STATE OF CALIFORNIA – THE RESOURCES AGENCY PETE WILSON, *Governor*

CALIFORNIA COASTAL COMMISSION
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March 18, 1998

To: **Coastal Commissioners and Interested Parties**

From: **Peter Douglas, Executive Director**
Mark Delaplaine, Federal Consistency Supervisor

Re: **Navy Monitoring Plan, "Homeporting" Project, Coronado, Submitted in Compliance with CD-95-95**

STAFF NOTE/BACKGROUND:

On November 16, 1995, the Commission concurred with the Navy's consistency determination for the relocation of one NIMITZ class aircraft carrier from the Naval Air Station in Alameda, San Francisco Bay, to the Naval Air Station, North Island (NASNI) in San Diego Bay (CD-95-95). This project included a number of components, including construction of a 13.4 acre fill area adjacent to the Turning Basin at NASNI. Because contaminants existed at the site of the fill, and because additional contaminants from the dredging component of the project were proposed for placement into the fill area, the Navy committed to performing post-construction monitoring of the confined disposal fill (CDF) activity.

Because the monitoring plan was not available when the Commission was reviewing the Homeporting project, the Commission and the Navy agreed the monitoring plan would be the subject of a future public hearing. Relevant excerpts from the Commission's findings in concurring with the Homeporting project include:

> *To assure the integrity of the fill is maintained and to contain the contaminants at the site, the Navy is in the process of preparing "an effective maintenance and management plan" for the rock dike and fill area. This plan will include a biological and water quality monitoring program, including a mussel watch station and visual inspections to insure structural integrity. This will allow "early detection of*

> *bioaccumulation in transplanted and resident biota that may indicate a breach in the integrity of the facility." In addition, an engineering monitoring program will be prepared to evaluate the structural integrity of the rock dike throughout its lifetime .... The RWQCB will require finalization of the plan within three months of its waste discharge permit issuance for the project, which is currently expected in early January 1966. The Navy has agreed to submit the final monitoring plan to the Commission, for its review and concurrence (including a public hearing), prior to placing any fill material within the fill area.*
>
> *A key project feature is the final, post-disposal monitoring program needed to assure the continuing integrity of the fill is retention of the contained contaminants at the fill site. Because this monitoring is critical to the Commission's finding, the Commission staff has requested and the Navy has agreed to submit this monitoring plan to the Commission, for its review and concurrence (including a public hearing), prior to placing any material within the fill area. With this assurance the Commission is able to conclude that the proposed mitigation and monitoring provisions are adequate to address project impacts.*

While the Navy did not complete the monitoring plan prior to placing fill in the structure, the Commission staff agreed to defer review of the plan to a later date. In compliance with its commitments to the Commission (and also in compliance with Army Corps permit conditions and Regional Water Quality Control Board requirements) the Navy has now compiled the necessary monitoring plan, which is attached (Exhibit 1).

Because the CDF/fill area is part of a more extensive remediation project, the Navy's monitoring plan has been provided as Appendix A in the Navy's "Draft Focused Remedial Investigation/RCRA Facilities Investigation Work Plan IRP Site 1, Outfalls 9-15, Shoreline Sediments, Naval Base Coronado North, San Diego California," (October 1997). The monitoring plan has been reviewed by the Commission staff, as well as the staffs of the Regional Water Quality Control Board (RWQCB, San Diego Region), and the California Department of Toxic Substances Control (DTSC). Also because of the greater scope of the overall remediation program, the DTSC provided extensive comments on the plan (Exhibit 2). The Navy has modified the plan to incorporate the recommendations in the DTSC's and the Commission staff's comments.

The Commission staff has also received comments on the plan from the Environmental Health Coalition (EHC) (Exhibit 3). EHC's primary concern was over the duration of monitoring stated in the plan, which only appeared to commit to taking monitoring samples for two years. In discussing this matter with the Navy, the Navy stated its intent was to re-evaluate the

monitoring results after two years, to determine the most appropriate type and frequency for subsequent monitoring, but not to discontinue monitoring after two years. The Navy has committed that it will monitor the site for the life of the rock dike/CDF structure, and will not reduce the frequency of monitoring until the Commission staff has had an opportunity to review the Navy's re-evaluation and concur with any modifications. With these commitments, the Navy has committed to a process which will assure adequate long-term monitoring of the site.

