, the level of confidence for this type of analysis would be low.
3. A conservative, subjective scale based on quantitative data could be developed to compare Project-induced changes to profile volumes to the natural variability of the profile volumes. Profile volumes are used as a simple proxy for more detailed analysis of variable cross shore sand thickness (for which there is no quantitative guidance either). This approach was chosen for the current analysis.

Two key variables were developed to carry out this analysis: 1) the increase in profile volume resulting from beach nourishment within a given duration, and 2) the standard deviation of the historical profile volume changes. These variables and their comparison are described in detail below.

The maximum predicted change in shoreline position (ΔSL) at the model cell nearest to each reef break, within the first 5 years after construction, was extracted from the GENESIS shoreline results. The GENESIS numerical model was used to estimate Project induced changes to beach widths as described by Everest (2013) and Moffatt & Nichol (2013). These shoreline changes were converted to changes in profile volumes (V_{SL}) using the V/S ratio developed for this project and described in the shoreline analysis report by Everest (2013). Values were calculated for various combinations of wave climate and Project Scenario. Since Alternative 2A was shown in the shoreline morphology report (Everest 2013) to have the greatest changes to shoreline position, only this alternative was analyzed. It was assumed that other alternatives would cause less impacts to reef breaks.

These V_{SL} values were compared to the standard deviation of measured profile volumes nearest to each reef beak (STDEV).

For the current study, the assumed threshold for change is an increase in V_{SL} equal to the STDEV expressed as:

$$\frac{V_{SL}}{STDEV} = \begin{cases} < 1, & \text{Impact is not likely} \\ \geq 1, & \text{Potential impact} \end{cases} \qquad \text{(Equation 4)}$$

This ratio was calculated for each year after construction through year 5 as shown in Table 7-2 through Table 7-7. Year 1 represents April 1, assuming construction finished March 15. Year 2 is the same time the following year. For each year and each reef break within the Project area, the following results are shown: V_{SL}/STDEV ratio, the nearest profile (that was used to calculate STDEV), the cumulative years of impact, and if any impact is expected or not.

Table 7-2 through

Table 7-4 shows results for Alternative 2A, Scenarios II, III, and IV, respectively, under the calm wave climate. Table 7-5 through Table 7-7 shows similar results under the high wave climate.

In general, the wider the beach nourishment option and the less variability in the existing profile, the more likely that this method will predict that the SELRP will have an impact on the reef break. Changing these reef breaks to behave more like beach breaks is likely to be perceived as a negative impact on those surf sites.

Table 7-2: Impacts to Reef Breaks Under the Calm Wave Climate, Alternative 2A, Scenario II

Surf Site	Nearest Profile	V_{SL}/ STDEV					Impact Duration	Reef Impact
		Yr1	Yr2	Yr3	Yr4	Yr5	(Years)	
Swamis	SD660	0.0	0.5	0.7	0.8	0.8	0	not likely
Dabbers	SD660	0.0	0.2	0.5	0.7	0.6	0	not likely
Brown House	SD650	0.0	0.1	0.4	0.6	0.3	0	not likely
Pipes	SD650	0.0	0.1	0.4	0.5	0.1	0	not likely
Traps	SD650	0.0	0.1	0.4	0.5	0.1	0	not likely
Turtles & Barneys	SD650	0.0	0.2	0.4	0.4	0.0	0	not likely
85s	SD630	0.0	0.1	0.1	0.0	0.0	0	not likely
Tippers	SD630	0.1	0.2	0.1	0.0	0.1	0	not likely
Cardiff Reef R	SD630	0.3	0.2	0.0	0.0	0.5	0	not likely
Seaside Reef	SD630	0.3	0.4	0.2	0.0	0.2	0	not likely
Table Tops	SD610	0.5	1.0	0.8	0.4	0.3	0	not likely
Pillbox & Southside	SD600	1.6	1.4	1.4	1.3	0.9	4	potential
Cherry Hill	SD595	2.8	1.8	1.7	1.7	1.6	5	potential
Rockpile	SD595	1.6	1.5	1.4	1.4	1.5	5	potential

Table 7-3: Impacts to Reef Breaks Under the Calm Wave Climate, Alternative 2A, Scenario III

Surf Site	Nearest Profile	V_{SL}/ STDEV					Impact Duration	Reef Impact
		Yr1	Yr2	Yr3	Yr4	Yr5	(Years)	
Swamis	SD660	0.0	0.0	0.0	0.1	0.1	0	not likely
Dabbers	SD660	0.0	0.0	0.1	0.2	0.1	0	not likely
Brown House	SD650	0.0	0.0	0.2	0.3	0.0	0	not likely
Pipes	SD650	0.0	0.2	0.3	0.3	0.0	0	not likely
Traps	SD650	0.0	0.2	0.3	0.3	0.0	0	not likely
Turtles & Barneys	SD650	0.0	0.3	0.4	0.3	0.0	0	not likely
85s	SD630	0.0	0.1	0.1	0.0	0.0	0	not likely
Tippers	SD630	0.1	0.2	0.1	0.0	0.1	0	not likely
Cardiff Reef R	SD630	0.3	0.2	0.0	0.0	0.5	0	not likely
Seaside Reef	SD630	0.3	0.3	0.1	0.0	0.1	0	not likely
Table Tops	SD610	0.3	0.6	0.4	0.0	0.0	0	not likely
Pillbox & Southside	SD600	0.0	0.2	0.4	0.4	0.1	0	not likely
Cherry Hill	SD595	0.0	0.0	0.2	0.4	0.3	0	not likely
Rockpile	SD595	0.0	0.0	0.0	0.2	0.3	0	not likely

Table 7-4: Impacts to Reef Breaks Under the Calm Wave Climate, Alternative 2A, Scenario IV

Surf Site	Nearest Profile	V_{SL}/STDEV					Impact Duration	Reef Impact
		Yr1	Yr2	Yr3	Yr4	Yr5	(Years)	
Swamis	SD660	0.0	0.5	0.7	0.8	0.8	0	not likely
Dabbers	SD660	0.0	0.2	0.5	0.7	0.6	0	not likely
Brown House	SD650	0.0	0.1	0.4	0.6	0.3	0	not likely
Pipes	SD650	0.0	0.1	0.4	0.5	0.2	0	not likely
Traps	SD650	0.0	0.1	0.4	0.5	0.1	0	not likely
Turtles & Barneys	SD650	0.0	0.2	0.4	0.4	0.0	0	not likely
85s	SD630	0.0	0.1	0.1	0.0	0.0	0	not likely
Tippers	SD630	0.1	0.2	0.1	0.0	0.1	0	not likely
Cardiff Reef R	SD630	0.3	0.2	0.0	0.0	0.5	0	not likely
Seaside Reef	SD630	0.3	0.4	0.2	0.0	0.2	0	not likely
Table Tops	SD610	0.5	1.0	0.8	0.4	0.3	0	not likely
Pillbox & Southside	SD600	1.6	1.4	1.4	1.3	0.9	4	potential
Cherry Hill	SD595	2.8	1.8	1.7	1.7	1.6	5	potential
Rockpile	SD595	1.6	1.5	1.4	1.4	1.5	5	potential

Table 7-5: Impacts to Reef Breaks Under the High Wave Climate, Alternative 2A, Scenario II

Surf Site	Nearest Profile	V_{SL}/STDEV					Impact Duration	Reef Impact
		Yr1	Yr2	Yr3	Yr4	Yr5	(Years)	
Swamis	SD660	0.1	0.6	0.8	0.8	0.8	0	not likely
Dabbers	SD660	0.0	0.4	0.6	0.8	0.7	0	not likely
Brown House	SD650	0.0	0.2	0.5	0.6	0.4	0	not likely
Pipes	SD650	0.0	0.2	0.5	0.6	0.3	0	not likely
Traps	SD650	0.0	0.2	0.5	0.5	0.2	0	not likely
Turtles & Barneys	SD650	0.0	0.3	0.5	0.4	0.2	0	not likely
85s	SD630	0.1	0.1	0.1	0.0	0.1	0	not likely
Tippers	SD630	0.1	0.1	0.1	0.0	0.1	0	not likely
Cardiff Reef R	SD630	0.4	0.2	0.0	0.0	0.4	0	not likely
Seaside Reef	SD630	0.4	0.3	0.2	0.0	0.2	0	not likely
Table Tops	SD610	0.7	1.0	0.7	0.3	0.4	0	not likely
Pillbox & Southside	SD600	1.5	1.4	1.3	1.1	0.7	4	potential
Cherry Hill	SD595	2.5	1.7	1.7	1.6	1.4	5	potential
Rockpile	SD595	1.7	1.4	1.4	1.4	1.3	5	potential

Table 7-6: Impacts to Reef Breaks Under the High Wave Climate, Alternative 2A, Scenario III

Surf Site	Nearest Profile	V_{SL}/STDEV					Impact Duration	Reef Impact
		Yr1	Yr2	Yr3	Yr4	Yr5	(Years)	
Swamis	SD660	0.0	0.0	0.1	0.2	0.1	0	not likely
Dabbers	SD660	0.0	0.0	0.1	0.2	0.1	0	not likely
Brown House	SD650	0.0	0.1	0.2	0.3	0.0	0	not likely
Pipes	SD650	0.0	0.2	0.3	0.3	0.0	0	not likely
Traps	SD650	0.0	0.2	0.3	0.3	0.0	0	not likely
Turtles & Barneys	SD650	0.0	0.3	0.4	0.2	0.0	0	not likely
85s	SD630	0.1	0.1	0.1	0.0	0.1	0	not likely
Tippers	SD630	0.1	0.2	0.1	0.0	0.1	0	not likely
Cardiff Reef R	SD630	0.4	0.2	0.0	0.0	0.4	0	not likely
Seaside Reef	SD630	0.3	0.2	0.1	0.0	0.1	0	not likely
Table Tops	SD610	0.4	0.6	0.3	0.0	0.0	0	not likely
Pillbox, Southside	SD600	0.0	0.3	0.4	0.3	0.0	0	not likely
Cherry Hill	SD595	0.0	0.1	0.3	0.4	0.3	0	not likely
Rockpile	SD595	0.0	0.0	0.1	0.3	0.3	0	not likely

Table 7-7: Impacts to Reef Breaks Under the High Wave Climate, Alternative 2A, Scenario IV

Surf Site	Nearest Profile	V_{SL}/STDEV					Impact Duration	Reef Impact
		Yr1	Yr2	Yr3	Yr4	Yr5	(Years)	
Swamis	SD660	0.1	0.6	0.8	0.9	0.8	0	not likely
Dabbers	SD660	0.0	0.4	0.6	0.8	0.7	0	not likely
Brown House	SD650	0.0	0.2	0.5	0.7	0.4	0	not likely
Pipes	SD650	0.0	0.2	0.5	0.6	0.3	0	not likely
Traps	SD650	0.0	0.2	0.5	0.5	0.2	0	not likely
Turtles & Barneys	SD650	0.0	0.3	0.5	0.4	0.2	0	not likely
85s	SD630	0.1	0.1	0.1	0.0	0.1	0	not likely
Tippers	SD630	0.1	0.1	0.1	0.0	0.1	0	not likely
Cardiff Reef R	SD630	0.4	0.2	0.0	0.0	0.4	0	not likely
Seaside Reef	SD630	0.4	0.3	0.2	0.0	0.2	0	not likely
Table Tops	SD610	0.7	1.0	0.7	0.3	0.4	0	not likely
Pillbox & Southside	SD600	1.5	1.4	1.3	1.1	0.7	4	potential
Cherry Hill	SD595	2.5	1.7	1.7	1.6	1.4	5	potential
Rockpile	SD595	1.7	1.4	1.4	1.4	1.3	5	potential

Observations indicate that reef breaks in Solana Beach at Pill Box, Southside, Cherry Hill, and Rockpile are offshore reef breaks that breakless frequently than other nearby sites. Most of the time they behave like beach breaks with waves shoaling in shallower sand-covered bottom areas close to shore. Therefore, the potential impact identified above for Scenarios II and IV may be of a lesser magnitude than the matrix suggests. An interview with long-time Solana Beach local Ira Opper indicated that sand deposition on the vicinity of these sites from previous nourishment by the San Diego Association of Governments (SANDAG) in 2001 produced good quality surf for a relatively short time period (Opper, Personal Communication 2012 and 2013). The sand quantity placed in 2001 at Fletcher Cove in Solana Beach is the same quantity proposed for this SELRP at 146,000 cy, and the sand is of similar quality as being relatively fine-grained. The same interview source indicates that Pill Box experienced poor conditions in 2012/2013 after sand was placed at Solana Beach in 2012 by SANDAG. This sand was much coarser in grain size than the previous project and may have deposited differently than finer sand. Considering these anecdotal data, sand from the SELRP may not cause a significant adverse impact to surfing at Solana Beach. However, the effects should be monitored and any adverse impacts identified if they occur.

7.2.4 Currents at Surf Sites

Ocean currents can change surfing by changing a surfer's ability to line up for and catch a wave and by changing the way waves break. The most frequent currents around these North County surf sites are rip currents and ebb and flood tidal currents near San Elijo Lagoon. Some currents

can also be expected near high relief reefs. All of these currents are expected to be highly variable, changing with swell, tide, and wind conditions. Potential impacts of currents are addressed in the subsequent report section of qualitative analyses.

7.2.5 Currents at Beach Breaks

As beaches widen with the Project alternatives, the break point of the surf sites are expected to move proportional distances seaward, bringing with them the various currents that exist under normal without-Project conditions. These currents are not expected to change in magnitude or direction, but only relocate seaward. Therefore, the SELRP is not expected to significantly change currents or change surfing in any discernible way through changes to currents at beach breaks.

7.2.6 Changes to Surf Break Location and Surfing Frequency

As with ocean currents, the locations of the break point of beach breaks are expected to move seaward distances that are proportional to the amount of beach widening. For example, if a beach is expected to widen by 100 feet, it can be expected that the beach break fronting that shoreline would move a similar distance seaward, maintaining an unchanged relative distance between the break point and the shoreline. The primary change to surfing locations at beach breaks is that they would move seaward relative to geographic coordinates, but not change perceptibly relative to the shoreline.

With no long-term expected changes to the surf zone seabed slope, most waves that would have been surfable prior to the SELRP would still likely be surfable under the Project condition. Exceptions are 1) during high tide during construction when a minor increase in backwash is expected and 2) at reef breaks that may experience excessive sedimentation. The above described changes to surfing quality can change the frequency of surfability as detailed in Table 7-8.

Table 7-8: Project Induced Changes to Surfing Frequency

Phenomenon	Project Induced Change	Change to Frequency of Surfability
Backwash at Beach Breaks	Increased backwash during construction	Less Frequent
Breaking intensity at Beach Breaks	No change	No change
Sedimentation of Reef breaks	Reef break to beach break	Less frequent
New Ebb Bar	New Surf Site	More frequent

Changing a surf site from a reef break to more of a beach break could reduce the surfing frequency, especially during walled conditions or windy conditions where the only surfable places tend to be reef breaks. Given that the increased backwash is expected to be an intermittent (only during high tides) and temporary impact (during and immediately after construction) and that the reefs impacted by sedimentation rarely break, and that the new ebb bar for Alternative 2A is expected to break frequently and be a permanent feature, the overall frequency of surfable waves within the study area are expected to improve as a result of the SELRP alternatives. As a note, the offshore ebb bar is not a permanent feature of Alternative 1B.

7.3 QUALITATIVE IMPACTS

These analyses address the effects of modifications to the tidal inlet from implementation of various alternatives, as compared to existing conditions.

7.3.1 Closing the Existing Inlet and Creating a New Inlet – Alternative 2A

Closure of the existing tidal inlet to create a new tidal inlet for Alternative 2A could potentially cause impacts from reduced tidal flow from the existing inlet, lack of scour along the reef edge, and potential effects on bathymetry. Each item is addressed below.

Reduced Tidal Flow – Tidal flow presently issues from the mouth of San Elijo Lagoon just south of the Cardiff Reef surf spot and north of George's. Tidal flow out of the Lagoon (ebbing tides) results in a rip current. The current velocities were modeled as part of the SELRP project hydrodynamics study (Moffatt & Nichol 2012). Model results for an ebbing spring tide show that the velocity of the current is relatively low because tidal flow "fans out" after issuing from the inlet channel into the nearshore ocean. Figure 7-2 shows the position of the ebbing tidal jet relative to Cardiff Reef for mid-tide as predicted using a numerical model. The figure shows the modeled velocity results overlaid on an aerial photograph of the coast. The model predicts currents distributed symmetrically off the inlet with flow spreading uniformly outward in an approximate 180-degree arc offshore..

Figure 7-2: Existing Inlet, Ebbing Spring Tidal Flow Velocities at High Tide

Existing conditions do not appear to include significant scour along the south edge of Cardiff Reef under normal conditions. Modeling predicts that existing ebb tidal flow velocities in the nearshore are insufficient to suspend sand from the seabed. Extreme conditions of high stormflows draining coincident with ebbing spring tides may result in scour in the beach and nearshore, but do not appear to be a controlling factor for bathymetry. Several aerial photographs from different dates when the tidal inlet was closed are provided in Figure 7-3 through Figure 7-6. The wave breaking pattern at Cardiff Reef does not appear different from dates when the tidal inlet was open, shown in Figure 7-7 and Figure 7-8. These data support the conclusion that the bathymetry of Cardiff Reef is not controlled or affected significantly by scouring from the inlet, but rather by the bedrock foundation of the reef.

In addition, the position of the ebbing current jet is typically south of the surf spot and not in direct connection with the path of the wave rider. Reducing the ebbing current by closing the inlet for Alternative 2A will not likely affect the bathymetry of Cardiff Reef and surfing.