PROCEDURES:

The Commission 's review of this plan is being carried out under Section 930.44 of the federal consistency regulations, which provides that:

> *(b) The State agency shall request that the Federal agency take appropriate remedial action following a serious disagreement resulting from a State agency objection to a Federal activity which was: (1) Previously determined to be consistent to the maximum extent practicable with the State's management program, but which the State agency later maintains is being conducted or is having a coastal zone effect substantially different than originally proposed and, as a result, is no longer consistent to the maximum extent practicable with the State's management program .... The State agency's request must include supporting information and a proposal for recommended remedial action.*

CONCLUSION:

With the Navy's agreement to submit the quarterly and annual reports to be generated under the plan to the Commission staff, to monitor for the life of the structure and submit future monitoring plan changes to the Commission staff for its review, the Commission staff believes this plan is adequate to detect any potential escape of contaminants from the site, and, with remediation procedures in place to be triggered in the event escape of contaminants were to occur, is adequate to protect marine resources and environmentally sensitive habitat in San Diego Bay.

The Commission staff has concluded that there is no basis for the Commission to find that the project is not being carried out in a manner consistent the maximum extent practicable with the California Coastal Management Program.

ATTACHMENT A

NEARSHORE CONFINED DISPOSAL FACILITY
POST-DREDGE MONITORING PLAN

EXHIBIT NO. 1
APPLICATION NO.
CDF Monitoring Plan
NAVY

NEARSHORE CONFINED DISPOSAL FACILITY
POST DREDGE MONITORING PLAN

CVN HOMEPORTING PROJECT

NAVAL AIR STATION, NORTH ISLAND

CORONADO, CALIFORNIA

Prepared for:

SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
South Bay Area Focus Team
2585 Callagan Highway, Building 99
San Diego, California 92136-5198

Contract No. N68711-92-C-4595

May, 1997

NEARSHORE CONFINED DISPOSAL FACILITY
POST DREDGE MONITORING PLAN

CVN HOMEPORTING PROJECT

NAVAL AIR STATION, NORTH ISLAND

CORONADO, CALIFORNIA

Walter E. Hurtienne, Professional Engineer

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Contract No. N68711-92-C-4595