Figure 7-3: Inlet Closed, 1972

Figure 7-4: Inlet Closed, 1986

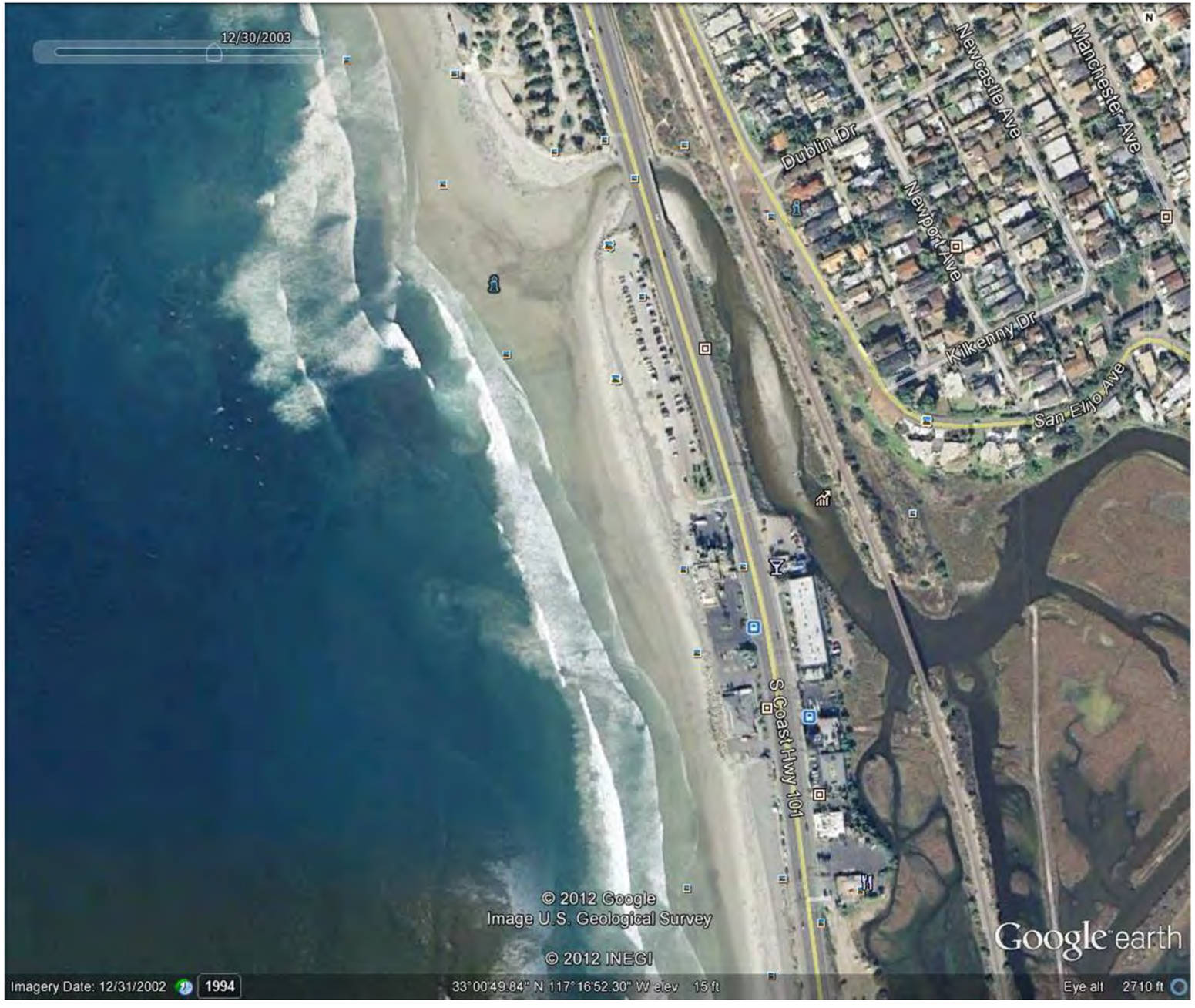


Figure 7-5: Inlet Closed, 2002

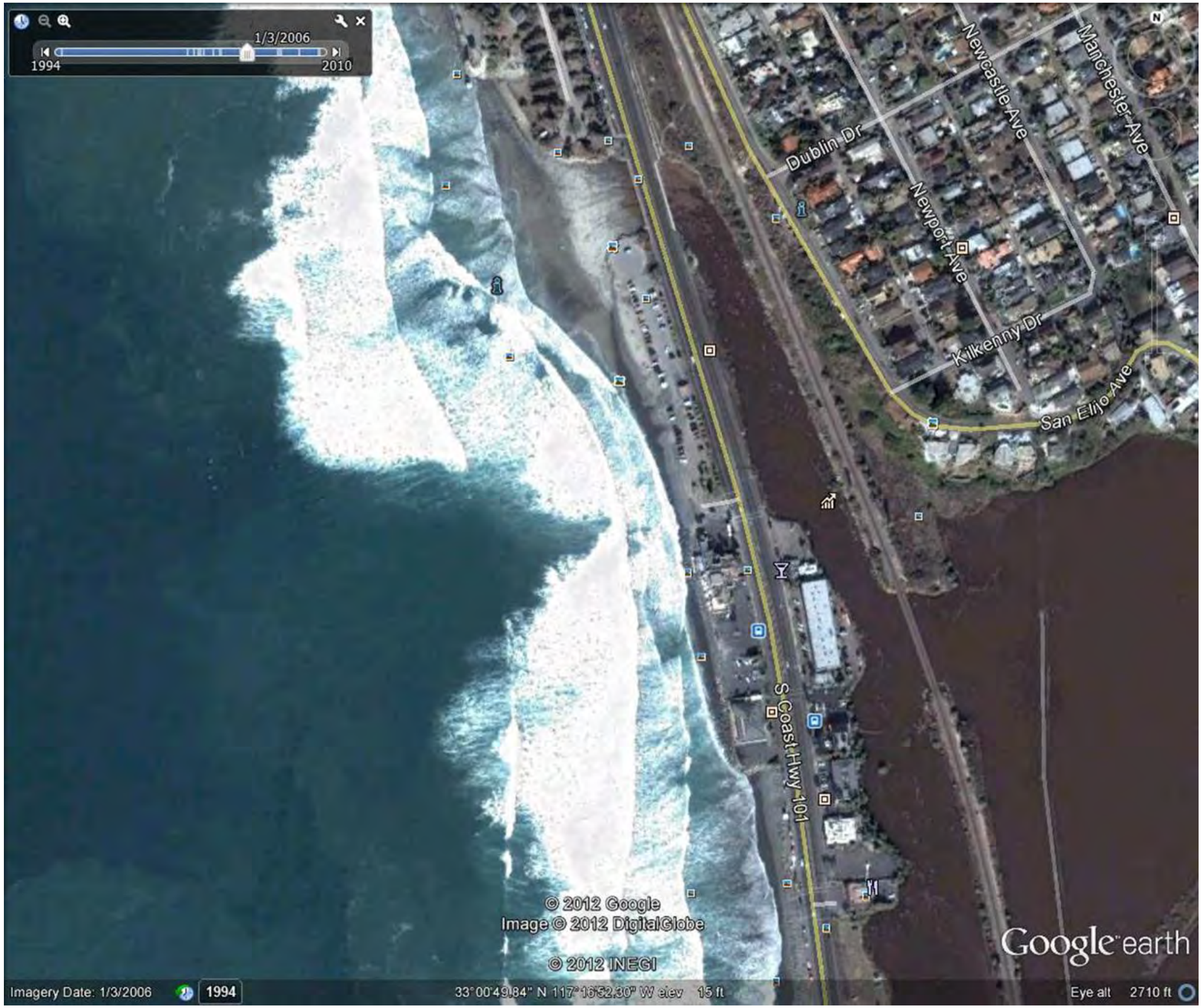


Figure 7-6: Inlet Closed, 2006

Figure 7-7: Inlet Open, 1993

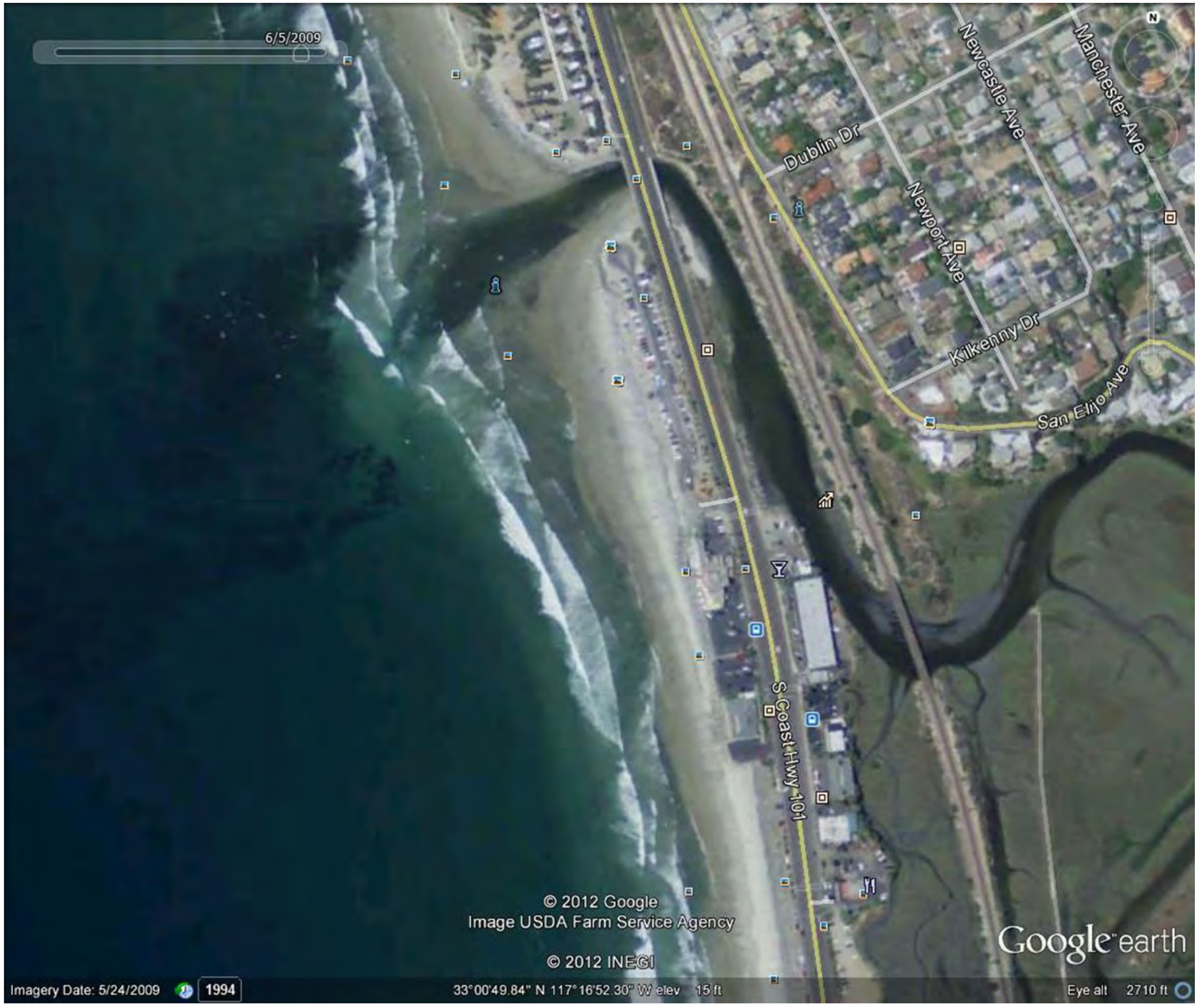


Figure 7-8: Inlet Open, 2009

7.3.2 An Existing Open Lagoon Mouth With Increased Flows – Alternatives 1A and 1B

Implementing Alternatives 1A and 1B will increase the tidal prism of the Lagoon, and the consequent tidal discharge through the tidal inlet. Impacts to surfing could be caused by current/wave interaction. Hydraulic model results were used to compare existing conditions to proposed conditions for alternatives.

Increasing the tidal discharged from the existing tidal inlet could cause increased turbulence on the ocean surface at the Cardiff Reef surf spot if the currents interacted with waves in a particular manner. If the ebbing current was directed into the wave shoulder or toward the take-off zone of the wave at Cardiff Reef, turbulence from the current interaction with the wave could cause chop on the surface and decrease the wave quality. This type of condition exists at certain inlets (e.g., Ocean Beach Jetty in San Diego) under certain spring tidal conditions and makes it more difficult to surf and can diminish the surfing experience. Observations at Cardiff Reef over time show that the ebbing current is directed more to the southwest and away from the shoulder of the right at Cardiff Reef, and current/wave. With the relative position of the ebbing current south of and away from the Cardiff Reef surf spot, increasing tidal currents should not cause a new problem with current/wave interaction. Table 7-9 shows existing tidal currents in the nearshore, and predicted currents with Alternatives 1A and 1B. The variation in tidal current velocities is relatively low and should not cause a change in the existing pattern of the ebbing tide. Therefore, it is not anticipated that either alternative would cause different current/wave interaction and a decrease in surfing wave quality or the surfing experience. Figure 7-10 shows predicted ebb tidal current velocities at Cardiff Reef.

Table 7-9: Ebbing Spring Tidal Peak Flow Velocities at Cardiff Reef for Mid-Tides As Predicted by the Hydrologic Model (in Feet Per Second)

Location	Existing Conditions – No Project	Alternative 1A Minimal Grading/Dredging – Existing Inlet	Alternative 1B – Maximum Habitat Diversity – Existing Inlet
Mid-Tide Conditions With the Wave Break Point Closer to Shore			
Beach	2.0	2.0	>2.0
Impact Zone	0.2	0.3	0.4
Line-Up	<0.2	<0.2	0.2

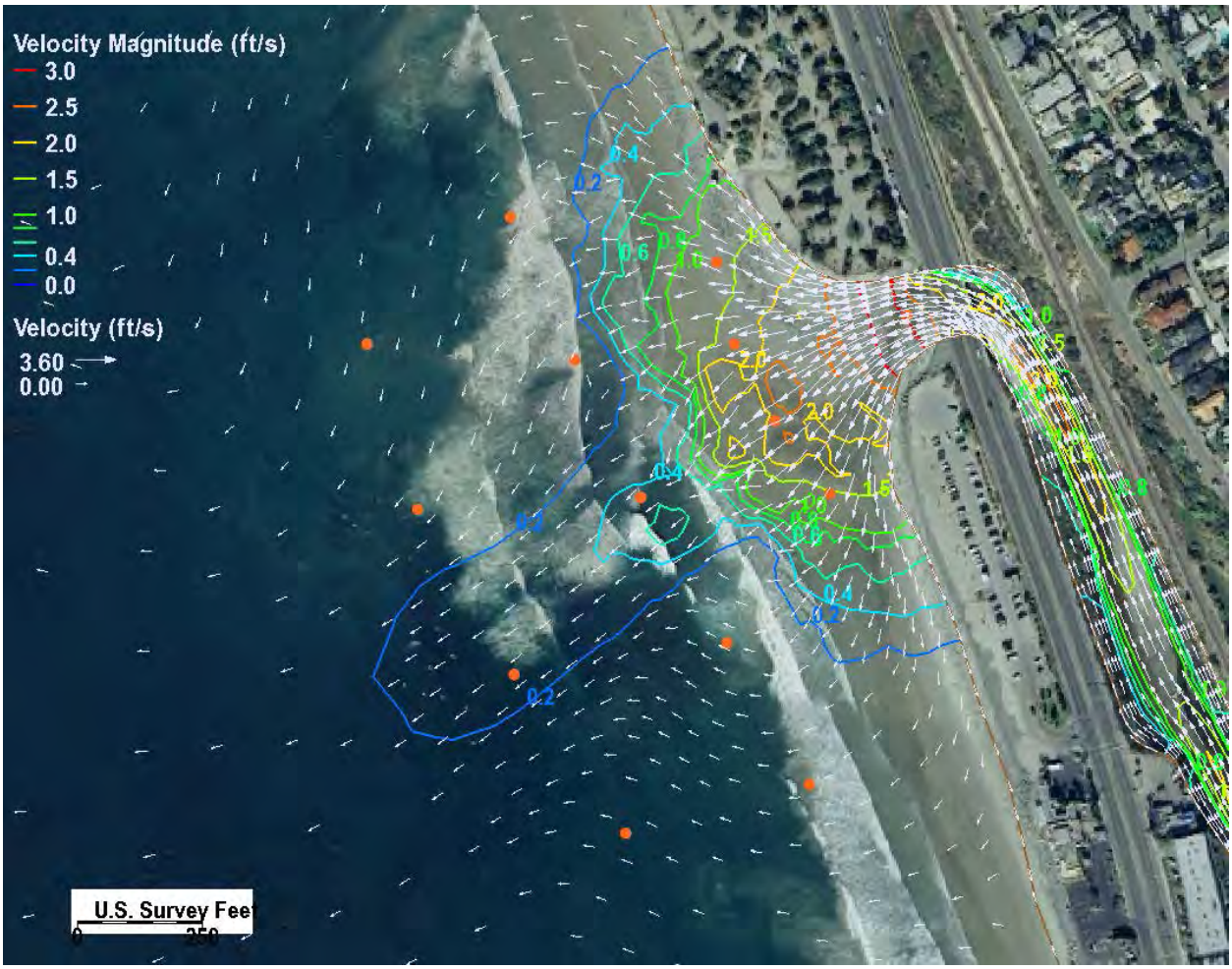


Figure 7-9: Ebb Tidal Flow Velocities at Cardiff Reef

Regardless, if Alternatives 1A or 1B move forward, monitoring of possible project effects of the ebbing tidal current on surfing at Cardiff will be required and any mitigation identified.

Although the numerical model indicates slightly increased tidal currents in the vicinity of the surf break, the effect may be reduced because the location of the ebbing tidal jet is south of the South Peak surf break. The location of the ebbing tidal jet follows the bathymetry that is deeper to the south of the South Peak. South Peak breaks over a shallower area of the reef and the breaking wave follows that bathymetry. In contrast, ebbing tidal currents seek the path of least resistance, and therefore follow the deeper bathymetric contours outside of the surf break. Site observations show that the ebbing tidal current is located off and away from the shoulder of the right that breaks off South Peak.

7.3.3 New and Relocated Lagoon Mouth– Alternative 2A

Installing a new tidal inlet relocated south of the restaurants for Alternative 2A will change the surf at George's. Surfing at George's occurs from in front of restaurant row south to the middle portion of Cardiff Beach. Alternative 2A would install a new tidal entrance through the beach south of Las Olas Restaurant, and through the southern portion of George's. Figure 7-10 shows the project inlet location relative to George's. This will significantly alter a portion of George's, but the effect may range from adverse under certain conditions, to neutral and even beneficial under other conditions.

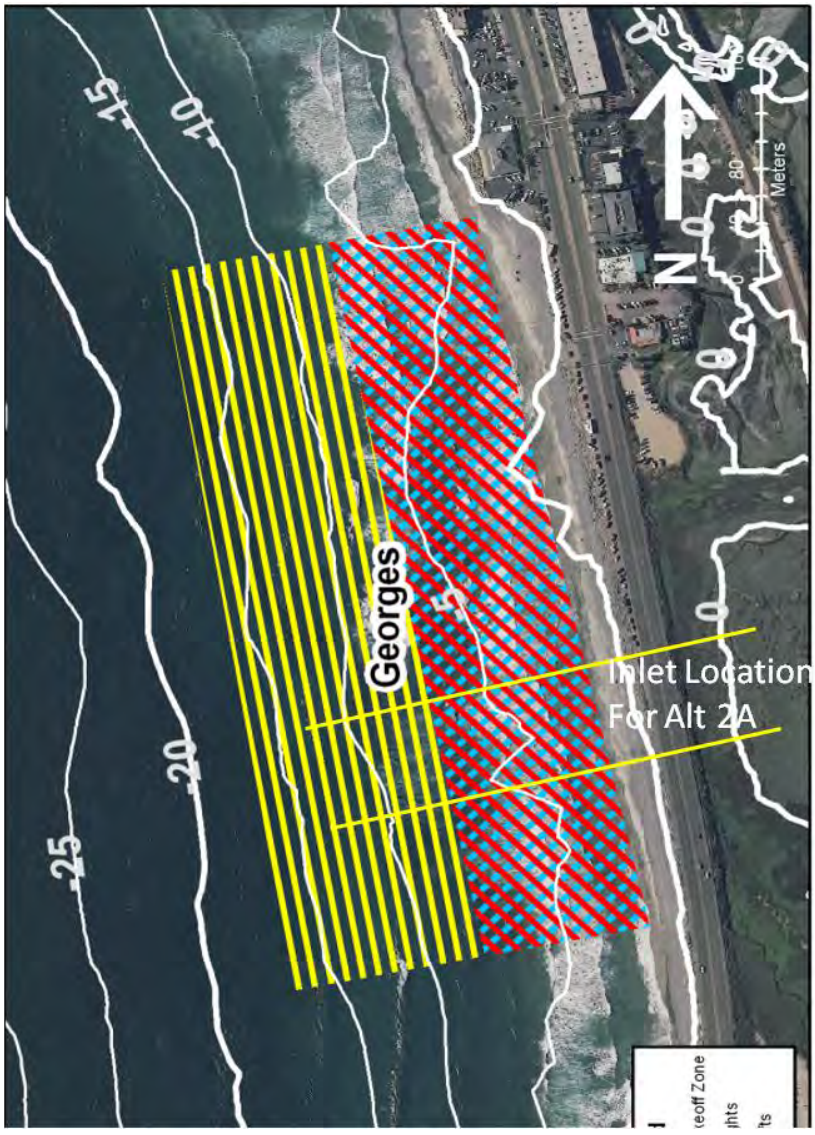


Figure 7-10: Tidal Inlet Location for Alternative 2A Relative to George's

The existing character of George's will change with the existence of a new channel, but there will not be jetties protruding into the water. Short stone Cobble Blocking Features (CBFs) are

proposed on both sides of the inlet at the back of the beach (near the toe of the existing revetment slope) to partially block existing cobble from entering the inlet during winter conditions and to protect the base of the bridge abutment from direct wave attack. These structures are intended to be below the beach and landward of the water line under near all conditions, so they should be "transparent" to any effect on surfing.

The new inlet channel will extend through the surf zone as a deep spot that may provide a paddling opportunity for return trips to the line-up. The channel will breach the nearshore sand bars at George's and change existing wave breaking patterns. A larger bar will exist at the seaward end of the channel in the nearshore (the ebb bar) that may produce a ridable peak, similar to what presently exists off Batiquitos Lagoon mouth, the San Dieguito River mouth, and Bolsa Chica. Therefore, the project will create a break in the existing relatively straight-lined bathymetry along this beach and may create a rideable wave in the vicinity of the new tidal inlet. Some surfers prefer physical features (inlets) that cause a break in existing bathymetry to provide sufficient variation to create "peaks" and "shoulders" at sites where unrideable "walls" exist prior to the project. Concluding whether this effect is a detriment, is neutral, or is a benefit will be subjective to the individual surfer and will vary from person to person.

Currents will exist in the channel that will be outflowing (ebbing) during dropping tides and incoming (flooding) during rising tides. Ebbing tidal currents resemble a rip current that will degrade surfing conditions at the lagoon mouth during ebbing. This condition will be short-lived and mainly discernible during spring tides that occur several times every other week. Flooding tidal currents should be indiscernible to surfing quality.

7.3.4 New Nearshore Mound– Alternatives 1B and 2A

Both Alternatives 1B and 2A include installing a sand mound in the nearshore zone along the center of the reach of Cardiff Beach (approximately half-way between Cardiff Reef and Seaside Reef). The sand mound is to serve as an ebb bar for Alternative 2A off the new inlet. The sand mound is simply a beneficial sediment re-use opportunity for Alternative 1B. The nearshore mound can provide a significant surfing benefit if designed and constructed appropriately, or it can be neutral to benign on surfing. The mound should not be a detriment to surfing. Waves tend to focus on the mound and can form a peak if the mound is shallow enough, and can provide ridable shoulders if the mound outline is either in a shallow angle toward shore or curved/rounded. Waves will refract (wrap) around the mound and break over the shallow portion in a peeling left and right. Depending on the depth of the nearshore mound's crest, it can break at various tides. A very shallow mound crest can break at all tides, while a slightly deeper mound crest may only break at mid- to low tides. Even if the mound does not generate an average quality breaking wave at high tide, the wave refraction over the mound can lead to creation of a peak or multiple peaks along the beach landward of the mound.

The nearshore mound for Alternative 2A will likely be a semi-permanent feature that will be dynamic and change over time, depending on tide and wave conditions. The mound for Alternative 1B will be a temporary feature that will gradually disperse and eventually disappear. Figure 7-11 shows an example of a peak created off Huntington State Beach in 2010 by deposition of 100,000 cy of sand immediately off the beach. The mound created epic surf called the "freak peak" for about 3 months, then began to disperse and provided rideable and fair surf for another 3 months for a 6-month total lifespan.

Figure 7-11: The H.B Freak Peak Above and Below in 2010

Similarly, a larger mound was constructed off Newport Beach (Santa Ana River Mouth) in 1992 by the U.S. Army Corps of Engineers (USACE) where 1.5 million cy of sand and silt was placed nearshore. The mound formed a high-quality peak called "submarines" due to the dredge discharge line periodically surfacing and resembling a submarine. The peak was present for approximately 6 to 9 months, and held sizable surf. The mound was so large that sand dispersed off the mound toward shore and created a connecting bar from mound to beach. Waves could

be ridden over the mound and along the bar all the way to shore for a distance of approximately ¼ mile.

Sand dispersal off of the mound for Alternative 1B should not pose a detriment to surf spots at Cardiff Reef and Seaside Reef, both just up- and downcoast of the mound. Sand will disperse in a thin layer in the downcoast direction and gradually spread over a large area (footprint) over the seafloor. Due to the mound's limited sand quantity and large area of dispersal, the absolute thickness of the sand veneer at downcoast reefs is on the order of inches rather than feet, so any effects should be indiscernible to surfing.

7.3.5 Effects on Surfing at Other New Inlet Locations

Another project surfing analysis includes documentation of effects to surfing at existing and new inlets associated with restoration projects. Several recent wetland restoration projects were installed that included new tidal inlets at Batiquitos Lagoon (1996), Bolsa Chica Wetlands (2006), and Huntington Beach Wetlands (1991). Another recent wetland restoration project at San Dieguito Lagoon (2011) preserved the existing lagoon inlet condition, but increased the tidal prism and potential tidal currents. Analysis of the effects of these projects and their effects on surfing are below.