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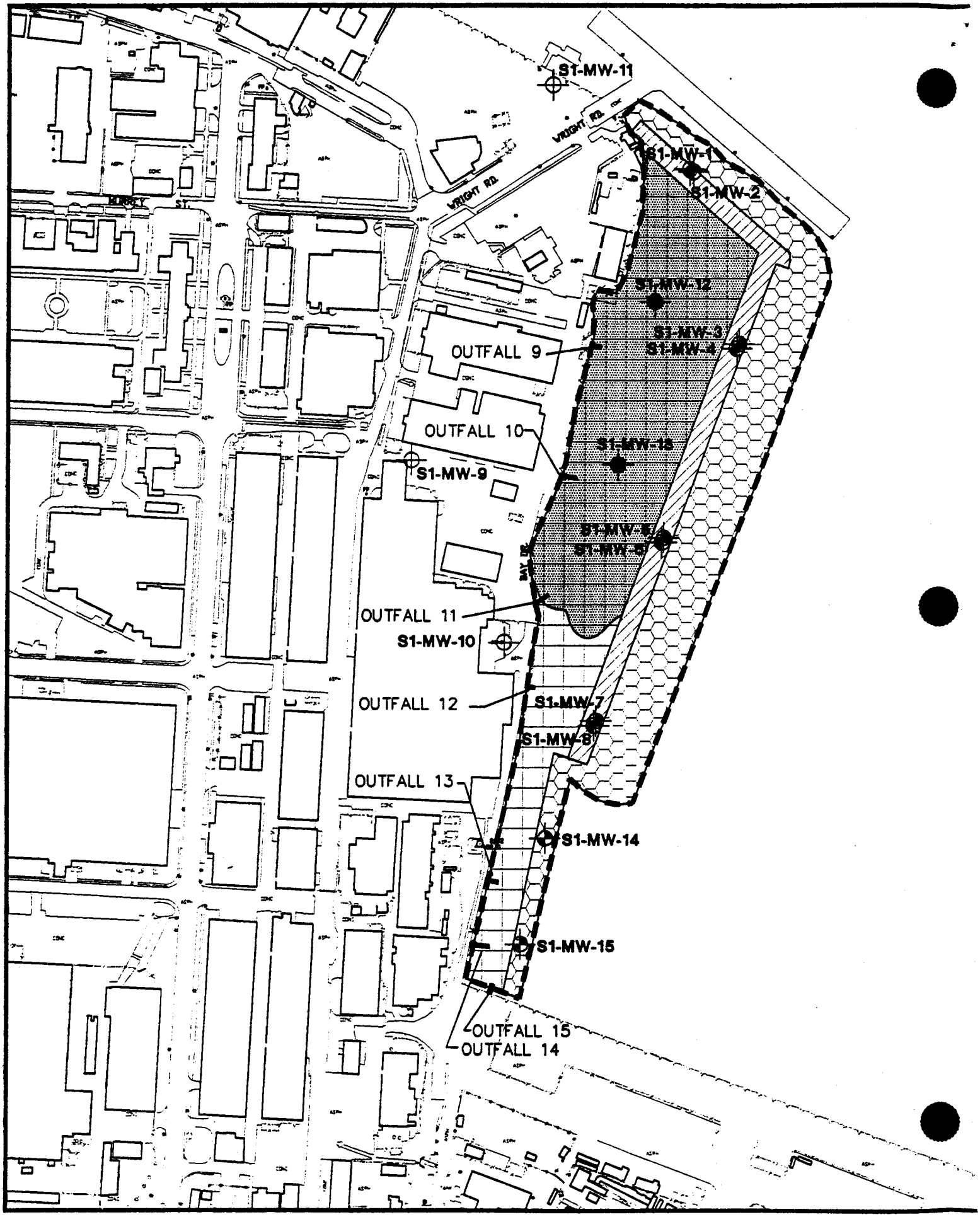
May 1997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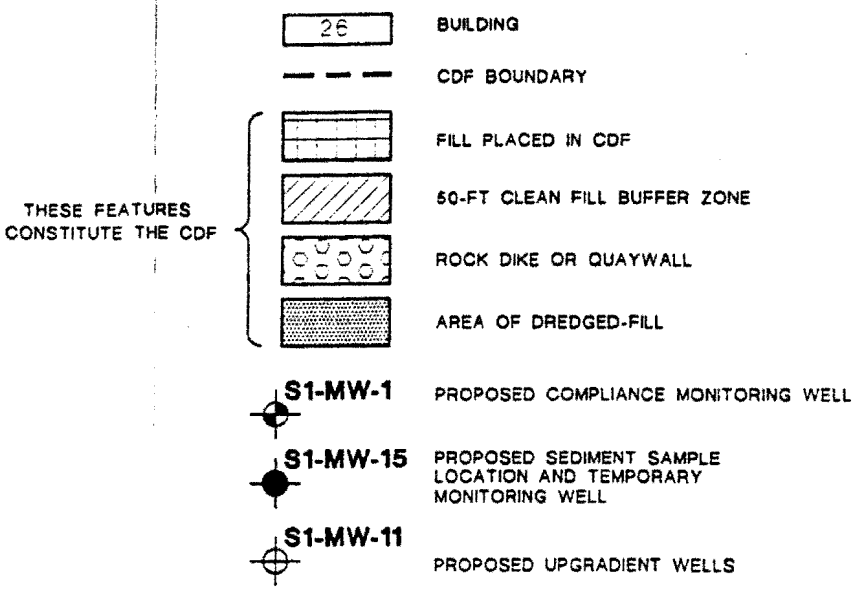
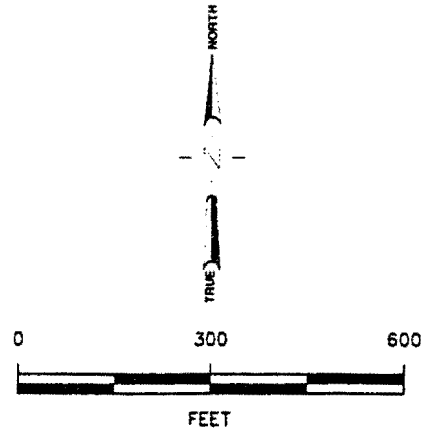


NOTE: FIGURE FEATURES FROM US DON REPORT 1996.