(a) Batiquitos Lagoon

Batiquitos Lagoon was restored and opened in 1996 to tidal flow through a new tidal inlet. Historically the inlet was not jettied, and was closed by a cobble berm, thereby impounding lagoon water and decreasing water quality. Restoration increased the tidal prism and stabilized the inlet with relatively short jetties to restore lagoon habitat as mitigation. The jetties are referred to non-surf zone piercing because they are intentionally too short to pierce through the surf zone. The design intent was to eliminate adverse impacts to the shoreline from sand trapping by the jetties.

While surfing off Batiquitos Lagoon was basically non-existent prior to lagoon restoration, surfing off the lagoon inlet is presently very good. The surf spot referred to as Ponto is a sand bar off the lagoon mouth at the location of the ebb bar. A sand bar was formed off the mouth by sand moving alongshore being deflected into deeper nearshore water by ebbing tidal currents, therefore termed an ebb bar. The ebb bar is crescent-shaped (concave toward shore) and thus a curved arc toward the sea. Incident waves refract (bend) over and around the ebb bar and break as a peak with sloping right and left shoulders. The bar is stable and the quality of the break is good. Conditions are reliable as the bar causes waves of nearly all sizes and directions break with similar shape. The site is affected by tides, but breaks on nearly all tides as long as sufficient wave energy exists. The surf can be crowded, but it is definitely improved over the pre-project

condition. Surf contests are also held at the site. Figure 7-12 and Figure 7-13 show the Ponto site before and after restoration.

(b) Bolsa Chica Wetlands

A surfing study was conducted for Bolsa Chica in 1990 prior to restoration (M&N 1991). The study evaluated the existing surfing conditions along Bolsa Chica State Beach and identified qualities that surfers liked about Bolsa Chica. Information about surfing near structures was also provided in the study. Bolsa Chica was restored in 2006 with similar short jetties at a new tidal inlet. Since construction, this site has been heavily surfed. Surfing was always popular along Bolsa Chica due to its relative uncrowded conditions compared to more crowded sites (Huntington Cliffs and Huntington Beach Pier), and its more gentle type of wave compared to gnarlier breaks. Bolsa has always attracted a broader range of crowd, from younger kids, to women, to longboarders, to shortboarders.

Installation of new tidal inlet with jetties created another ebb bar off the mouth with a multiple peaks and shoulders. This bar is not as definitive as the one at Batiquitos Lagoon, but it exists in a different form. This inlet is wider and the lagoon has a smaller tidal prism than Batiquitos, so the ebb bar is less pronounced. However, the area off the mouth consists of variable sand bars that provide ridable surf under most conditions. The variety of the sand bars caused by the break in bathymetry at the inlet channel and ever-dynamic tidal currents provide a broad field of peaks. This site is different in character than pre-restoration Bolsa, and is generally as good of quality as before restoration and is at times of better quality. Bolsa serves as a refuge from more exposed breaks during high southern swell and can provide rideable shoulders while other breaks close out. It is also is better exposed to northern hemisphere swell than large areas of Huntington and Newport Beaches and can therefore provide higher waves in winter months under some conditions. Figure 7-14 and Figure 7-15 show the Bolsa Chica inlet location before and after restoration.

Figure 7-12: Batiquitos Lagoon Before Restoration

Figure 7-13: Batiquitos Lagoon After Restoration

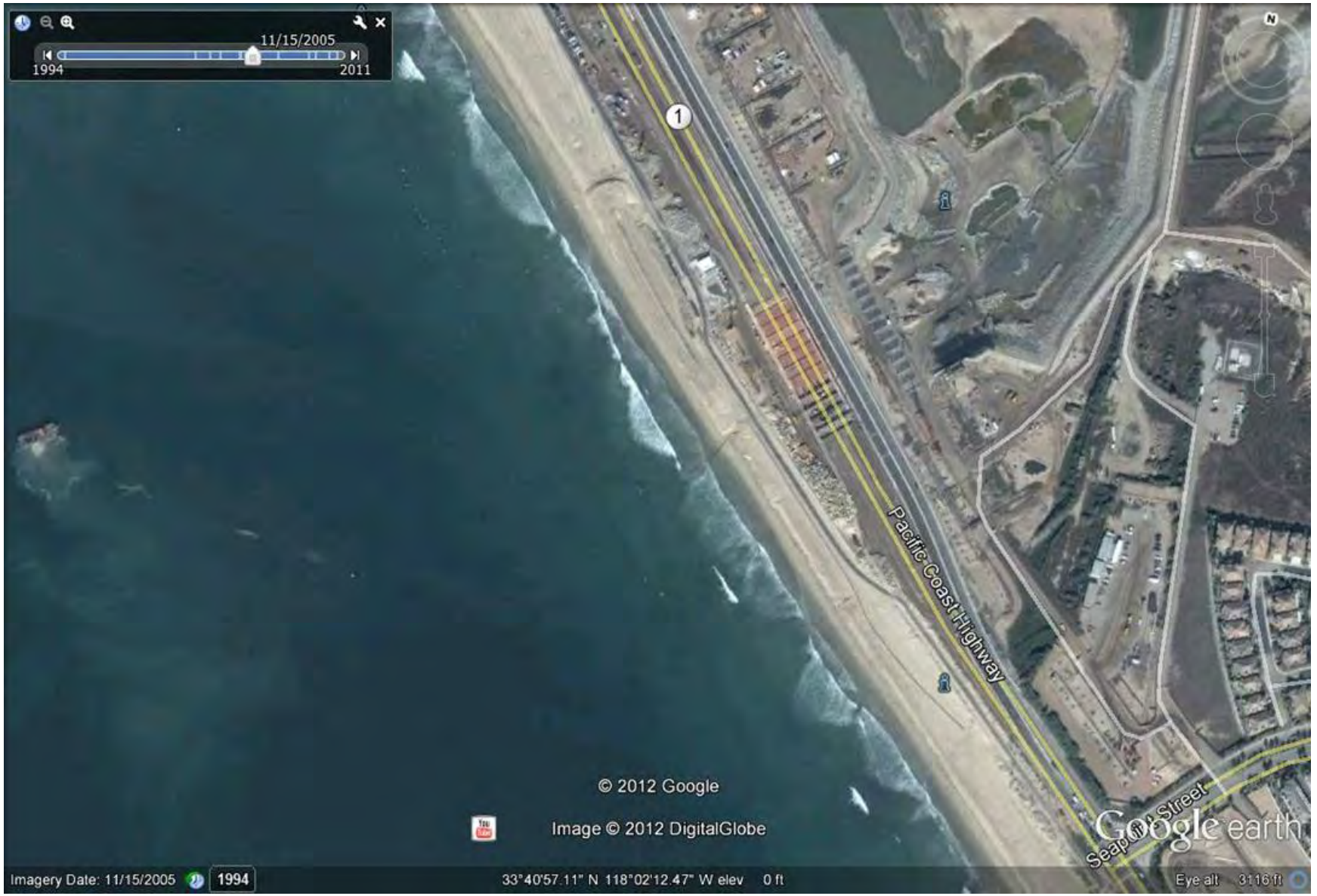


Figure 7-14: Bolsa Chica Wetlands Before Restoration

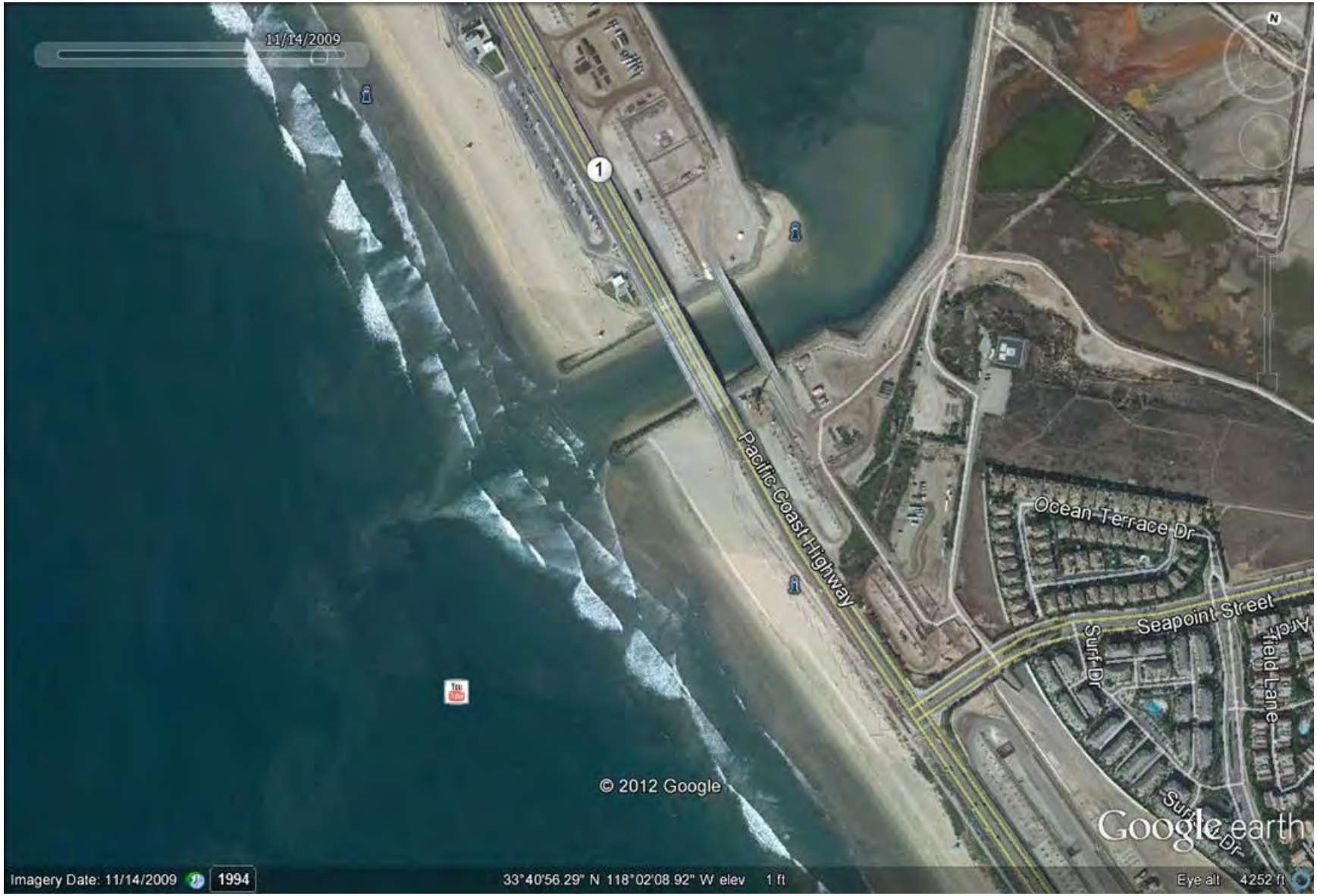


Figure 7-15: Bolsa Chica Wetlands After Restoration

(c) Huntington Beach Wetlands

The surf off the Huntington Beach Wetlands inlet is high quality. Jetties are shortest at this site compared to the previous two sites, and waves are nearly uninterrupted by the channel at most tides. The site is called River Jetties (or RJs) and consists of a field of peaks that is rideable under most conditions. RJs was a good break as far back in time as locals tend to recall, and has remained very high quality to the present. The inlet introduced a break in bathymetry that may increase the number of more defined peaks at the site than before restoration, but this is not confirmed. Dropping tides result in a strong current that tears through the line-up under certain conditions. Little or no change has occurred to the surf along RJs since installation of the tidal inlet, but the surf is good. Figure 7-16 and Figure 7-17 show examples of RJs before and after restoration.

(d) San Dieguito Lagoon

San Dieguito Lagoon is characterized by a sand bar off the mouth in the form a less defined ebb bar than the first two examples above. Surfing is relatively good off the lagoon mouth. Restoration has not apparently caused an impact to surfing at this site. Surfers frequent the mouth now, as they did prior to restoration. It is possible that restoration did not significantly change this site either, because it has possessed a lagoon mouth for decades. The increased tidal prism from restoration is relatively small compared to the first two sites described above, and the effects on sand bar formation are less dramatic. However, there is a definite attribute of sand bar formation off the mouth and surfing conditions are better at this location than along the adjacent beaches. Figure 7-18 and Figure 7-19 and show the sites before and after restoration.

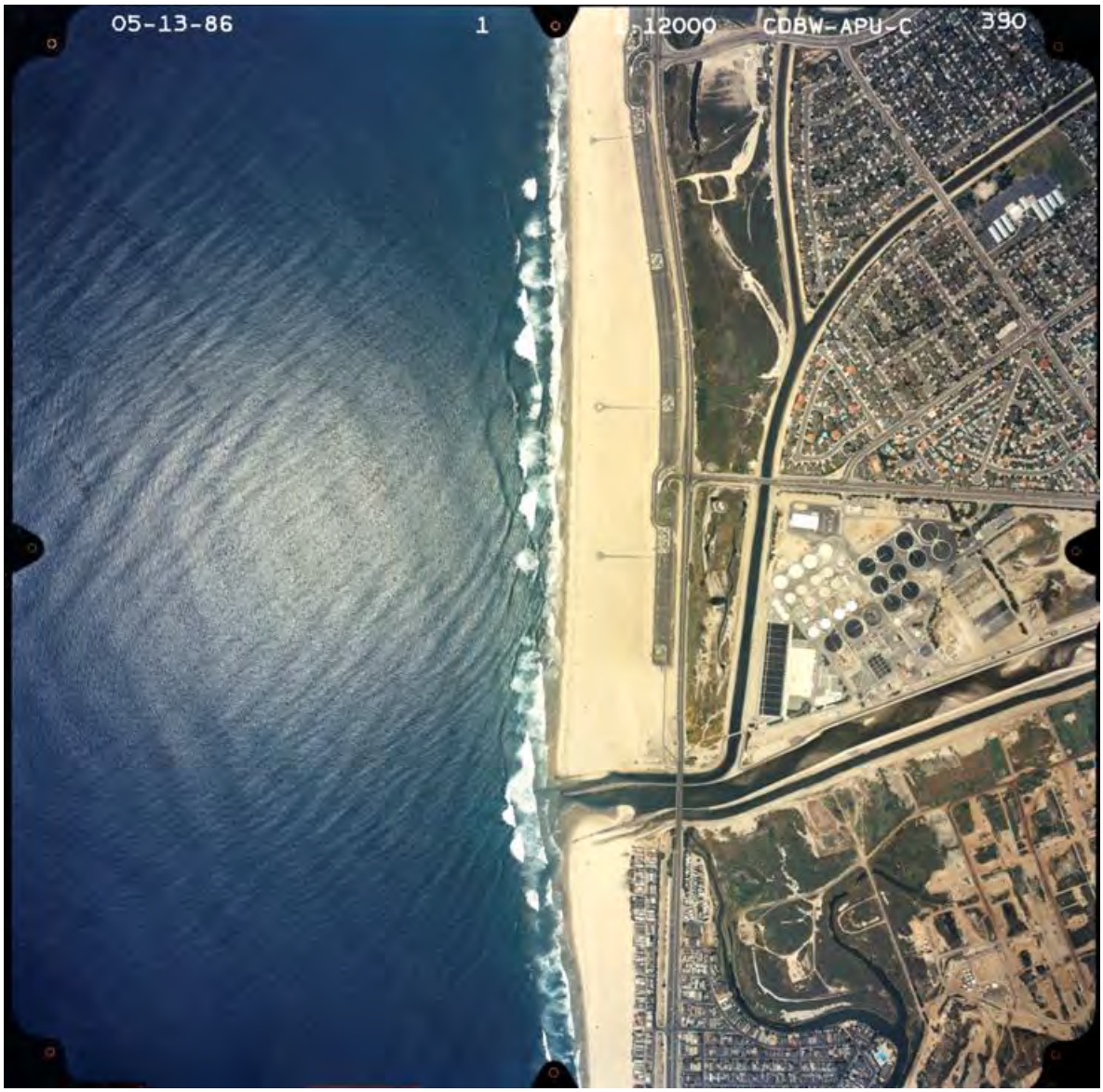


Figure 7-16: Huntington Beach Wetlands Before Restoration

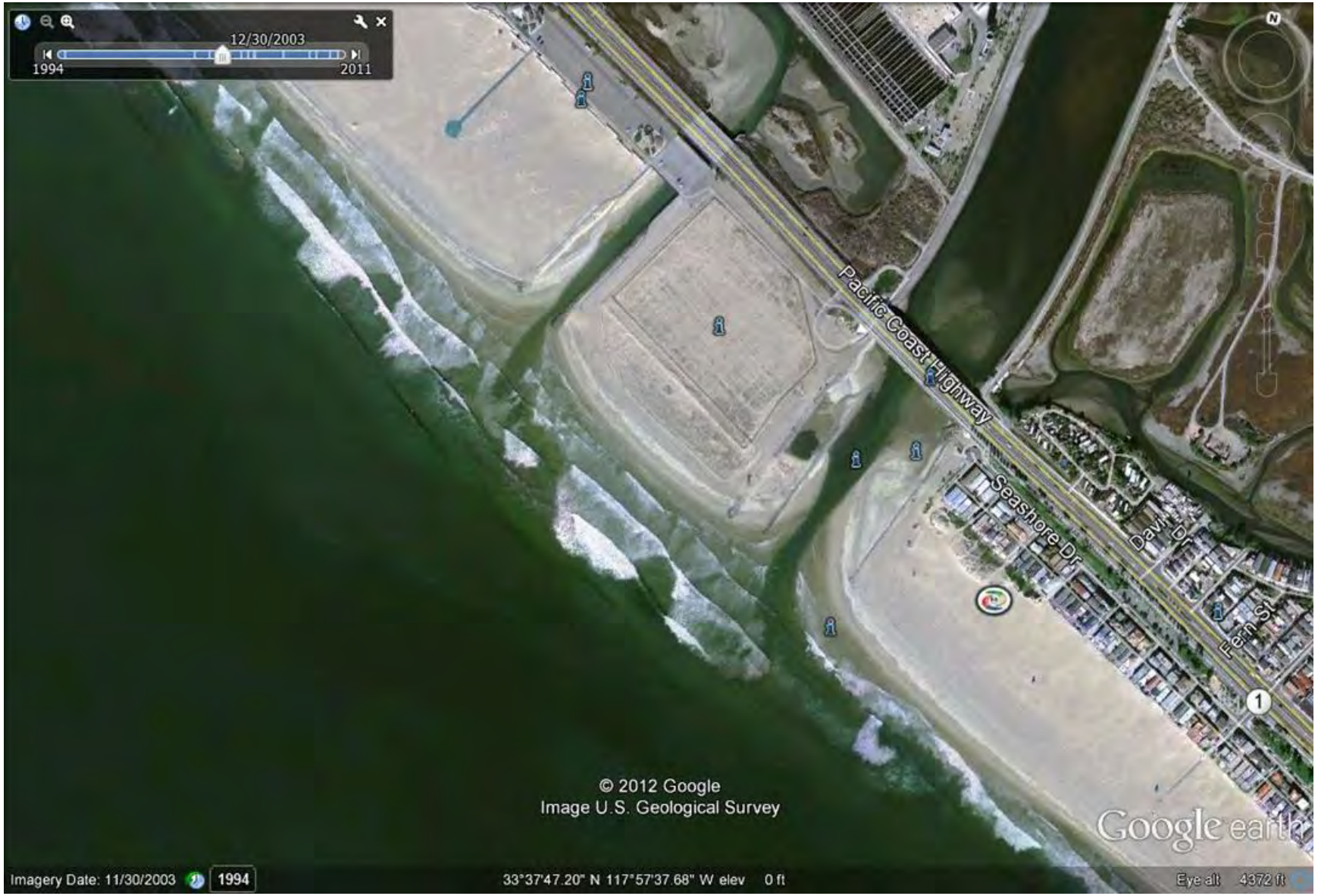


Figure 7-17: Huntington Beach Wetlands After Restoration

Figure 7-18: San Dieguito Lagoon Before Restoration

Figure 7-19: San Dieguito Lagoon After Restoration

8. CONCLUSIONS

Implementation of the SELRP will potentially have effects on surfing that may range from beneficial, to neutral, to temporarily adverse. Four alternatives are being considered that consist of No Project, and Alternatives 1A, 1B, and 2A. Two of the four alternatives (1B and 2A) involve generation of surplus sand that may be placed in the littoral zone, either on the beach and/or in the nearshore zone. Two alternatives (1A and 1B) also include changes within the lagoon that will increase the tidal prism and tidal discharges through the existing tidal inlet channel. One alternative (2A) assumes relocation of the tidal inlet channel to a new location south of the existing inlet, and closure of the existing inlet. Effects to surfing may occur from:

- Placement of surplus sand at several beaches from Moonlight Beach to Torrey Pines for Alternatives 1B and 2A;
- Increasing the volume and rate of tidal flows from the lagoon to sea through the existing inlet channel for Alternatives 1A and 1B;
- Installing a new tidal inlet south of the existing inlet, and closing the existing inlet for Alternative 2A; and
- Installing a nearshore sand bar off Cardiff Beach for Alternatives 1B and 2A.

Existing baseline surfing conditions were observed from Swami's to the San Dieguito Rivermouth for a six-month period in 2011 and 2012.

Analyses included quantitative evaluation of various possible impacts such as:

- Backwash;
- Burial of sand bars;
- Nourishment sand grain size and nearshore slope;
- Sedimentation at reefs;
- Increased or modified currents; and
- Changes in frequency of surfability.

Conclusions of the quantitative analyses indicate that with no long-term expected changes to the surf zone seabed slope, most waves that would have been surfable prior to the SELRP, would still likely be surfable under the Project condition. Exceptions are 1) during high tide during construction when a minor increase in backwash is expected and 2) at reef breaks that may

temporarily experience excessive sedimentation. These changes to surfing quality can change the frequency of surfability as detailed in Table 7-8 in the report.

Excessive sedimentation can change a surf site from a reef break to more of a beach break. This type of change could reduce the surfing frequency, especially during walled conditions or windy conditions where the only surfable places tend to be reef breaks. This may be the case for reefs in Solana Beach south of tabletops, but not at other reefs. The reefs potentially impacted by sedimentation rarely break, so existing surfing frequency is low.

Given that the increased backwash is expected to be an intermittent (only during high tides) and temporary impact (during and immediately after construction) and that the reefs impacted by sedimentation rarely break, and that the new ebb bar is expected to break frequently and is a permanent feature for Alternative 2A (but temporary for Alternative 1B), the overall frequency of surfable waves within the study area are expected to improve as a result of the SELRP alternatives.

Analyses also included qualitative evaluation of the following conditions:

- Closing the inlet and creating a new inlet (Alternative 2A);
- Increasing flows at the existing lagoon mouth (Alternatives 1A and 1B);
- Installing a new and relocated inlet (Alternative 2A);
- Installing a nearshore mound (Alternatives 1B and 2A); and
- General observations of conditions at new inlets.

Results indicate the following:

Closing the inlet and creating a new inlet (Alternative 2A) – Closing the inlet should not affect surfing at Cardiff Reef or other spots. A potential concern involved loss of possible sand supply from the lagoon to the littoral zone if the inlet were closed. Sufficient evidence exists that San Elijo Lagoon inlet has closed historically and the surf quality at Cardiff Reef and nearby breaks remained unaffected. Surfing has continued over time through long periods of the existing inlet being closed so there seems to be no effect on surfing from closing the existing inlet.

Increasing flows at the existing lagoon mouth (Alternatives 1A and 1B) – Tidal flows will increase to the nearshore ocean from existing inlet alternatives. The magnitude and location of the increased tidal flows are critical to impacting surf. Numerical modeling for the lagoon shows slightly increased currents in the line-up at Cardiff Reef which could cause an impact. The model results were generated to determine flow velocities only, and the relatively low level of increase to velocities as predicted should result in no perceptible change in the ebb flow condition at

Cardiff Reef. Impacts from any ebb current increase may be minimized because the ebbing nearshore current from the lagoon runs south of Cardiff Reef and follows a deeper channel around the surf break. This empirical evidence suggests that increased currents would not affect Cardiff Reef or other adjacent surf spots. Monitoring of surfing and potentially increased currents at Cardiff Reef should occur to quantify adverse impacts and identify potential mitigation measures.

Installing a new and relocated inlet (Alternative 2A) – The new tidal inlet of Alternative 2A will run through the south end of George's and change a portion of that surf spot. The change in this area may range from detrimental, to neutral, and even beneficial depending on the subjective judgment of the surfer. The remaining portions of the surf spot are anticipated to be unaffected. The new inlet will create a break in the straight nearshore bathymetry that will create a different surfable wave off the inlet mouth than presently exists. Currents will run through the inlet and affect surfing during ebbing tides and may be adverse several times per month during spring ebbing tides, but will not preclude surfing the majority of the time. Benefits have been realized for surfing at new inlets at Batiquitos Lagoon, Huntington Beach Wetlands, and Bolsa Chica Wetlands.

Installing a nearshore mound (Alternatives 1B and 2A) – A new nearshore mound installed off Cardiff Beach (i.e. seaward of Georges) will create a surf spot that does not presently exist, and may also improve surfing in the lee of the mound along Cardiff Beach compared to existing conditions. The mound can be designed to be a significant short-term benefit for Alternative 1B and a permanent benefit for Alternative 2A. Other nearshore mounds have been installed with varying success, but largely with benefits at sites such as Huntington State Beach and Newport Beach.

General observations of conditions at new inlets – New inlets tend to create new surfing opportunities that are beneficial. Several exist along the Southern California coast and are discussed for their quality. Each provides good quality surfing.

9. RECOMMENDATIONS

Several recommendations for either minimizing potential impacts and/or creating additional benefits are provided below for consideration. Recommendations are made under the categories of: 1) Beach fill design; 2) Nearshore mound design; and 3) Monitoring, and are discussed below. More recommendations may come out of the analysis by stakeholders and agencies that can be added to this study in the future.

Beach fill design - Minimizing impacts to surfing can be achieved by creating beach fills that mimic natural beach evolution. Design of the fills should be done to create a less abrupt seaward slope than many man-made beach fills to reduce impacts of backwash at high tide. Also, the planform (aerial view shape) of the fill can be adjusted to either be protective of existing surf, or to create a more discernible surfing benefit. Protection of existing surf can occur by keeping the fill narrow and not extend it into the surfzone to the location of existing sand bars. For example, designing beach fills along Cardiff Beach that are relatively narrow should be protective of the surf spot called George's for both Alternatives 1B and 2A. Alternatively, if a greater direct benefit to surfing is desired, then the fills can be shaped like sand points that protrude seaward as a triangle to form a peak.

Nearshore mound design – Surfing benefits can be increased with optimal nearshore mound design. Designs for surfing reefs have been generated by others in the past that can be applied to this project. For example, Figure 9-1 shows a reef plan view and cross-section concept developed by Kimo Walker (1974) that can be considered for application to this site.

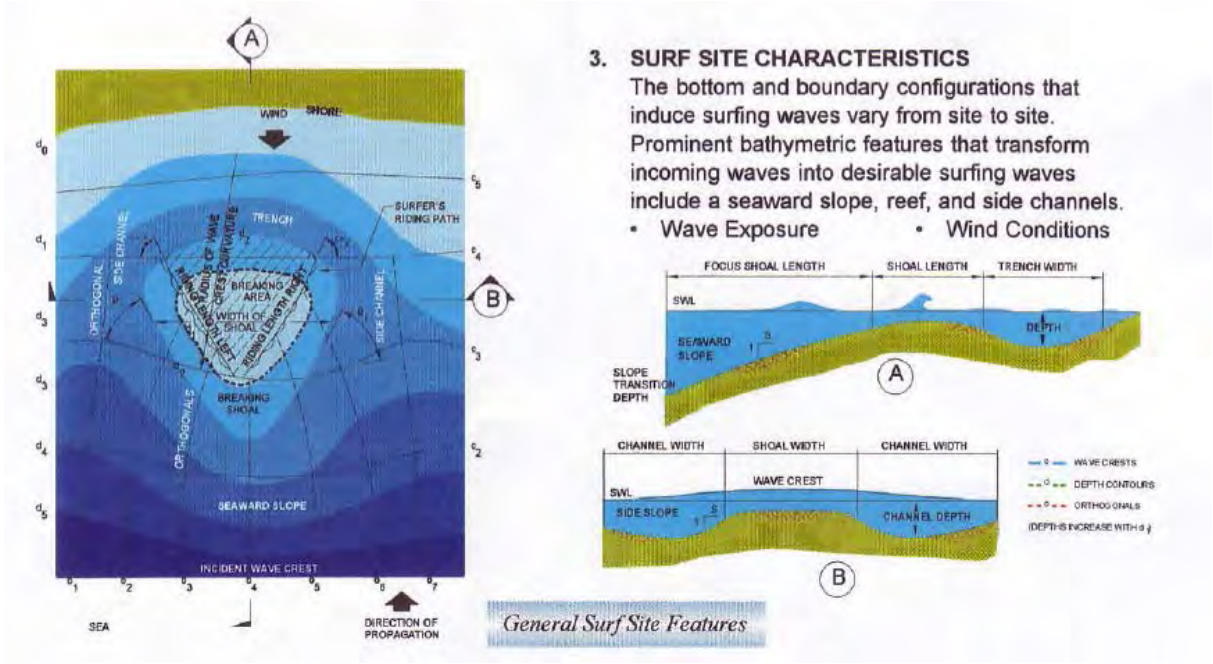


Figure 9-1: Example Surf Reef Concept Design for the Nearshore Mound

Nearshore mound design parameters include the mound's position, planform area, shape, side slopes, and elevation. Adjusting these factors will lead to varying surf conditions over the mound. The SELC can consider previous nearshore mound dimensions at other locations and lessons-learned from these experiences to design a mound that can successfully provide a surfing benefit and remain environmentally sensitive.

One variation on the mound design for Alternative 1B could be to extend its planform shoreward to connect to shore as a large triangle with the tip pointing offshore. This would create the longest ride possible at the mound, but would also bury existing sand bars along Cardiff Beach. Tradeoffs of the various mound parameters need to be considered to optimize the design.

Monitoring – Monitoring of surfing at sites affected by the project should occur to identify any impacts and potential mitigation opportunities. Beach fill placement is not anticipated to cause significant adverse impacts at fill sites outside of Cardiff Beach based on empirical evidence from other recent projects at the same sites. However, a monitoring network should be employed at Cardiff Reef, George's, and Seaside Reef at a minimum to quantify conditions over before and after construction. More sand is anticipated for placement in this area, and possible effects of increased tidal currents from Alternatives 1A and 1B, from a new inlet for Alternative 2A, and from a nearshore mound for Alternatives 1B and 2A warrant documentation and evaluation. Specifics of a monitoring plan will be developed in Phase 2 of the SELRP to be initiated in late 2013.

10. REFERENCES

CDIP (Coastal Data Information Program), 2009 & 2012. University of California, San Diego. http://www.cdip.ucsd.edu.

City of Encinitas. 2008. City of Encinitas Beach Attendance Study. 2007 Annual Report. March 2008.

CIC Research Inc. 2010. A Study of the Economic Value of Public Beach Land in the City of Solana Beach. September 2009. Revised July 2010.

EDAW. 2009. Final San Elijo Lagoon Restoration Project Data and Information Gap Analysis Summary Report. April 2008.

Everest International Consultants. 2013. *San Elijo Lagoon Restoration Project, Shoreline and Profile Analysis Technical Report, Draft.* Prepared for Moffatt & Nichol. January 2013.

Goda, Yoshimi. 2000. *Random Seas and Design of Maritime Structures*. Published by World Scientific.

Opper, Ira. 2012. Personal Communication with Chris Webb on December 12, 2012 and March 28, 2013.

Moffatt & Nichol. 1991. Bolsa Chica Surfing Study.

_____. 2000. Final Report. Shoreline Morphology Study. San Diego Regional Beach Sand Project. Constitutes Appendix C of the Environmental Impact Report/Review Environmental Assessment. March 2000.

_____. 2012. San Elijo Lagoon Restoration Project Hydrology/Hydraulic Study. Final Report. June 2012.

_____. 2013. Revised Preliminary Draft Shoreline Morphology Study, San Elijo Lagoon Restoration Project. January 2013.

_____. 2013. Draft Sampling and Analysis Plan Results Report. March 2013.

Nielsen, Frank M. 2007. *Franko's Map of San Diego Surfing*. Franko Maps, Ltd. 15 www.frankosmaps.com

Nordby Biological. 2012. San Elijo Lagoon Restoration Project Draft Alternatives Assessment. June 2012.

Smith, Bruce. Personal Communication with Chris Webb. September 2012.

U.S. Army Corps of Engineers. 1984. Shore Protection Manual.

_____. 1989. Historic Wave and Sea Level Data Report. San Diego Region. Coastal of California Storm and Tidal Waves Study. CCSTWS 88-6. January 1989.

_____. 2012. *Encinitas-Solana Beach Coastal Storm Damage Reduction Project, San Diego County, California, Appendix B, Coastal Engineering*. US Army Corps of Engineers, Los Angeles District. December 2012.

Veri-Tech 2008. Pre-Specified Offshore Contours in GENESIS. CEDAS Technical Documentation. http://www.veritechinc.com.

Walker, James Kimo. (1974). Recreational Surf Parameters. Technical Report No. 30. U. Hawaii – Look Lab – 73-30. February 1974

Wannasurf.com. 2011. http://www.wannasurf.com/spot/North_America/USA/California/San 22 Diego County/index.htm

APPENDIX A: SURFING MONITORING PROGRAM RESULTS

SURFING MONITORING PROGRAM OVERVIEW – PREPARED BY TIMBO STILLINGER OF THE SAN ELIJO LAGOON CONSERVANCY

This section summarizes the components of the surfing monitoring program.

Site Observations were collected twice a week at ten sites for 6 months from October 1st, 2011 till March 31st, 2012. 48 days of observations were collected. All ten sites were visited each study day between 8am and 12 noon. Stillinger collected data at every study breaks on every study day. The sites span a 4 mile stretch of coast and were visited from north to south or south to north each day (direction chosen at random to minimize effect of differences in conditions between early and late morning). More than 21 distinguishable surfing breaks are within the study zone and over 30 combined years of local surfing knowledge were used to determine the 10 breaks to be used for the surf study. These ten spots were chosen because of their frequency of use, value to the local surfing community, distance from the current and proposed lagoon inlet, and quality of ride at the break.

OUTLINE:

Parameters

Data was collected for near shore conditions that could affect the surf quality at the beaches. Local wind speed, wind direction, and tide data was collected for each of the study day.

Regional Data:

Regional data was collected for the three reaches in the study, shown by colored brackets in Figure 3. For each of these reaches total surf counts and total beach user counts were performed. Binoculars were used from a high vantage point for each reach and total surfers and beach users were counted and recorded. This data is presented in the next section and shows the variations in popularity for beach use and surfing each reach had.

Wind speed data was collected using the beaufort sea state scale.

<u>Windspeed</u>

- 0 – Mirror smooth and glassy surface
- 1 – small ripples or capillary waves on glassy surface
- 2 – Larger ripples or wavelets on glassy surface
- 3 - Wavelets of irregular direction and shape; a few crests break on glassy surface
- 4 – Small chop, defined direction; numerous whitecaps
- 5 – Heavy chop, many white foaming crests; some spray
- 6 – Larger surface waves form, whitecaps everywhere, more spray

- 7 – Sea heaps up; white foam starts to blow in streaks along direction of wind; spindrift forms
- 8 – Moderately high waves, crests begin to break into spindrift; well marked streaks of foam
- 9 – High Waves, sea begins to roll; spray begins to reduce visibility; dense streaks of foam
- 10 – sea mostly covered in white foam; visibility reduced; exceptionally large waves
- 11-17 – Research Cancelled, winds are unsafe for data collection.

For rating the surf spots, the following metrics were used in terms of wave quality and size.

Surfability

- Excellent: The best surf of the year at the surf break. Biggest/best swell and weather conditions line up to create very memorable surfing conditions. Rare.
- Good to Excellent: Mostly good waves, few excellent waves. Only occur during the better swells of the year.
- Good: Quality waves, typical conditions when a swell is hitting the coast.
- Fair to Good: Generally fair surf with some good waves. Typical conditions when a swell is hitting the coast but some factor (weather, tides, or surf break bathymetry) is limiting surf quality
- Fair: Very average surf with many fair waves.
- Poor to Fair: below average surf, some fair waves.
- Poor: Well below average surf, no good or fair waves.
- Ex Poor: Waves not enjoyable for any type of surfboard. Most of the time is spent waiting for or trying to catch very mediocre waves. Not flat but really bad
- Not Breaking: no surfable waves for any type of surfboard.

- WAVE HIGHT SCALE
  - **1'** = shin high
  - **2'** = knee high
  - **3'** = waist high
  - **4'** = shoulder high
  - **5'** = head high
  - **6'** = 1 foot overhead
  - **8'** = 3'overhead
  - **10'** = 5' overhead or Double Overhead faces
  - **12'** = Double Overhead+ faces
  - **15'** = Triple Overhead faces

Surf Quality Methods: Nine parameters with specific values to choose from were collected daily to describe the shape and break of the waves at each location. The parameters and values for each follow. Definitions are in appendix A.

- **Shape:** Mushy, Steep, or Hollow.
- **Speed:** Slow or Fast
- **Face:** No Shoulder, Small Shoulder, Peeling, Sectioning, Walled with Corners, or Closed out.
- **Peak:** Tight Peak, Spread Peak, Peaky, Shifty Peaks
- **Power:** Weak, Punchy, or Powerful
- **Consistency:** Consistent, Inconsistent, or Very Inconsistent
- **% Unsurfable:** 0%, 1-20%, 21-79%, 80-99%, or 100%
- **Ride Length:** 0ft, 1-99ft, 100-300ft, 301-900ft, or more than 900ft
- **Ride Time:** 0 seconds, 1-5 seconds, 6-10 seconds, 11-15 seconds, 16-20 seconds, 21-25 seconds, 26-30 seconds, more than 30 seconds

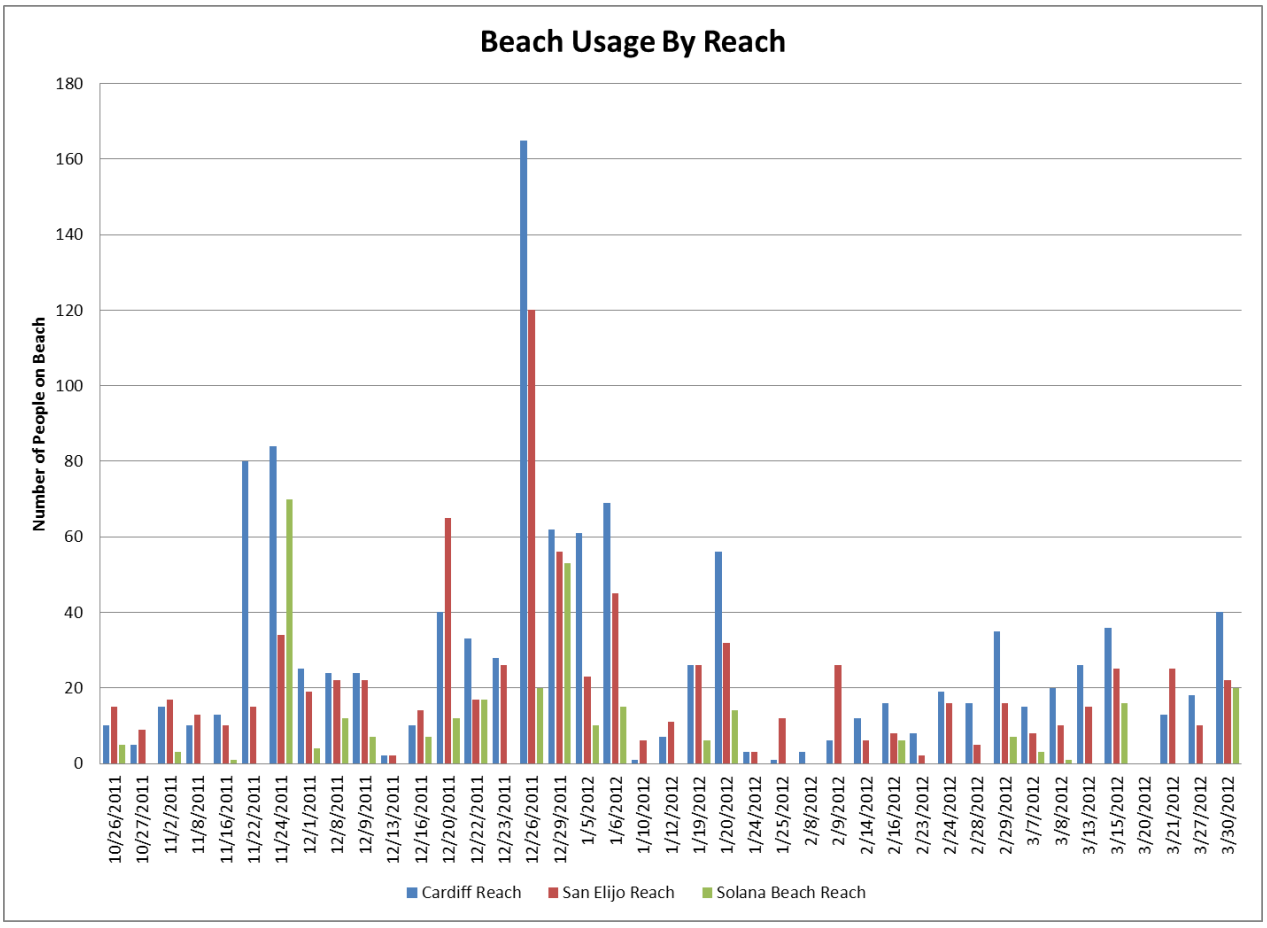
The number of observations of each value over the course of the study period was totaled and these results are described in tables for each surf break.