SOURCE: BASEMAP FROM RICK ENGINEERING CO.
COORDINATE SYSTEM IN NAD 83

SAN DIEGO BAY



Focused RI/RFI Work Plan

Figure 4-5

Proposed Well Locations

Naval Base Coronado–North, San Diego, CA

Bechtel National, Inc.
CLEAN II Program

Date: 10/14/97
File No: 148L2532
Job No: 22214-148
Rev No: I

SUMMARY

This Post Dredge Monitoring Plan presents the long term monitoring plan for dredge sediments utilized as fill and in-situ Installation Restoration (IR) Site 1 Harbor Sediments for Outfalls 9 through 15 located adjacent to Naval Air Station North Island at the Turning Basin. This report responds to requirements described in the California Regional Water Quality Control Board Order 95-118 as clarified in the August 20, 1996 Supplement to Pre-Dredge Monitoring Report and to the conditions in the US Army Corps of Engineers permit 94-20861-DZ. The plan provides information to monitor the potential leaching of sediment borne chemicals of concern from either the dredge fill sediments or *in-situ* sediments into San Diego Bay. The monitoring plan described herein consists of water quality monitoring from groundwater monitoring wells and physical inspection of the site at quarterly intervals, for a period of 2 years. Quarterly reports will be forwarded to the permitting agencies at the completion of each monitoring event. Annual reports will also be prepared to synthesize the quarterly report data and evaluate/discuss groundwater movement patterns over the year, including potentiometric surfaces, gradient changes, and groundwater migration rates.

This plan also provides for groundwater monitoring data collection for conducting a focused Comprehensive Environment Response, Compensation and Liability Act (CERCLA) remedial investigation/feasibility study (RI/FS) at Installation Restoration Site 1. Provisions are specified for well placement and construction in order to allow for the incorporation of groundwater well monitoring data with environmental data collected in this area prior to the construction of the CDF into a data package suitable for groundwater modeling. The provisions specified within this plan require the data to be collected to conform to the quality assurance/quality control (QA/QC) standards of the CERCLA and the Resource Conservation and Recovery Act (RCRA).

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1.0 INTRODUCTION

The purpose of this document is two-fold. First, to present the long term monitoring plan for the Nearshore CDF in compliance with the U.S. Army Corps of Engineers (ACOE) and California Regional Water Quality Control Board (RWQCB) permits regarding CWA section 404 and Waste Discharge Requirements (WDRs). This involves both groundwater monitoring and structural integrity monitoring. Second, to support a focused CERCLA remedial investigation/feasibility study (RI/FS) to determine whether additional remedial efforts are necessary beyond those provided for within the ongoing CERCLA time critical removal action. In order to support the second purpose, groundwater monitoring information will be used in conjunction with a sophisticated groundwater modeling program to perform this evaluation at a later date. The collected data and investigation together with the generated report documents will ensure that the RCRA corrective action requirements (RFI/CMS/CMI) for this site are also met. The report documents will accordingly be prepared using the standard NASNI CERCLA/RCRA hybrid approach used at other North Island IR sites. The draft and final focused CERCLA RI/FS will be submitted separately from the groundwater monitoring reports. The collected data and subsequent evaluation will ultimately lead to a CERCLA Record of Decision (ROD)/RCRA Statement of Basis (SOB) for the site. The ROD/SOB also will be submitted as a separate document. It is anticipated that the Navy will be submitting the focused RI/FS work plans in the near future.