Surfing Monitoring Program Results – Existing condition

GENERAL USE BY REACH

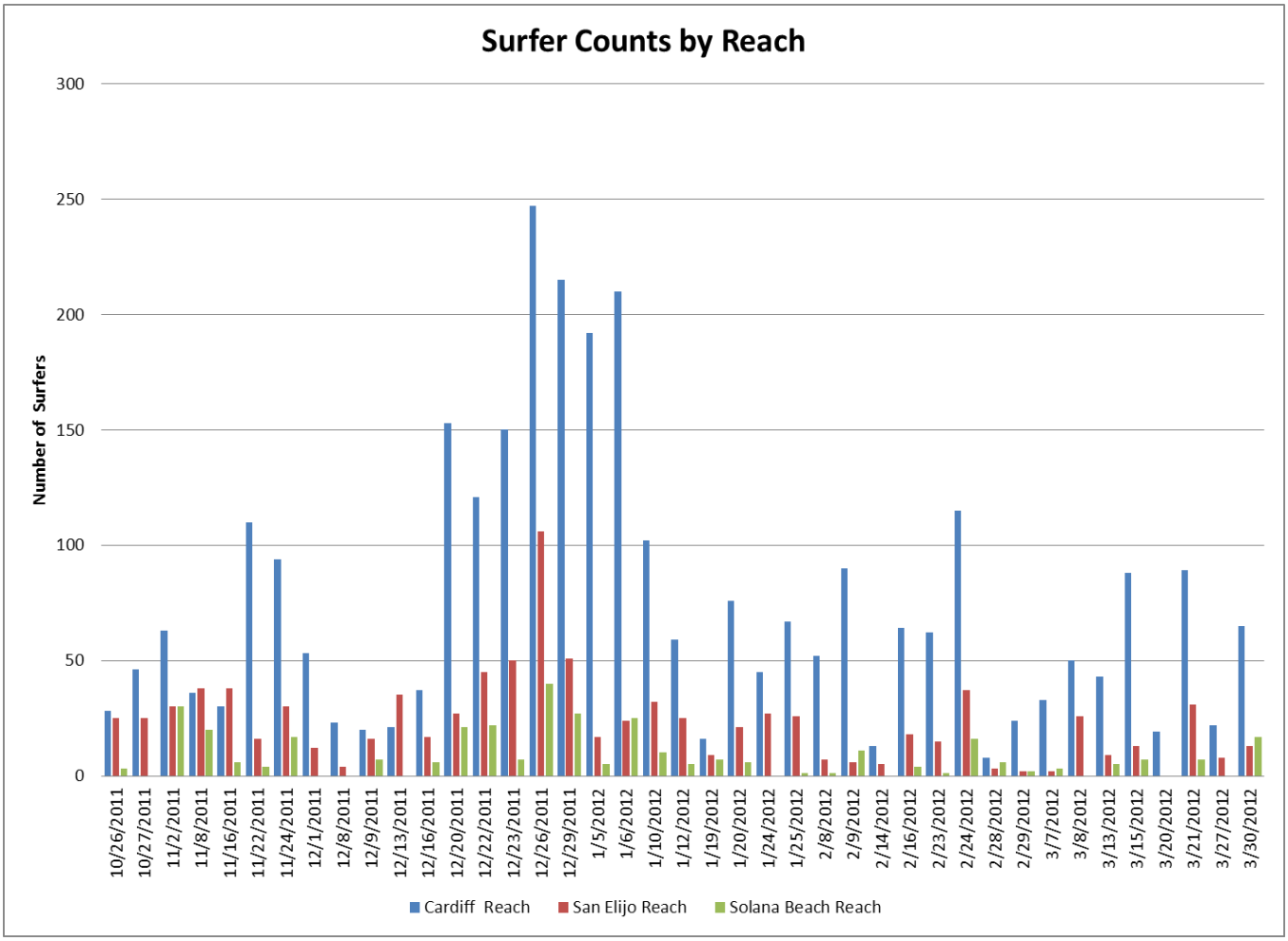
General use data (both people on-beach and surfing) were collected along three segments of coast within the study area. Data from these reaches are presented in this section.

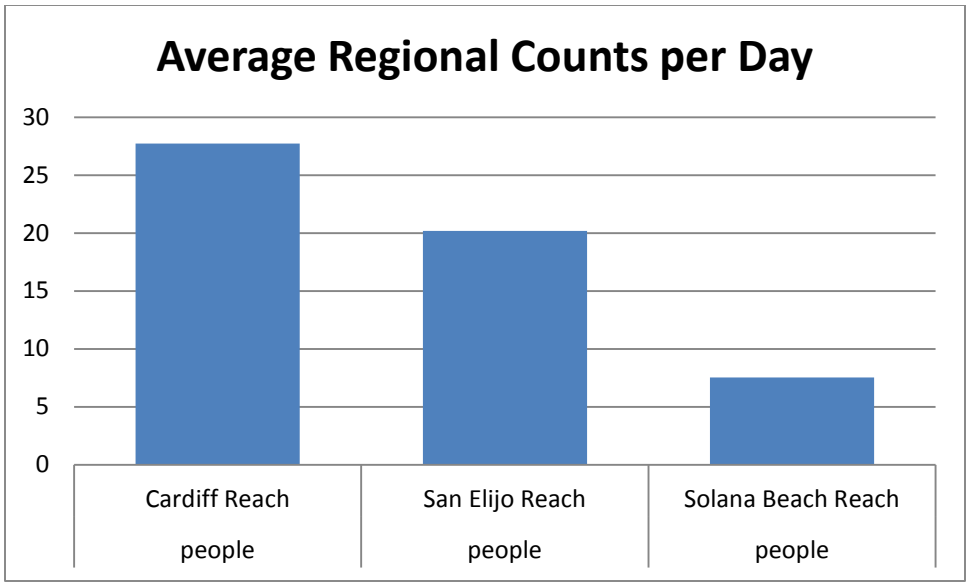
Below is the usage data collected comparing the numbers of people who used each stretch of coast. Spikes can be seen at all location around the holidays (thanksgiving, last week of the year) The Cardiff Reach consistently had the most beach goers. Many factors are at play here. This reach is directly below the San ELijo State Beach Campgrounds and sees added traffic from the camgrounds. The Solana reach showed the least foot traffic partially because of decreased access at high tides. Many days during the study the water level was too high in Solana Beach to access the beach, with breakers crashing aginst the cliff. On these same days there was still dry beach for people to walk on along the San Elijo and Cardiff Reaches.

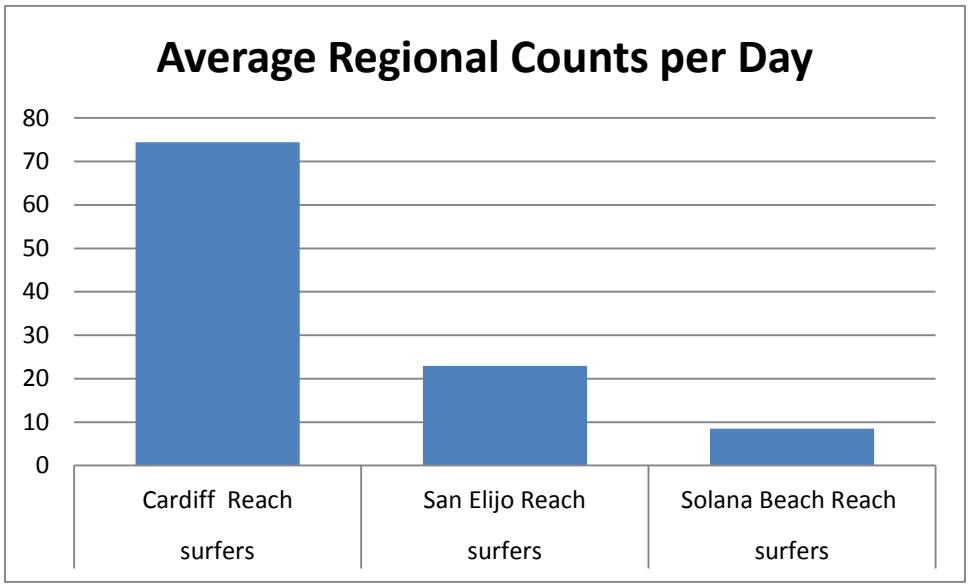


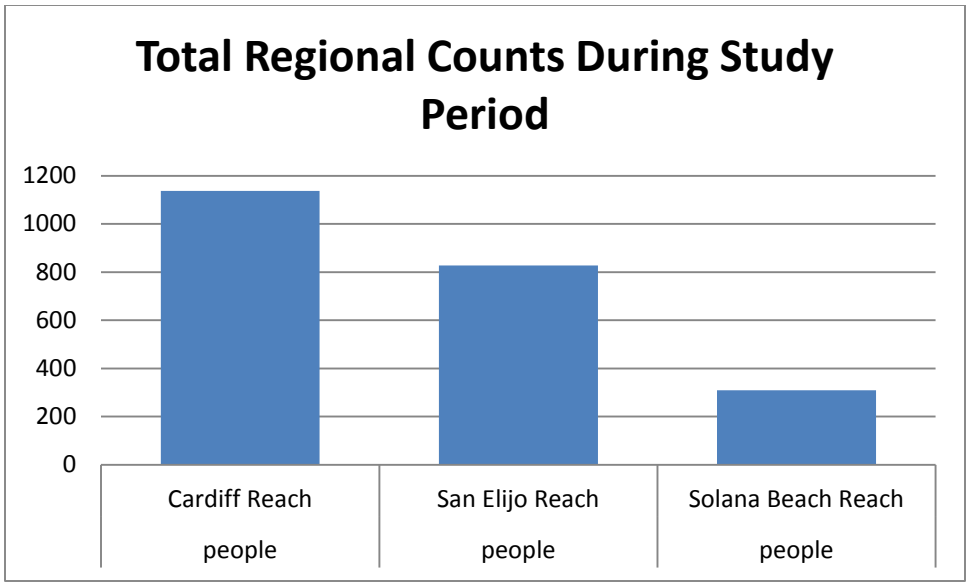
SURFER USE BY REACH

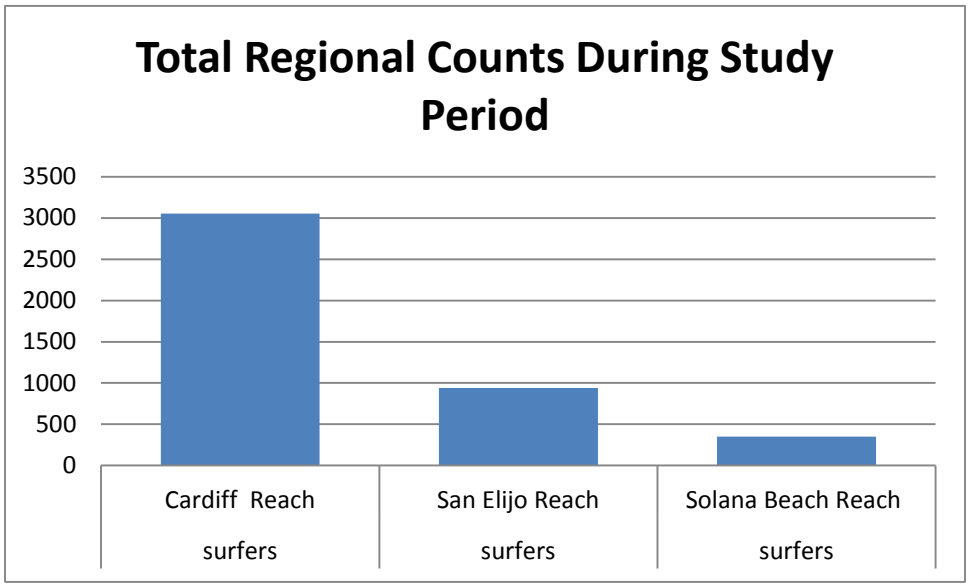
Below are the surfer counts by reach for the study period. The Cardiff Reach consistently had the most surfers. While the reaches are all similar lengths of beach, there are the most surf spots along the Cardiff stretch. The Cardiff stretch sees use from the Campgrounds as well and benefits from multiple public parking lots, easy beach access, and many friendly waves. The Cardiff Stretch is the longest, so this could be one reason for increased surf usage, along with the higher density of surf spots and the higher quality of waves in Cardiff.




Average Regional Counts per Day
30
25
20
15
10
5
0
Cardiff Reach people
San Elijo Reach people
Solana Beach Reach people


Average Regional Counts per Day
80
70
60
50
40
30
20
10
0
Cardiff Reach surfers
San Elijo Reach surfers
Solana Beach Reach surfers


Total Regional Counts During Study Period
1200
1000
800
600
400
200
0
Cardiff Reach people
San Elijo Reach people
Solana Beach Reach people

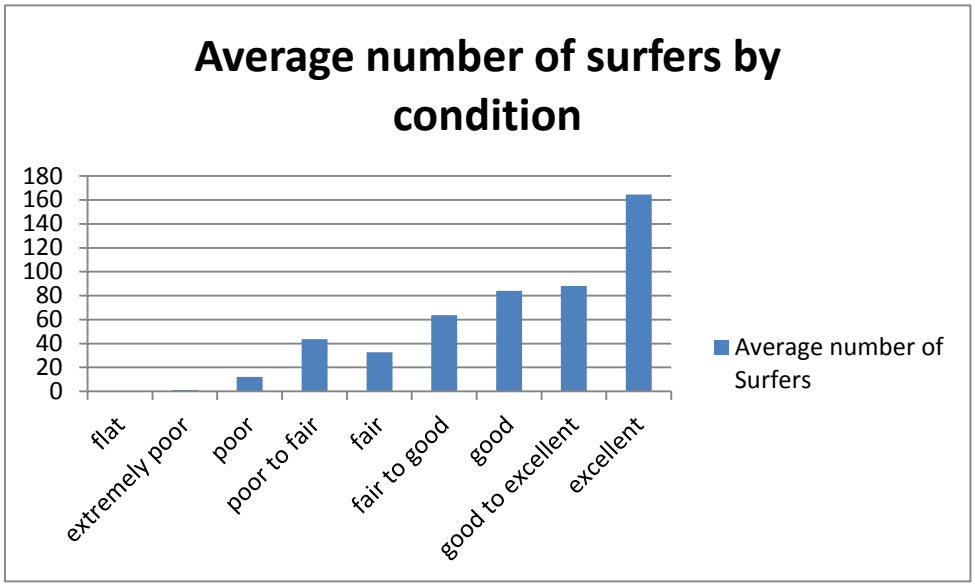

Total Regional Counts During Study Period
3500
3000
2500
2000
1500
1000
500
0
Cardiff Reach surfers
San Elijo Reach surfers
Solana Beach Reach surfers

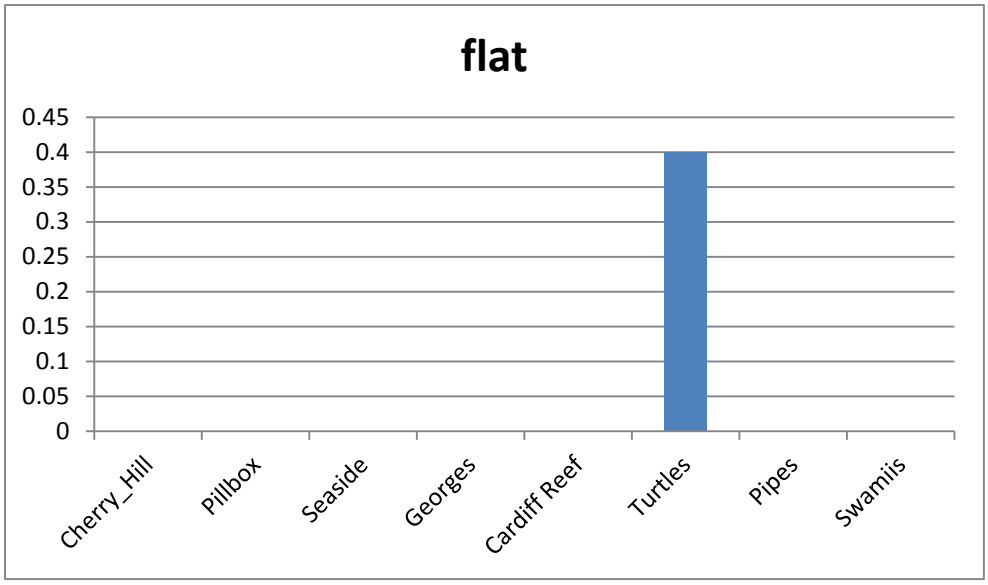
SURFING

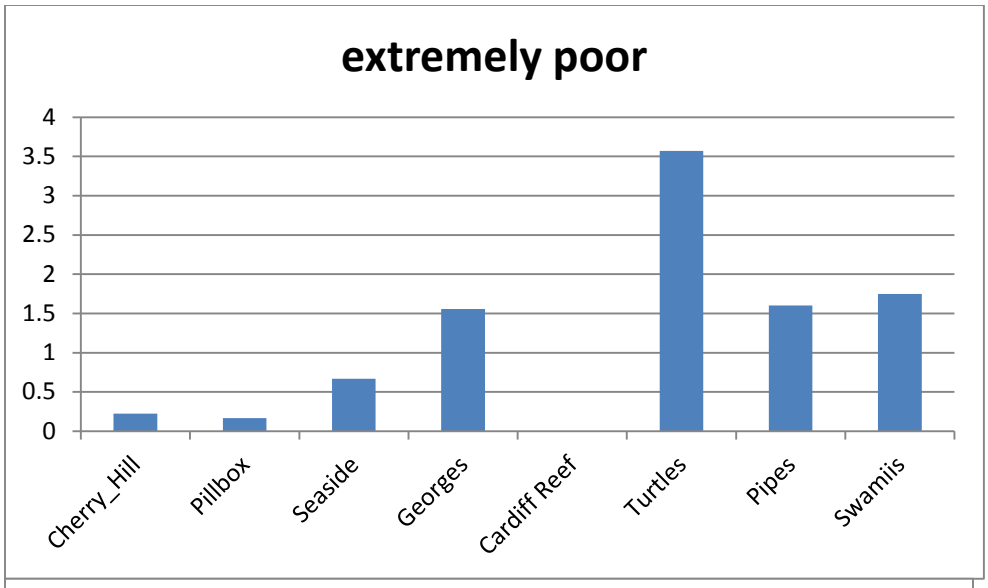
This section summarizes the results of the surfing monitoring program. The program entailed the site observations at 10 sites, twice weekly during the study period of October 2011 to May 2012. The study sites were located within the Cities of Encinitas and Solana Beach, as shown in Figure 3.

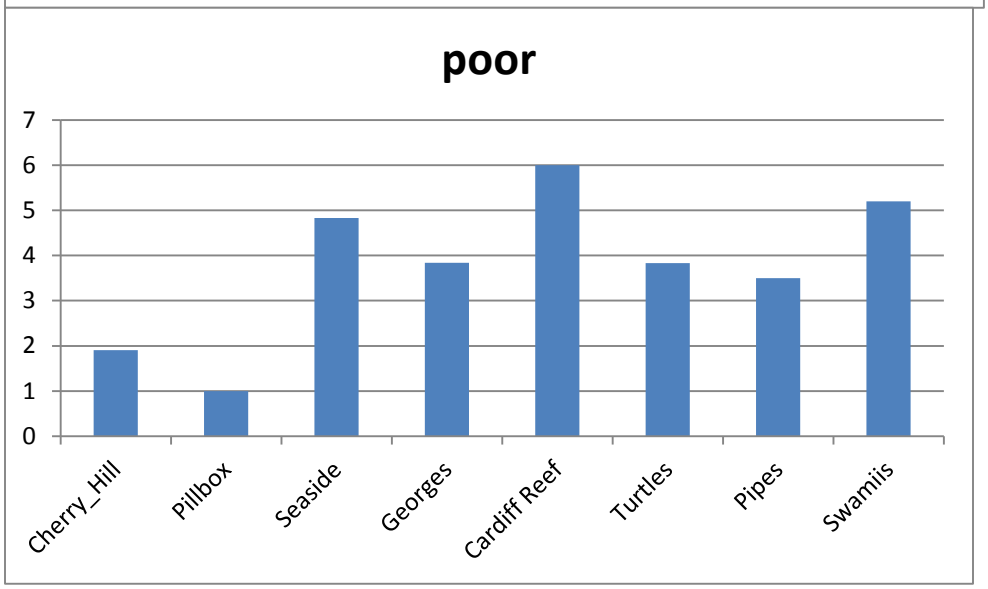
STUDY AREA CHARACTERISTICS

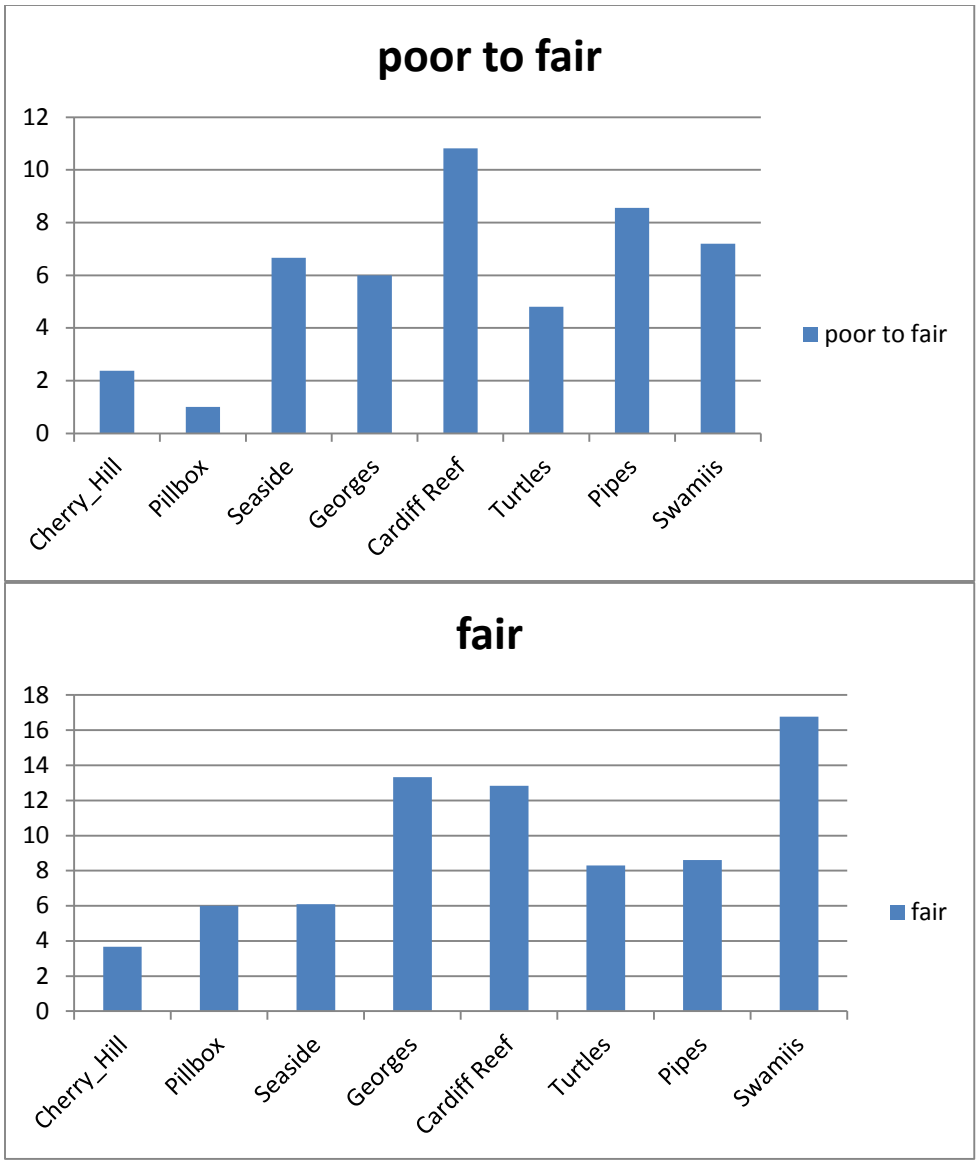
Data of surf spot characteristics and counts of surfers at each site for various conditions is provided herein..

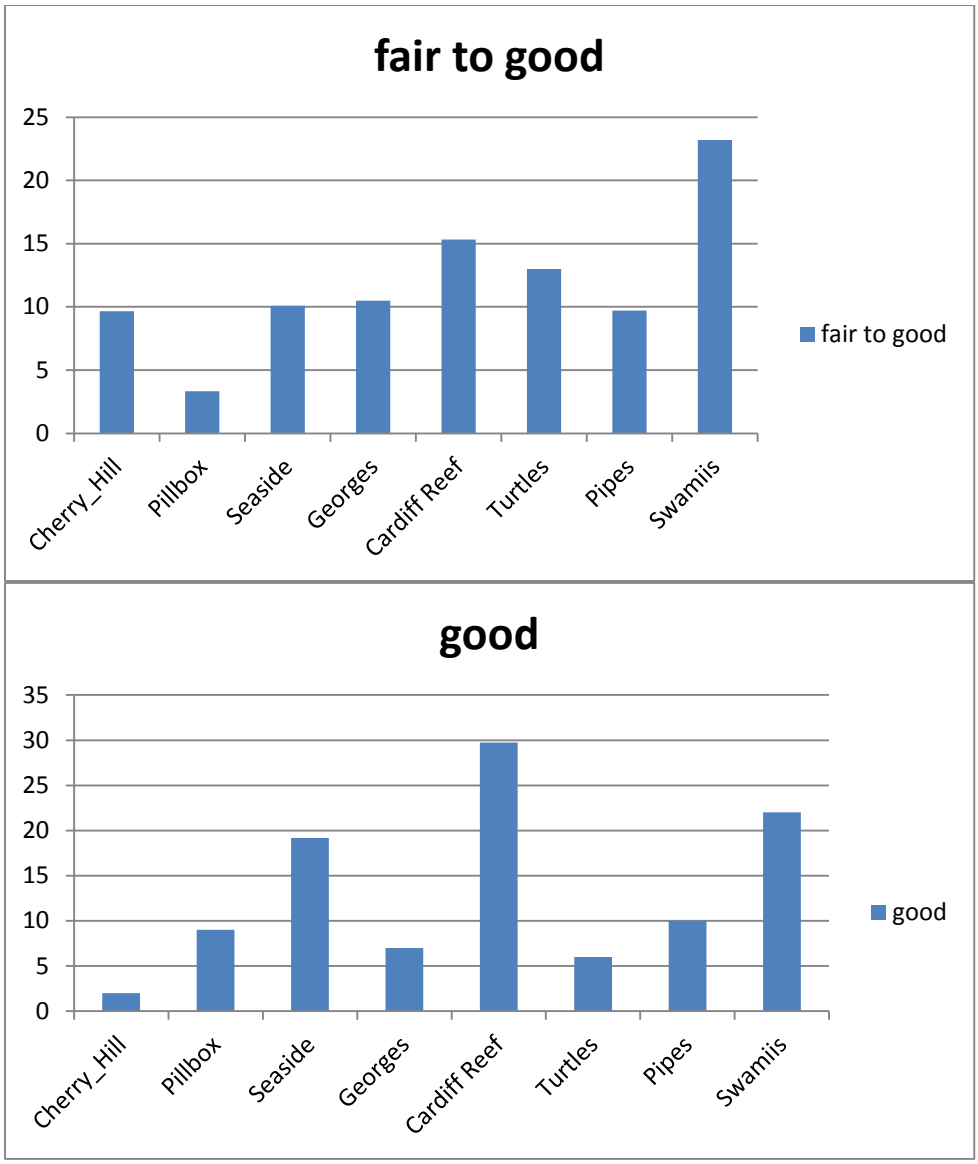


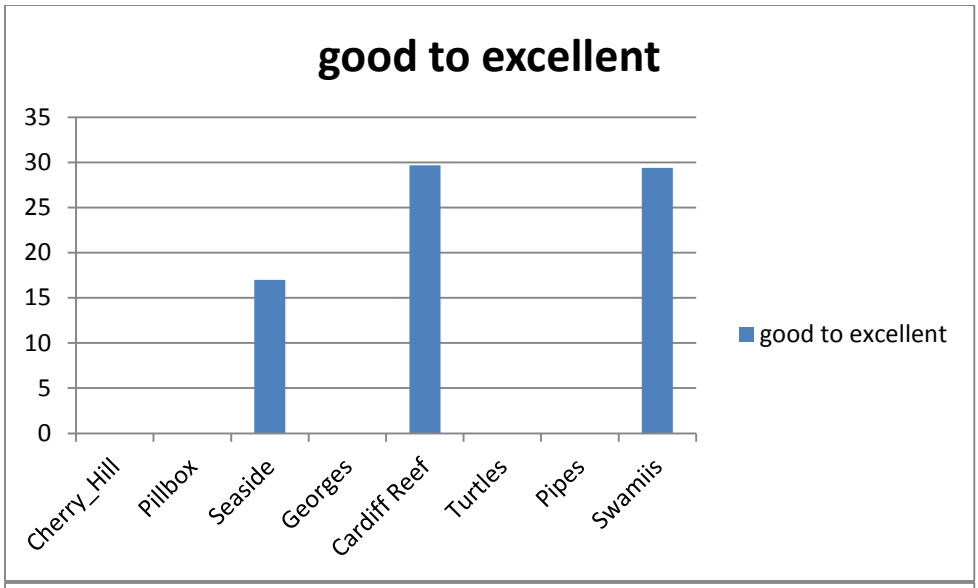


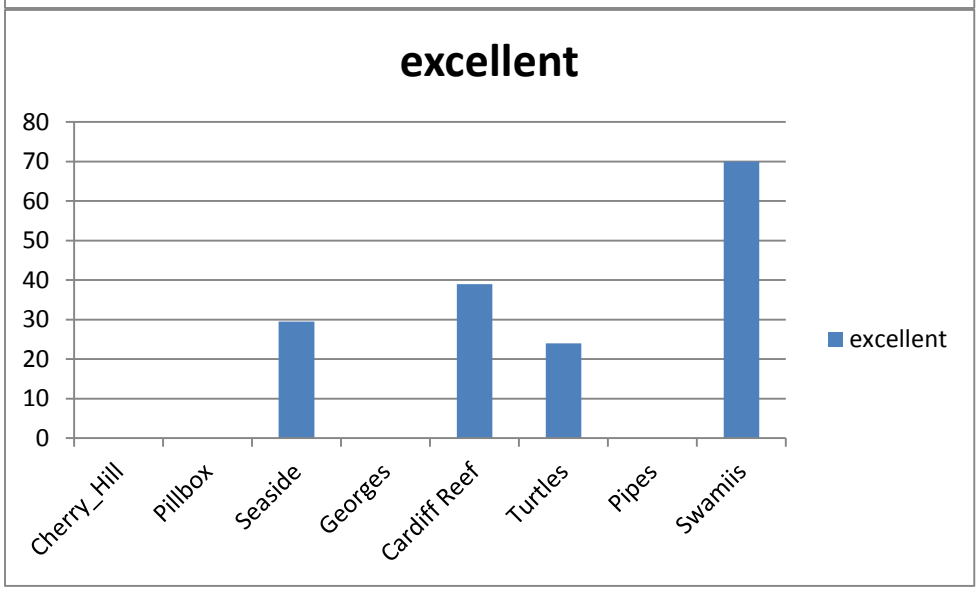

extremely poor
4
3.5
3
2.5
2
1.5
1
0.5
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis

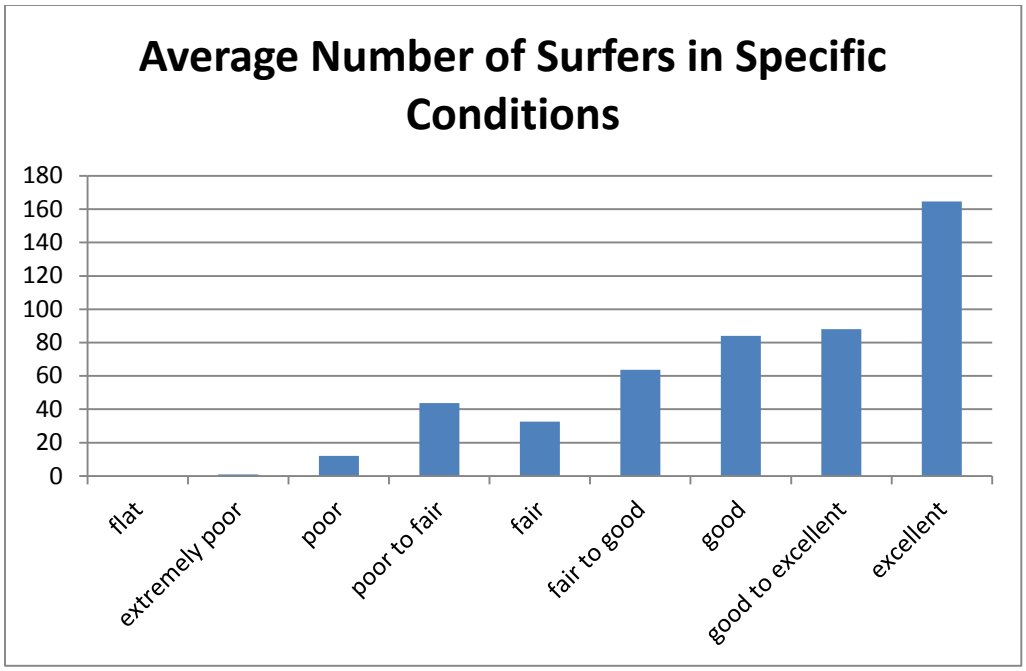

poor
7
6
5
4
3
2
1
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis


poor to fair
12
10
8
6
4
2
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis
poor to fair
fair
18
16
14
12
10
8
6
4
2
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis
fair


fair to good
25
20
15
10
5
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis
fair to good
good
35
30
25
20
15
10
5
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis
good


good to excellent
35
30
25
20
15
10
5
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis
good to excellent


excellent
80
70
60
50
40
30
20
10
0
Cherry_Hill
Pillbox
Seaside
Georges
Cardiff Reef
Turtles
Pipes
Swamiis
excellent


Average Number of Surfers in Specific Conditions
180
160
140
120
100
80
60
40
20
0
flat
extremely poor
poor
poor to fair
fair
fair to good
good
good to excellent
excellent

CARDIFF REACH – INFORMATION PAGE FOR EACH BREAK WITH MAP, TEXT, GRAPHS, AND SURVEY RESULTS

SWAMI'S

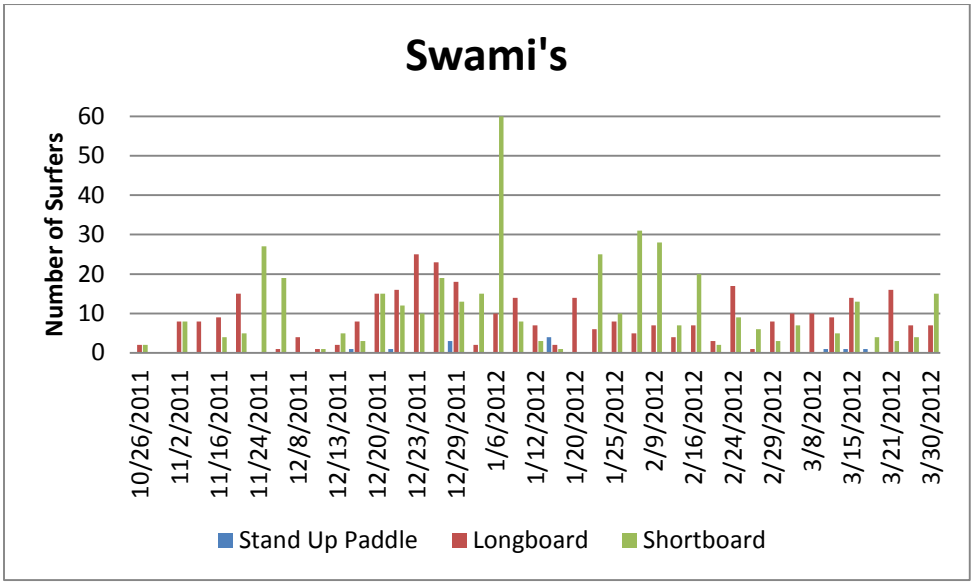
Swami's		
	Lefts	Right
Takeoff locations	1	2
Wave Breaking Speed	Fast	Fast
Breaker Type	Mushy to Steep	Mushy (<4 ft); hollow (>6 ft)
Approx. Max. Ride Length (ft)	500 ft	1,000 ft
Best Tide	Low to mid	Low to mid
Approx. Max. Ride Time (sec)	10 to 15 sec	30 sec

Swami's is an excellent right-hand, reef point break. It is one of the most popular and heavily surfed breaks in the region due to the length of ride and ability to hold the largest swells. Swami's is ridden at any size but is considered better with larger swells when rights connect through the entire length of the point. While the right is more famous, the left at Swami's is also a quality wave and is a steep peeling wave that does not closeout. The left is shorter than the right and not as consistent but is still better than many of the other waves within the reach.

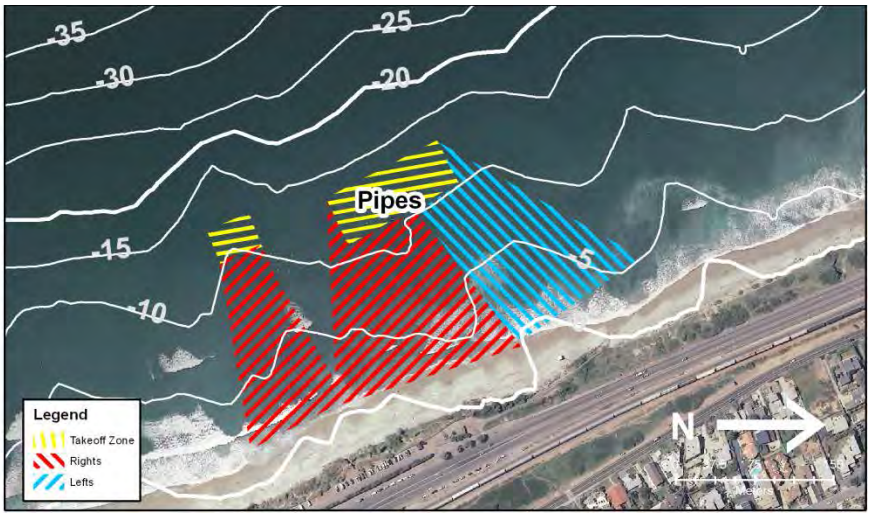
At higher tides Swami's becomes mushy and inconsistent and during higher tides on small days is only surfable on longboards. The bigger the waves get the less the tides affect them. The large

deep channel to the south allows an easy paddle out during even during the largest swells. During larger swells there are hollow sections on the inside. Swami's is surfed by long boarders under all conditions. When small, the wave is best suited to longboards and fishes. Once the wave reaches 3-6 feet it becomes an excellent wave for short boarding as well.

On large days the peak splits into an inside bowl section and an outside section. On these large days most set waves have a spread hollow breaking pattern that pinches and fades before the inside section. These are excellent short waves, the better sets though, connect through to the inside section in peel all the way to the shore. The inside section focuses both the reformed waves from the outside set waves that fade off and sets that swing wide and did not break on the outside section. The inside section has a steep abrupt takeoff followed by a long walled and hollow wave that races to the beach.

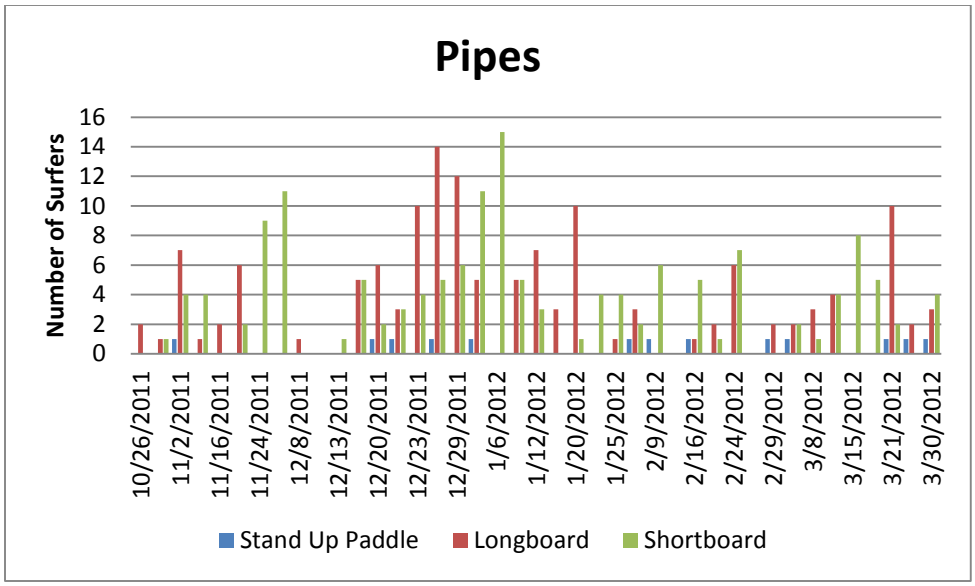


PIPES

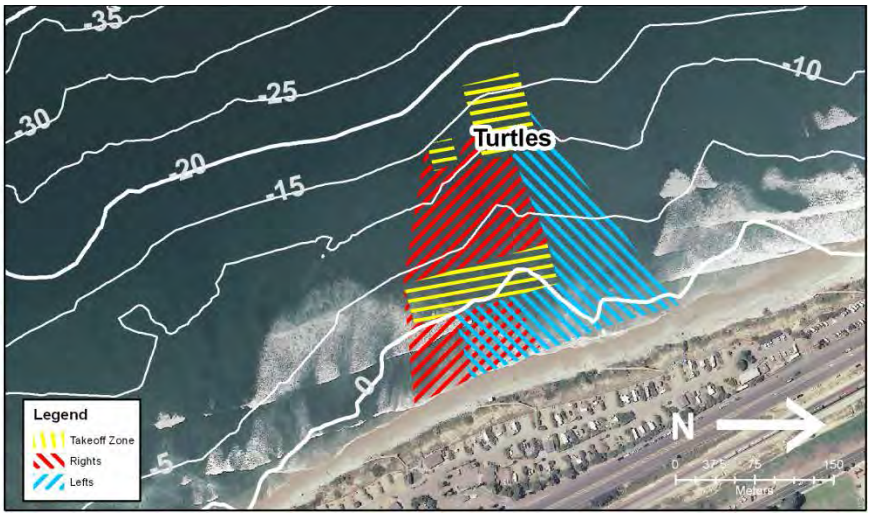


Pipes		
	Lefts	Rights
Takeoff locations	1	1
Wave Breaking Speed	Slow	slow
Breaker Type	Mushy to Steep; Peeling to Sectioning	Mushy to Steep; Peeling to Sectioning
Approx. Max. Ride Length (ft)	500 ft	500 ft
Best Tide	Low to mid	Low to mid
Approx. Max. Ride Time (sec)	10 to 15 sec	10 to 15 sec

Pipes is a peeling left and right reef break. The break has a consistent singular peak composed of reef and scattered sand throughout. Works on both NW and SW swells. The wave quality is good and is consistently surfed. Pipes is suited to fuller volume shortboards and longboards on all but the larger swell days.



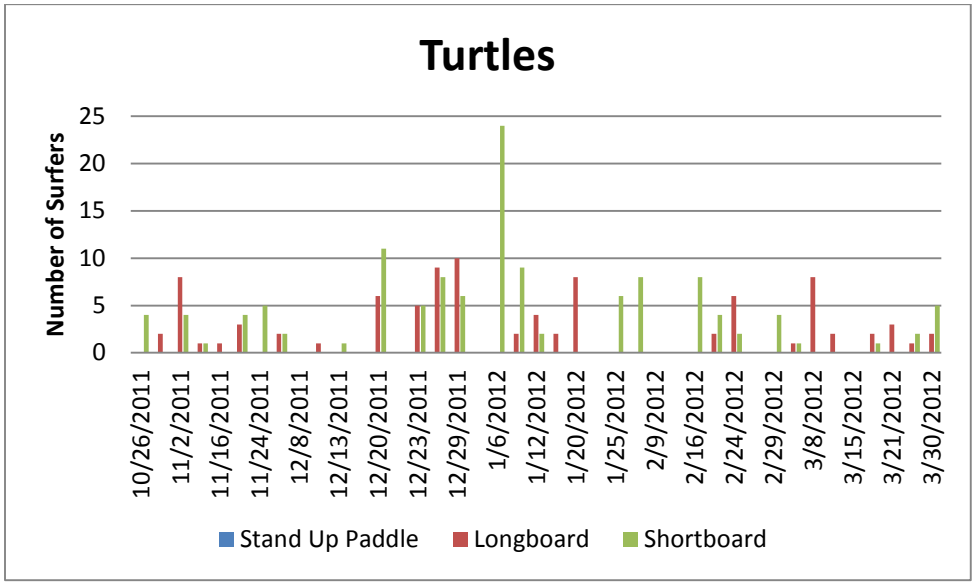
TURTLES



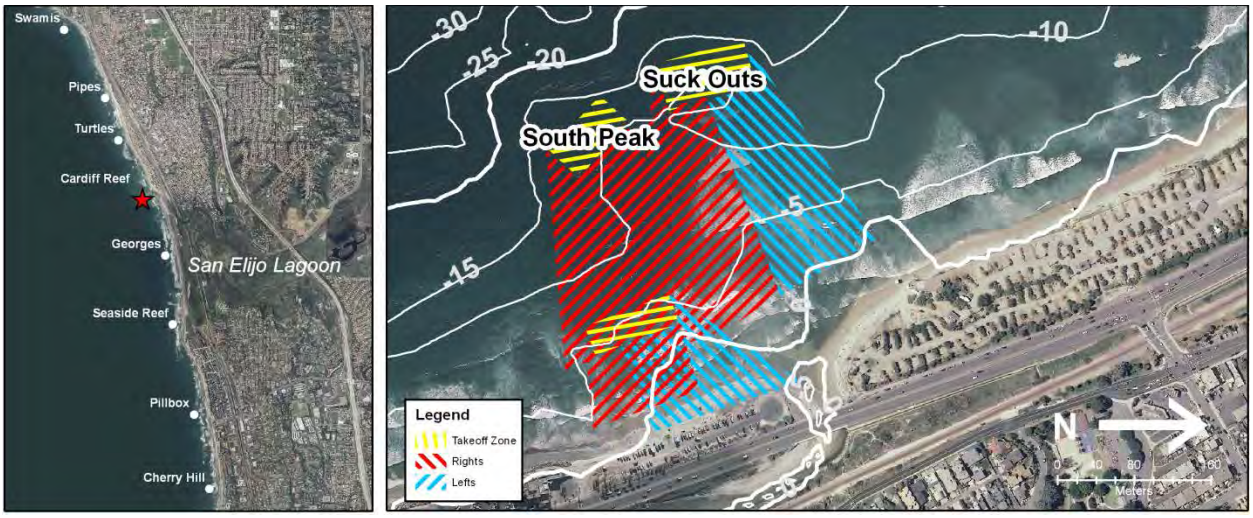
Turtles		
	Left	Right
Takeoff locations	1, tight	1, tight
Wave Breaking Speed	Slow	Slow
Breaker Type	Mushy/Steep/Hollow Small shoulder/ peeling	Mushy/Steep/Hollow Small shoulder/ peeling
Approx. Max. Ride Length (ft)	500 ft	500 ft
Best Tide	Low to mid	Low to mid
Approx. Max. Ride Time (sec)	10 to 15 sec	10 to 15 sec

Turtles is a defined and fairly long left and right-hand reef break. This reef can hold significant sized swells; however, not as big as Swami's and Cardiff Reef. On large swells, the biggest sets will closeout across the reef and in between waves will offer large hollow barrels on the right. The left is a easier, but still fast long left wave that is ridden by short boarders and longboards. Rarely are waves ridden all the way from the outside to the beach, the ocean bottom deeps indie of the reef and after a shot intense breaking period the right fades out or closes out.

At high tides when little swell is in the water the outside does not break and short waves break on the inside offering beginner type waves of poor to fair quality breaking onto the beach. Turtles is suited to experienced and confident surfers only on large swells. Turtles appeals to high performance short boarders during ideal conditions and long boarders and beginners on small days. Spot is heavily surfed due to its consistency and ability to handle a variety of conditions and tides. Spot is more shadowed to SW swells than some of the other breaks in this region.

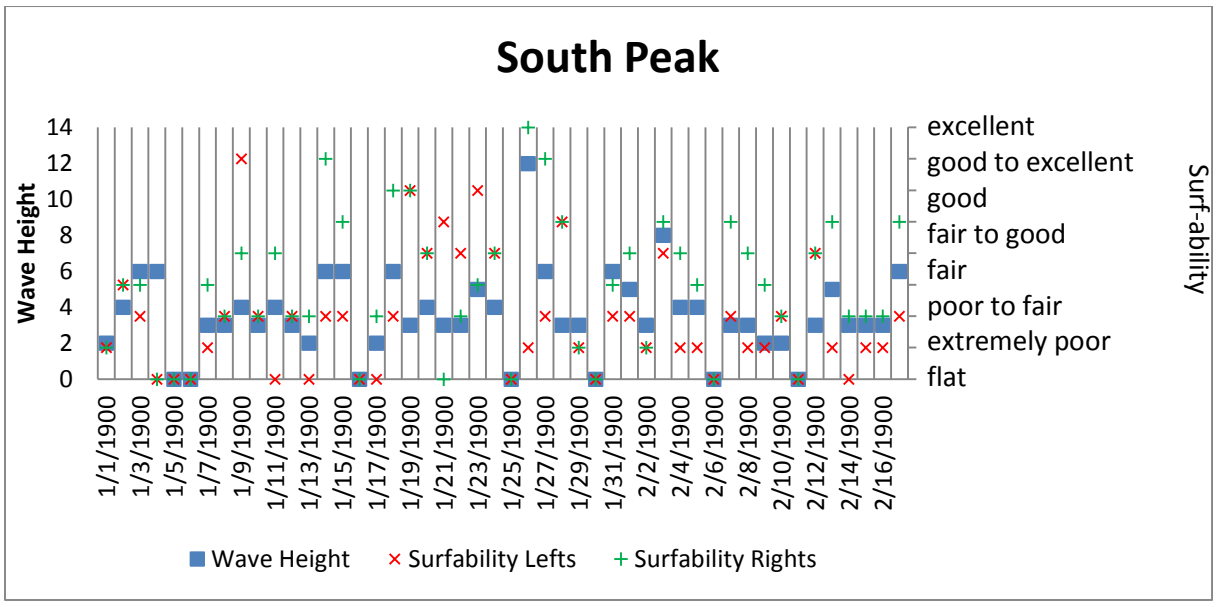


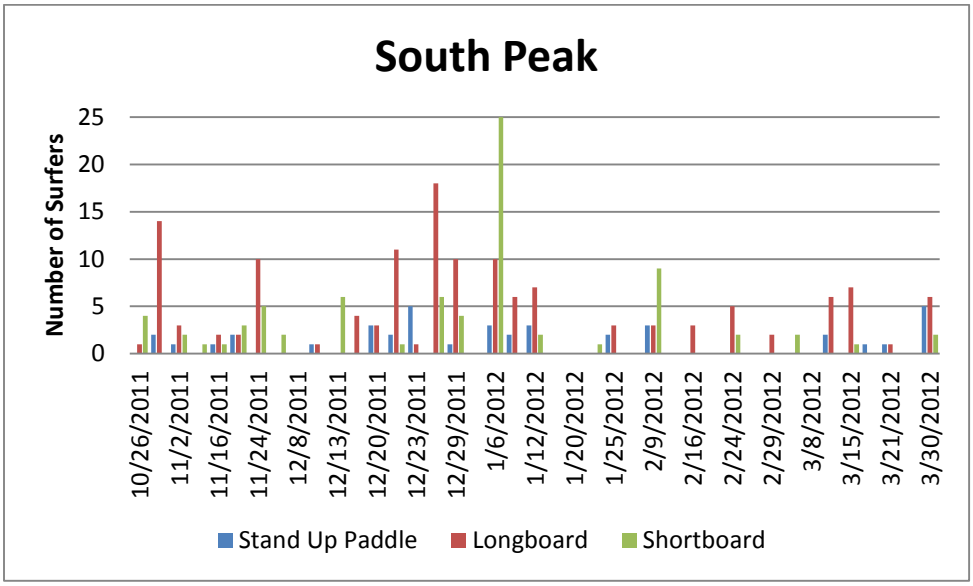
CARDIFF REEF (South Peak and Suck Outs)



South Peak		
	Left	Right
Takeoff locations	1	2
Wave Breaking Speed	Slow	Slow
Breaker Type	Closed out/peeling	Peeling
Approx. Max. Ride Length (ft)	300 ft	1000 ft
Best Tide	Very high	any
Approx. Max. Ride Time (sec)	10 to 15 seconds	20 seconds

South Peak:

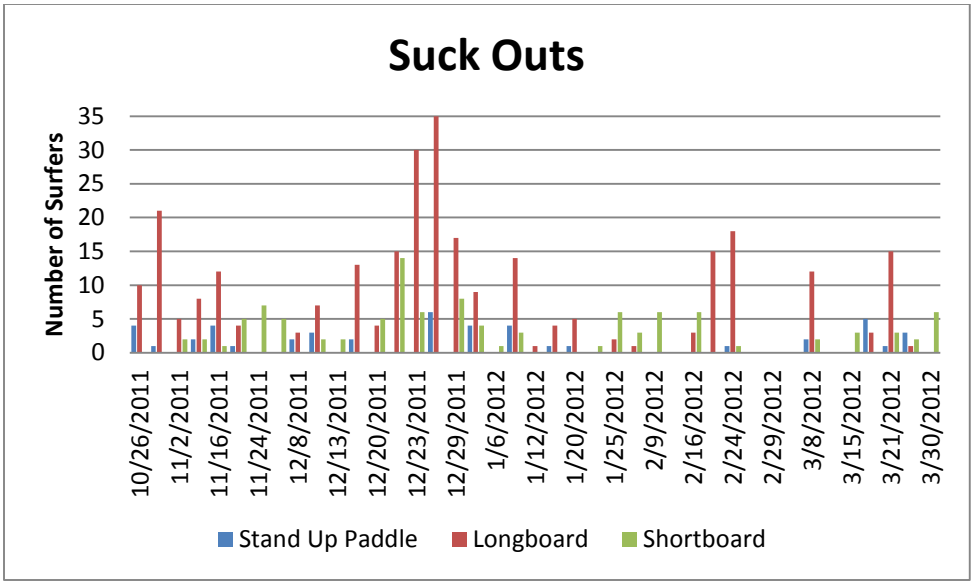




Suckouts:

Suck Outs		
	Left	Right
Takeoff locations	1	1
Wave Breaking Speed		
Breaker Type	Punchy/powerful Steep/hollow	Punchy/powerful Steep/hollow
Approx. Max. Ride Length (ft)	1000 ft	1000 ft
Best Tide	Low to mid	Low to mid
Approx. Max. Ride Time (sec)	40 sec	40 sec

A fast, hollow, left and right-hand reef break located immediately seaward of the river mouth. The wave is known as the hollowest in the reach. The wave is highly surfed by short boarders because of its power compared to some of the other breaks in the region. Works during both NW and SW directions and typically maxes out around eight-foot. During smaller days and at very high tides the wave is heavily surfed by a mix of short boarders, stand up paddle boarders, and long boarders.



Cardiff Reef is a long left and right-hand reef/point break. Due to its size, the area is divided into two sub-breaks (namely South Peak and Suckouts). The position of South Peak varies depending on swell direction, tide, and sand bar morphology, however is generally located south of the river mouth. The wave is a right-hand, reef point-break with some scattered sand (mostly on the inside). The wave offers a long and typically slow ride, which makes it very popular with longboarders, fun-shapes, and stand-up paddle boards during average wave conditions. During above average conditions and especially during larger swells from the SW and NW, the wave becomes faster and hollower and allows for waves with multiple maneuvers for shortboards. The spot can hold the largest waves of the season and also provides a channel (although not as defined as Swami's) on the south side of the break. At very high tides, the waves that break on the inside are ideal for longboarding and can offer the only surf-able waves in the region during the highest tides of each month.

Waves within reach data was not collected for:

Dabbers: Left and right-hand, reef and sand bottom wave. Spot works during big north/northwest swells. Therefore, the wave is infrequently surfed and overall wave quality is low at this time. On the biggest swells of this winter, this wave closed out across to Swami's on the largest sets and offered up uncrowded lefts and rights in between.

Brown House: Left and right-hand peak. Mostly sand with some scattered reef. The spot is frequently surfed and is a moderate to low wave quality until large swell events create beach break type walled fun short boarding waves. Generally frequented by less experienced surfers. Under epic conditions, this wave is suited to high performance short boarding with steep, fast, punchy waves.

Traps: A-frame wave of moderate to good quality. Primarily reef with some sand scattered throughout. Short right and longer left that allows a few maneuvers in either direction. After breaking on the outside, the right slows down when it hits a deep spot and then reforms and typically closes out on the inside. Consistently surfed due to wave form and channels. Spot is more shadowed to SW swells than some of the other breaks in this region.

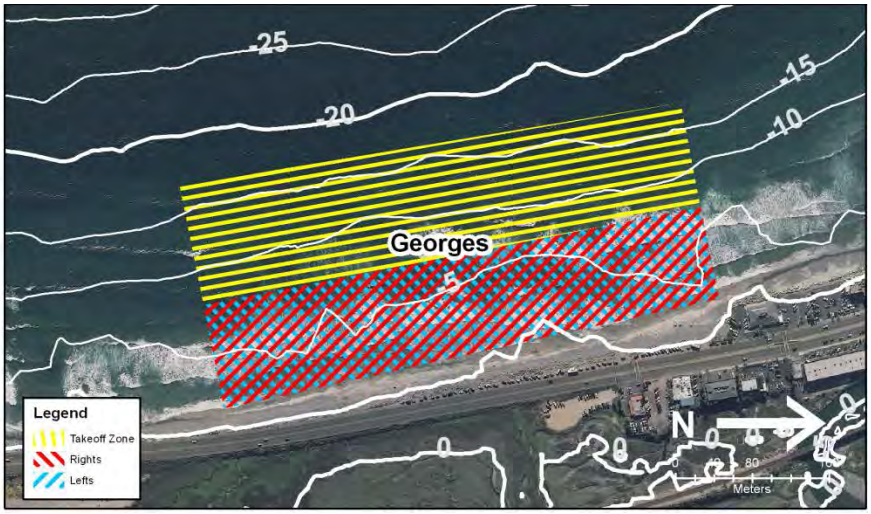
Barneys: Scattered peaks along a stretch of reef whose form can vary significantly based on wave direction(s) and tide. Best during NW swells and is typically surfed by less experienced surfers. Spot is more shadowed to SW swells than some of the other breaks in this region.

85's: Right hand reef break. Works primarily in the winter with NW swells under approximately eight feet. Wave can be fast and very maneuverable, therefore, is typically ridden by shortboarders. Spot is more shadowed to SW swells than some of the other breaks in this region.

Tippers: Left and right hand reef break. Is best during winter NW swells, however, is exposed to and breaks during both NW and SW swells. The left is generally longer with better form than the right. The left can offer a hollow section during swell and low tides. Highly surfed and good wave quality

SAN ELIJO REACH

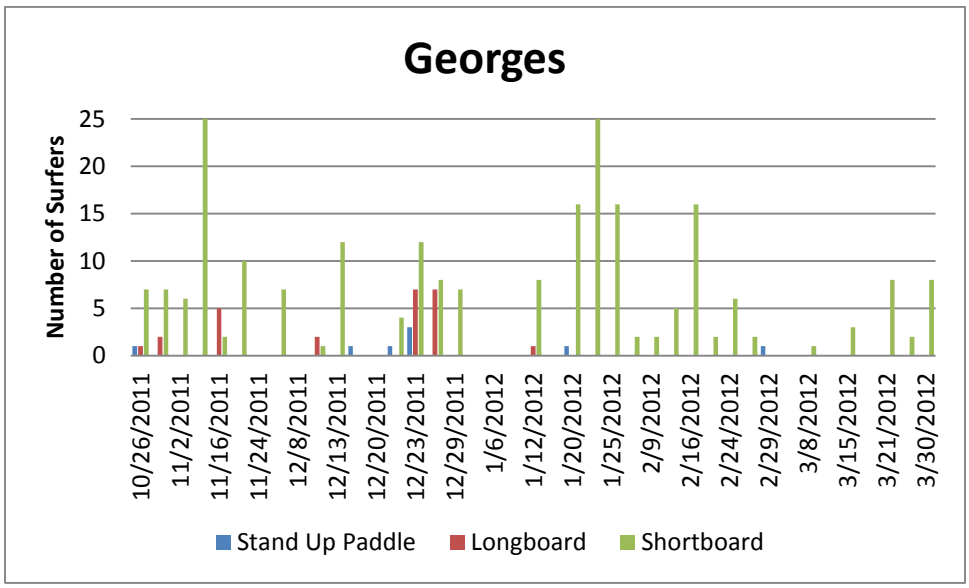
GEORGES

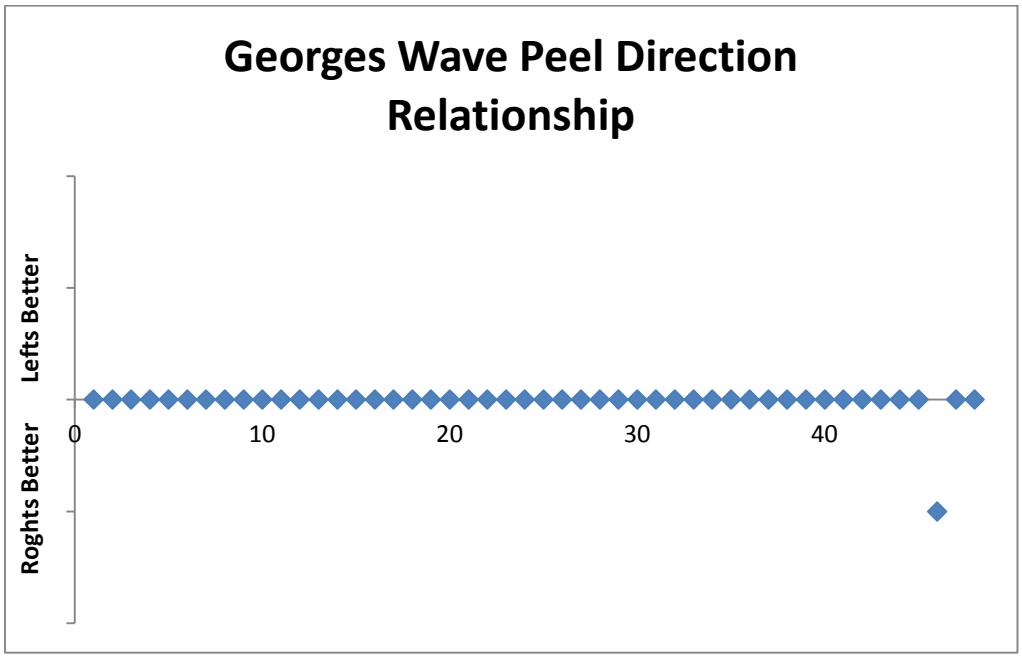


Georges		
	Lefts	Rights
Takeoff locations	Many peaks	Many peaks
Wave Breaking Speed	Fast	Fast
Breaker Type	Steep/hollow punchy	Steep/hollow punchy
Approx. Max. Ride Length (ft)	150 ft	150 ft
Best Tide	Mid to high	Mid to high
Approx. Max. Ride Time (sec)	5 to 10 sec	5 to 10 sec

Georges is a long stretch of beach break with scattered peaks. On small days the majority of the swell energy misses Georges because of refraction and defocusing of the swell energy by Seaside Reef and Cardiff Reef. The waves at Georges tend to be a few feet smaller. On larger days this effect is not noticeable and with larger wind swells and combo swells the stretch can produce larger than average fast high performance left and rights. At low tides Georges is often plagued with waves that are too fast or closed out to surf. The reach is not protected by kelp, so afternoon sea breezes can be problematic. Mid to high tides and a mix of swells in the water produce the best waves a Georges. It is also popular during cleaned-up storm surf days during the winter. Surfer usage of this stretch is highly variable due to the nature of the changing condition of the beach break and its dependence on the lineup of tides, weather, and swell conditions. On a good

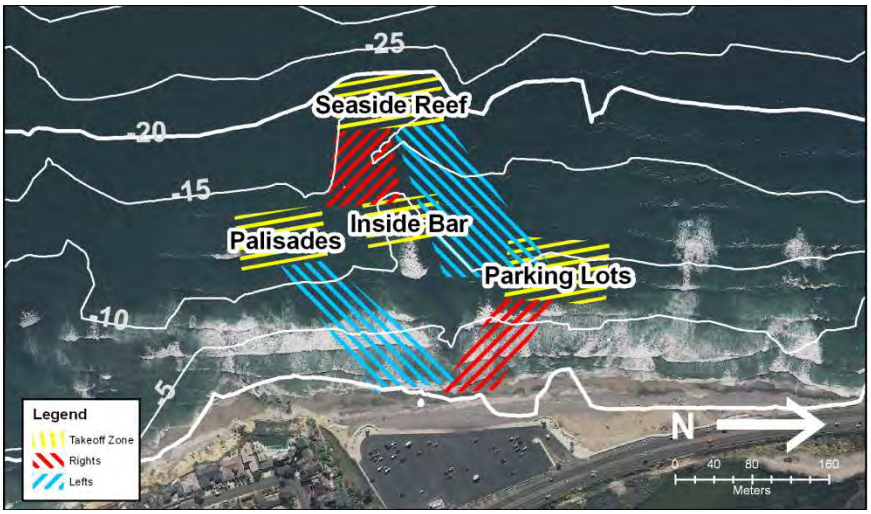
day upwards of 20 advanced and professional surfers can be found in the lineup but it is also common to find the stretch of beach empty when less than ideal conditions.





Both lefts and rights usually break with equal surfability at Georges. A brief txt discription of the graph will also be very informative. The graphs for Seaside, Swamiis, and others show that at some of th ebreaks there is a better direction for catching waves (rights are better at swamiis, lefts are better at seaside, etc.).

SEASIDE



Inside Seaside		
	Palisades Left	Parking Lots Right
Takeoff locations	1	1
Wave Breaking Speed	Fast	fast
Breaker Type	Spread/peaky Punchy steep	Spread/peaky Punchy steep
Approx. Max. Ride Length (ft)	150 ft	150 ft
Best Tide	Any	Any
Approx. Max. Ride Time (sec)	5 to 10 sec	5 to 10 sec

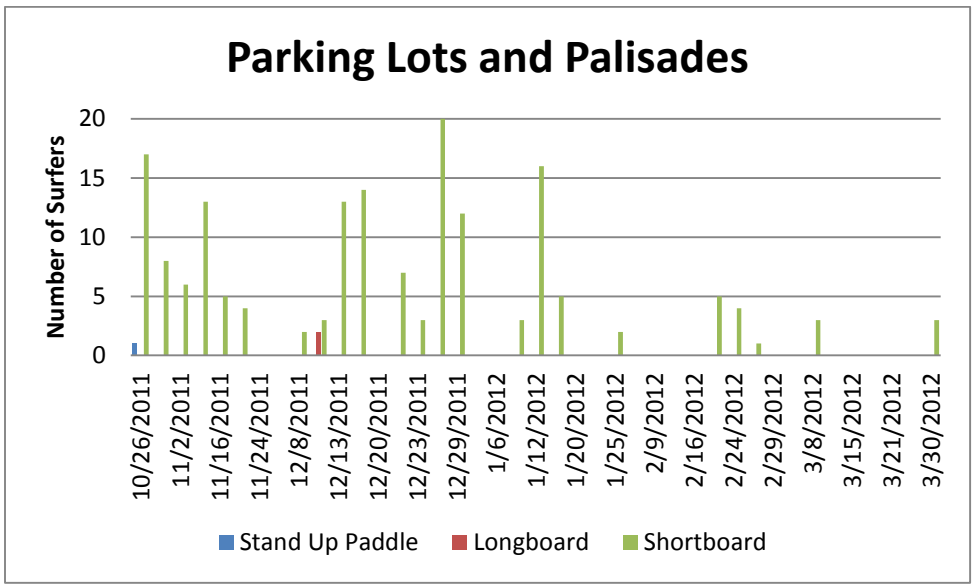
Parking Lots:

Parking lots is the inside beach break located just north and on the inside of Seaside Reef. Smaller (generally less than six-foot) lefts and mostly rights. Typically best and highly surfed during small, short-period swell when Seaside Reef is not breaking.

Palisades:

Located just south and to the inside of Seaside Reef. This wave breaks best on smaller swells when Seaside Reef is not working. This wave is a left that peels to the beach offering ramps,

corners, and racy lines. Typically best and highly surfed during small, short-period swell when Seaside Reef is not breaking. On small days this is the high performance short board wave of choice within the study area.

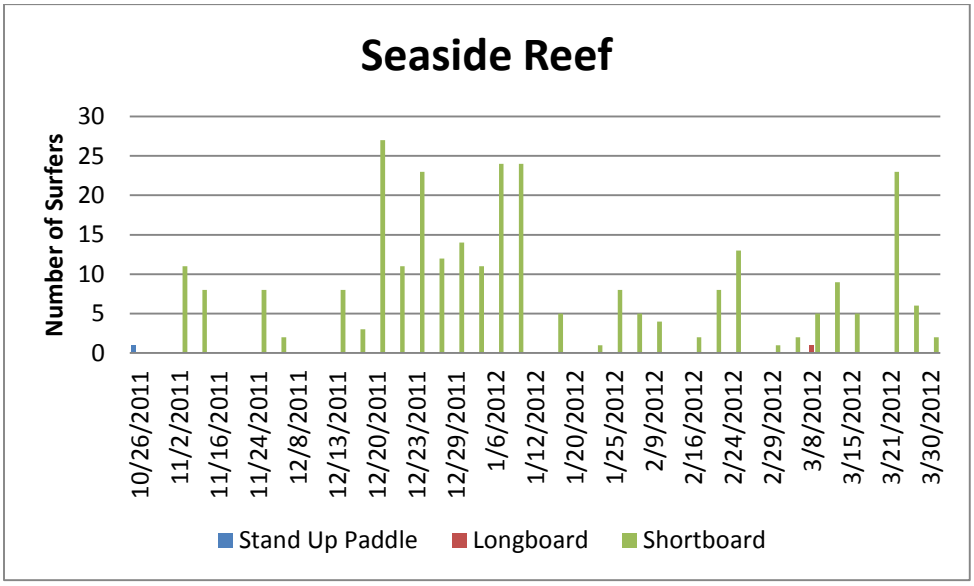


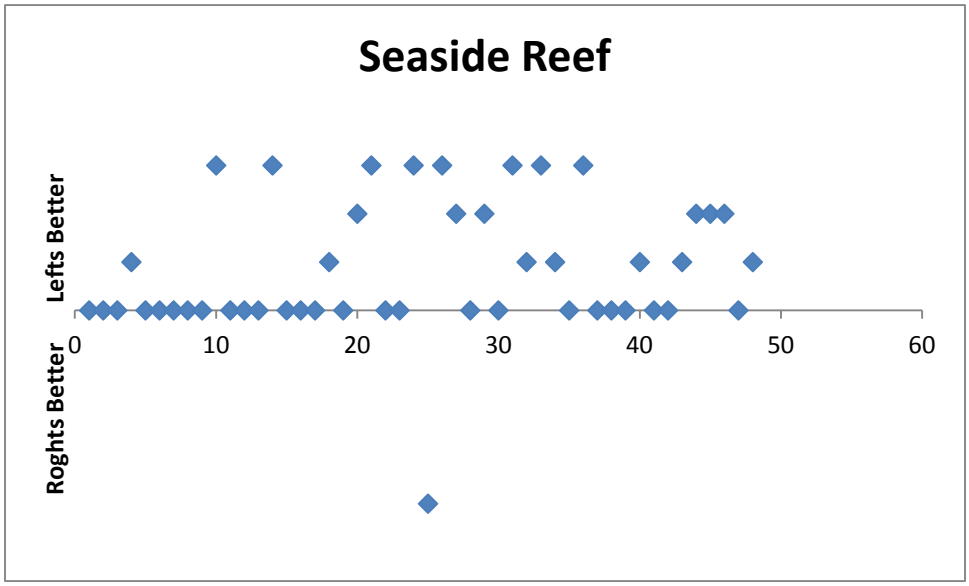
Seaside Reef:

Seaside Reef		
	Left	Right
Takeoff locations	1, tight	1, tight
Wave Breaking Speed	Fast	Slow
Breaker Type	Punchy/powerful Steep/hollow peeling	Weak/punchy Mushy/steep Small shoulder
Approx. Max. Ride Length (ft)	1000 ft	500 ft
Best Tide	Low to mid	Low to mid
Approx. Max. Ride Time (sec)	15 to 20 sec	5 to 10 sec

Seaside Reef is an offshore, shallow reef feature that creates a fairly long right and left-hand wave. The left is more consistent, longer, and is normally a better wave. Works during both SW and NW swells and is generally flat between swell events. The wave breaks abruptly over a shallow reef offering hollow waves at times. The left ranges from an excellent slow open shouldered peeling wave to an excellent fast steep hollow and lined up wave depending on the

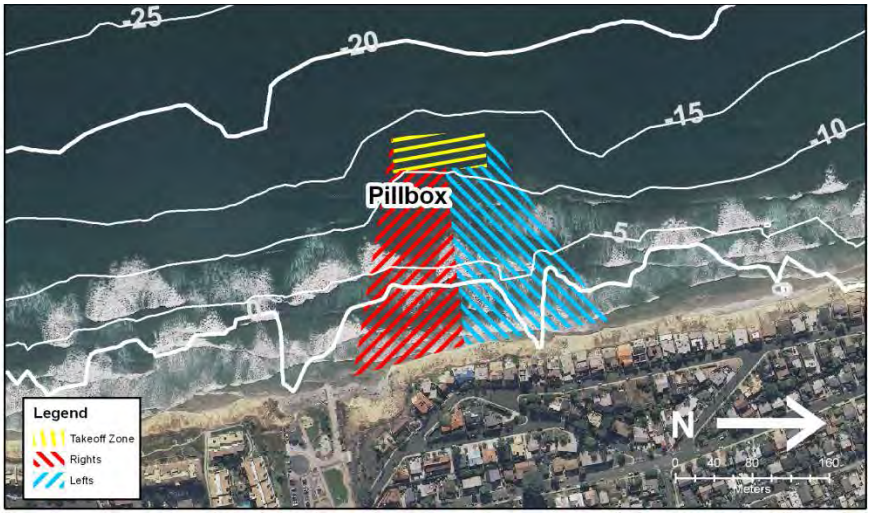
swell and tide. In good conditions the wave breaks about halfway to shore before fading in the deep area inside of the reef. In excellent conditions the left continues all that way through to the shoreline. The right has a similar steep punchy take off as the left but most waves on excellent days and all waves on normal days abruptly weaken with the deepening bottom and offer a very short take off followed by a slower no-shouldered whitewash ride. The vast majority of surfers surf left at the outside and the left is the best high performance left within the study area. This wave is consistently surfed by top professional surfers form around the globe when it is working. To surfers, Seaside Reef, Parking Lots, and Palisades are all casually collectively referred to as "Seaside".





SOLANA BEACH REACH

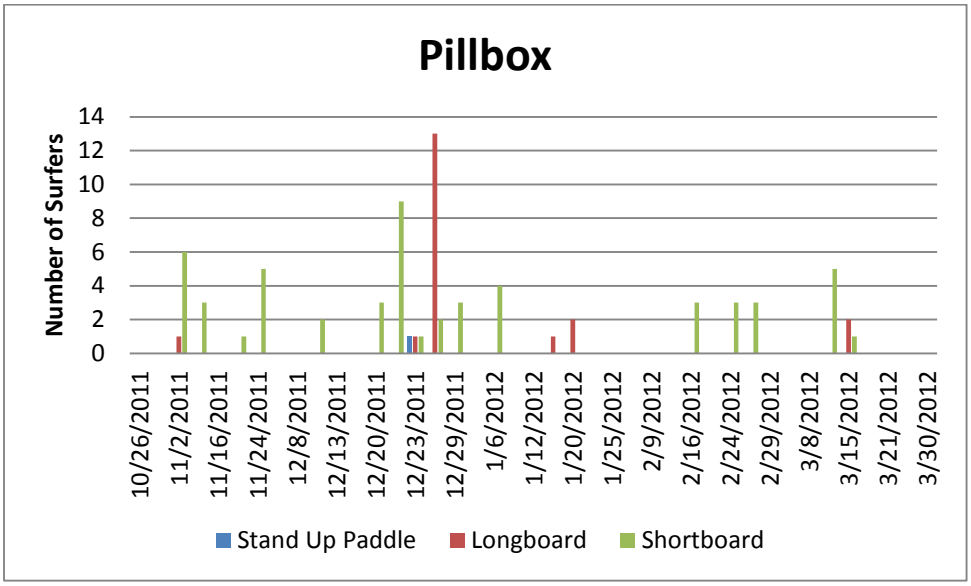
PILLBOX



Pillbox		
	Left	Right
Takeoff locations	1	1
Wave Breaking Speed		
Breaker Type	Weak/punchy Mushy/steep Sectioning/walled	Weak/punchy Mushy/steep Sectioning/walled
Approx. Max. Ride Length (ft)	300 ft	300 ft
Best Tide	Low to mid	Low to mid
Approx. Max. Ride Time (sec)	10 to 15 sec	10 to 15 sec

At the north end of Fletcher Cove is a reef that produces a steep peeling left that ends in a closeout and a slower peeling right. This spot is known to locals as “pillbox”. Pillbox is generally flat and offers poor quality surf on high tides and smaller swells. Wave breaks on a fairly shallow, offshore reef feature that then connects to an inside beach break section. Dependent on swell direction, the wave can have longer and better lefts or rights. The wave is sensitive to changes in sand and also tide. Tides greater than three feet cause waves to reflect off of the bluff, which results in backwash and unsurfable conditions. The wave yields moderate crowds when conditions are right due to its form and central location. Compared to the others waves within the Solana Beach Reach, Pillbox is less heavily surfed than Seaside and Tabletops but more heavily surfed than Cherry Hill. Parking is easier than at Cherry Hill. Pillbox is the best at lower tides when

the waves are in the waist to head high range. Bigger than head high and the reefs start to close out and smaller than waist high and a longboard is needed to catch waves. When it is working Pillbox produces fun quality lefts and rights that are very surfable. It is a fickle wave and hard to tell when it will be good or not. Pillbox can be a fun less crowded alternative to the other heavily impacted surf sites of Cardiff and Solana beach.



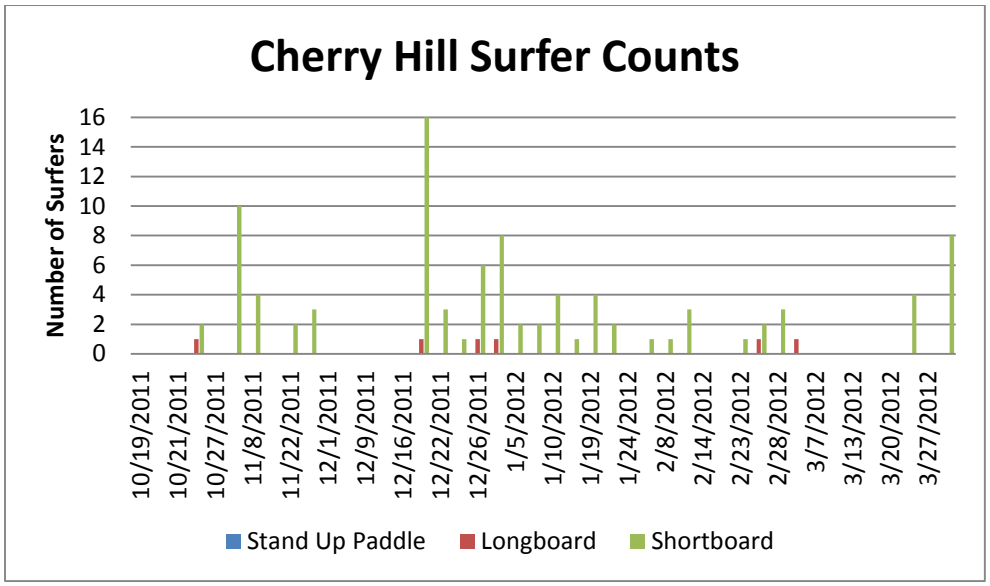
CHERRY HILL

Cherry Hill		
	Left	Right
Takeoff locations	peaky	peaky
Wave Breaking Speed	Fast	Fast
Breaker Type	Weak/punchy Mushy/steep Sectioning/walled	Weak/punchy Mushy/steep Sectioning/walled
Approx. Max. Ride Length (ft)	300 ft	300 ft
Best Tide	Low to mid	Low to mid
Approx. Max. Ride Time (sec)	10 sec	10 sec

The rights and lefts at Cherry Hill have peaky takeoffs, are usually weak to punchy, mushy to steep, sectioning, walled, or small shouldered waves. Most of the waves breaking are of lesser quality than these best waves and the best waves that the surfers wait for come in inconsistently, are of variable breaking speed and are surfed for up to 10 seconds and a few hundred feet.

Cherry Hill is a beach break with short scattered right and left-hand waves typical of an average standard southern California beach break. This is one of the least surfed waves within the study reach. To its benefit, surfers generally have a less crowded surfing experience at this wave and rarely were there more than a few surfers out at any one time. Competition for waves is minimal at this site. On the negative, this spot becomes severely impacted and unsurfable at higher tides. This spot shuts off on any tides higher than a mid-tide. Another possible reason for the infrequent use of this beach despite wave quality is the difficult beach access compared to the other spots in the study. To access the spot one must find limited parking space and walk along a path for

300m to check the surf and then return to their car suit up and walk back to the beach to surf. Public Parking is limited to a handful of on street parking spots that have competitive use from the residential communities and commercial retail park across the street. These conditions make this spot require the most effort to check conditions at and surf compared to the other study locations which do not require the beach user to leave their car to see the wave conditions. Given that the wave is no better than any of the other spots, this is part of the reason as to why it see less usage than other waves within the reach. There are specific beach user groups for this site. The stairs descending to the beach at Cherry Hill are heavily used by community members for workouts and physical activity. At high tides the beach is non-existent and covered up by the ocean water and attempting to walk along the beach to other access points is very dangerous. No other access points are connected to Cherry Hill by dry sand at high tides.



Waves within reach that data was not collected for

Tabletops: Left and right-hand reef break that breaks offshore. Multiple short rights breaks off of the far southern fringes of the reef with punchy left sections on smaller days and a singular right with hollow sections during large swells. The right is generally uncrowded compared to the left. A longer peeling left breaks in the central portion. Works during both SW and NW swells but is generally considered best during SW swells. One of the best spots in North County during a large SW swell. The left can be long and connect to the outside of Palisades. Table tops can hold swells as large as Swami's but with a smaller crowd factor. On smaller days the wave offers fun longboarding rides and an uncrowded surfing experience rare for this region of the coast.

Fletcher Cove: Left and right-hand beach break just south of Pillbox. This is a standard beach break whose conditions are highly dependent on tide and sand conditions.

Rockpile: Left and right A-frame reef break. Wave breaks offshore and breaks slowly in both directions. Allows for few maneuvers and is popular with longboards because of its slow nature. The inside section can be faster and is surfed by shortboards.

APPENDIX B:
SURFING MONITORING DATA SHEET

FINAL

SELRP
SURFING MONITORING PROGRAM

TIM STILLINGER
SELC ASSOCIATE BIOLOGIST

OBSERVER **STATION ID** **TIME (24Hr)** **Date**

WIND SPEED/SEASTATE (Beaufort Scale)
OFFSHORE 0 1 2 3 4 5 6 7 8 9 10
INSHORE 0 1 2 3 4 5 6 7 8 9 10
WIND DIRECTION
ONSHORE OFFSHORE CALM

WAVE DIRECTION (RELATIVE TO SHORE)
L SL N SR R

Surfer Count
SUP | LB | SB | BB | BS

Peak 1 _____
 # OF SURFERS _____
PEEL DIRECTION R L R/L

LONGSHORE CURRENT yes / no
DIRECTION north / south
STRENGTH S1/ S2/S3/S4/S5

Peak 2 _____
 # OF SURFERS _____
PEEL DIRECTION R L R/L

	LEFTS	RIGHTS
WAVE HEIGHT (FT)		
SURFABILITY		
WAVE TYPE	Short / Long / Mixed | Mushy / Steep / Hollow Slow / Fast | Tight / Spread / Peaky / Shifty NoSho/ SmlSho / P-ling / Sect / Walled / Closed Weak / Punchy / Powerful Con. / Incon. / Very Incon. / Flat	Short / Long / Mixed | Mushy / Steep / Hollc Slow / Fast | Tight / Spread / Peaky / Shift NoSho/ SmlSho / P-ling / Sect / Walled / Closed Weak / Punchy / Powerful Con. / Incon. / Very Incon. / Flat
% Unsurfable	0 / 1-20 / 21-79 / 80-99 / 100	0 / 1-20 / 21-79 / 80-99 / 100
RIDE LENGTH (FT)	0 / 1-99 / 99-300 / 301-900 / >900	0 / 1-99 / 99-300 / 301-900 / >900
RIDE TIME (sec)	0 / 1-5 / 6-10 / 11-15 16-20 / 21-25 / 26-30 / >30	0 / 1-5 / 6-10 / 11-15 16-20 / 21-25 / 26-30 / >30
COMMENTS:		

OBSERVER **STATION ID** **TIME (24Hr)** **Date**

WIND SPEED/SEASTATE (Beaufort Scale)
OFFSHORE 0 1 2 3 4 5 6 7 8 9 10
INSHORE 0 1 2 3 4 5 6 7 8 9 10
WIND DIRECTION
ONSHORE OFFSHORE CALM

WAVE DIRECTION (RELATIVE TO SHORE)
L SL N SR R

Surfer Count
SUP | LB | SB | BB | BS

Peak 1 _____
 # OF SURFERS _____
PEEL DIRECTION R L R/L

LONGSHORE CURRENT yes / no
DIRECTION north / south
STRENGTH S1/ S2/S3/S4/S5

Peak 2 _____
 # OF SURFERS _____
PEEL DIRECTION R L R/L

	LEFTS	RIGHTS
WAVE HEIGHT (FT)		
SURFABILITY		
WAVE TYPE	Short / Long / Mixed | Mushy / Steep / Hollow Slow / Fast | Tight / Spread / Peaky / Shifty NoSho/ SmlSho / P-ling / Sect / Walled / Closed Weak / Punchy / Powerful Con. / Incon. / Very Incon. / Flat	Short / Long / Mixed | Mushy / Steep / Hollc Slow / Fast | Tight / Spread / Peaky / Shift NoSho/ SmlSho / P-ling / Sect / Walled / Closed Weak / Punchy / Powerful Con. / Incon. / Very Incon. / Flat
% Unsurfable	0 / 1-20 / 21-79 / 80-99 / 100	0 / 1-20 / 21-79 / 80-99 / 100
RIDE LENGTH (FT)	0 / 1-99 / 99-300 / 301-900 / >900	0 / 1-99 / 99-300 / 301-900 / >900
RIDE TIME (sec)	0 / 1-5 / 6-10 / 11-15 16-20 / 21-25 / 26-30 / >30	0 / 1-5 / 6-10 / 11-15 16-20 / 21-25 / 26-30 / >30
COMMENTS:		

APPENDIX C:
PUBLIC SURVEYS

San Elijo Lagoon Restoration Project

Surfing Survey

Survey Location: _____ Name (Optional): _____

Survey Time: _____ Contact (Optional): _____

City of Residence: _____ Email (Optional): _____

1) Sex: (M/F)
2) Age:
   a) <14
   b) 15-24
   c) 25-34
   d) 35-44
   e) >45
3) Primary Surfboard type:
   a) Longboard
   b) Shortboard
   c) Stand-up paddle-board
   d) Other (kneeboard, bodyboard)
4) Years of surfing:
   a) <5
   b) 5-10
   c) 10-15
   d) 15 – 20
   e) >20
5) Years of surfing this spot or in the vicinity of this spot (within 2 miles)?
   a) < 5
   b) 5-10
   c) 10-15
   d) 15-20
   e) > 20
6) How often do you surf here?
   a) < 100 days / year
   b) 100-150 days / year
   c) 150-250 days / year
   d) >250 days / year
7) What season(s) do you normally surf here?
   a) Winter
   b) Spring
   c) Summer
   d) Fall
8) What time do you typically surf here?
   a) Before 10 am
   b) 10 am to 12 pm
   c) 1 pm to 5 pm
   d) After 5 pm
   e) Whenever it's best
9) What tide to you typically surf here?
   a) low (< 1.5 ft)
   b) Mid (1.5 - 3 ft)
   c) High (> 3 ft)
   d) Whenever it's best
10) Why do you like to surf here?
   a) Wave Quality
   b) Consistency
   c) Convenience
   d) People / environment

11) What types of wave do you prefer? Please pick your favorite from each column.

Break Type	Shape	Size(ft)	Direction	Swell	Face	Power
Reef Break	Hollow	1-3	Lefts	Wind Swell	Peeling	Weak
Point Break	Steep	3-4	Rights	GroundSwell	Sectioning	Punchy
Beach Break	Mushy	4-6	Both	ComboSwell	Corners	Powerful
		6-8		Anything	Closed out	
		8+				