1.1 Site Background

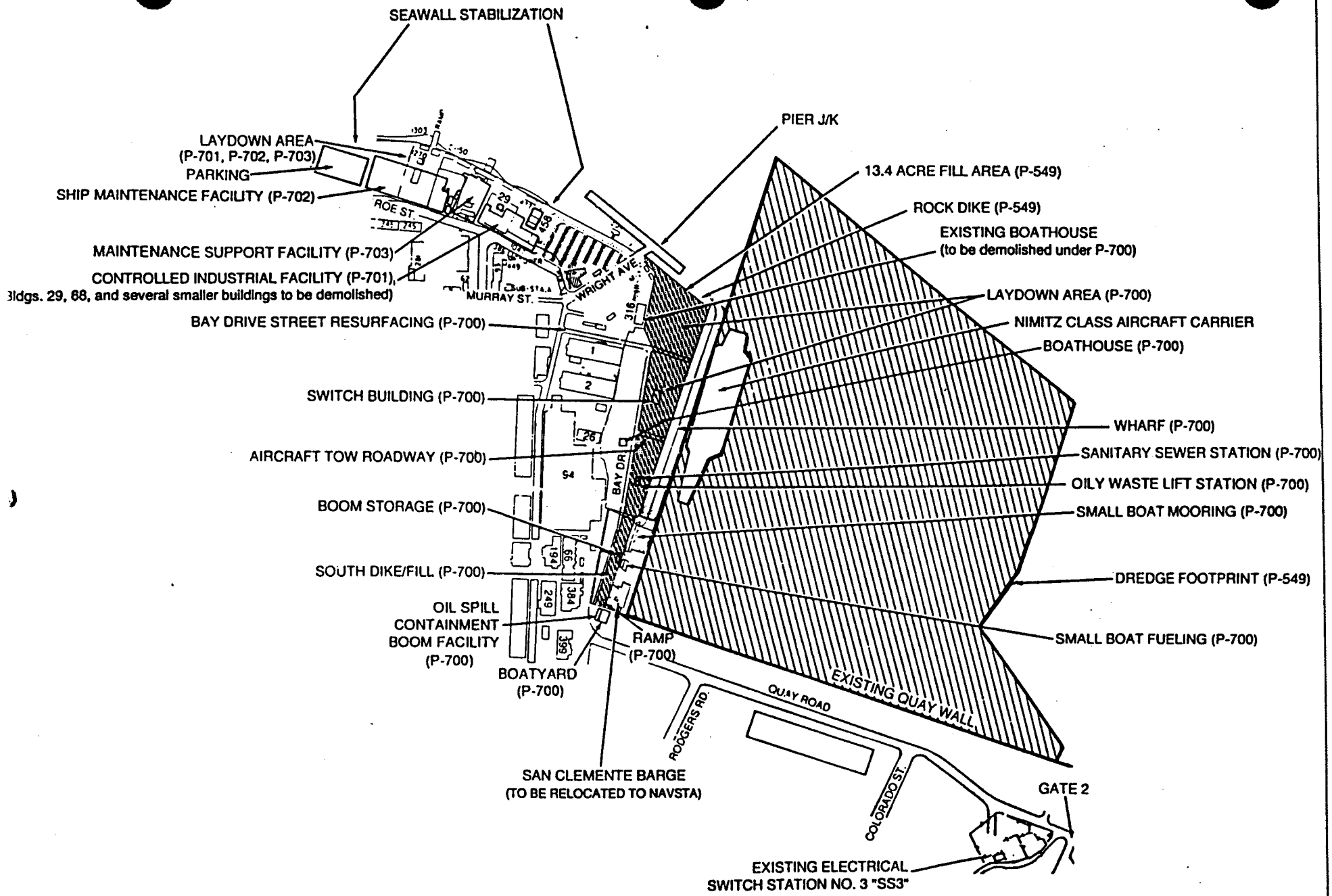
The Navy is constructing facilities to accommodate the relocation of one NIMITZ class aircraft carrier from Naval Air Station Alameda, San Francisco Bay, to Naval Air Station North Island (NASNI), San Diego Bay, California. This action is being taken to comply with the 1993 Base Realignment and Closure (BRAC III) directive from Congress to close Naval Air Station

(NAS) Alameda. Ships currently homeported at NAS Alameda will be relocated to fleet concentrations in San Diego and the Pacific Northwest.

To homeport and maintain one NIMITZ class aircraft carrier in San Diego Bay, extensive dredging is necessary. A NIMITZ class aircraft carrier has a deeper draft than the conventionally powered carriers currently homeported at NASNI. Consequently, to facilitate safe and routine navigation and berthing of this vessel, dredging of the aircraft carrier turning basin and San Diego Bay Navigation Channel is required (see Figure 1).

Prior to issuance of dredging and disposal permits, the U.S. Army Corps of Engineers (ACOE) and U.S. Environmental Protection Agency (EPA) required extensive chemical, physical, and biological testing to assess; 1) the quality of the proposed dredged material, and 2) to identify acceptable sediment disposal location(s). Disposal options identified for this project include: beach replenishment, ocean disposal, or containment within a rock dike structure. All testing results are contained in a set of eight report volumes for this project[1]. Approximately 9 million cubic yards (cy) of sediment was tested for the preferred disposal options (beach replenishment or ocean disposal). The vast majority of the proposed dredged material was determined to be suitable for one of these two options. A smaller portion of the material, approximately 85,300 cy (hereafter referred to as the "fill sediment"), was determined to be unsuitable for the proposed disposal options based on bioassay test results.

The Navy has placed this fill sediment within a Nearshore Confined Disposal Facility (CDF) being constructed at the project site to provide a berthing wharf for the new CVN. The CDF consists of a rock dike structure and 50 ft buffer zone of granular material. The fill sediment has been capped by approximately 150,000 cy of sandy material obtained from the creation of a mitigation site on the project. Furthermore, the majority of this clean sediment will be



CVN HOMEPORT PROJECT

SOURCE: OGDEN 1995

FIGURE 1

capped with asphalt or concrete which will substantially prevent rainwater infiltration into the CDF.

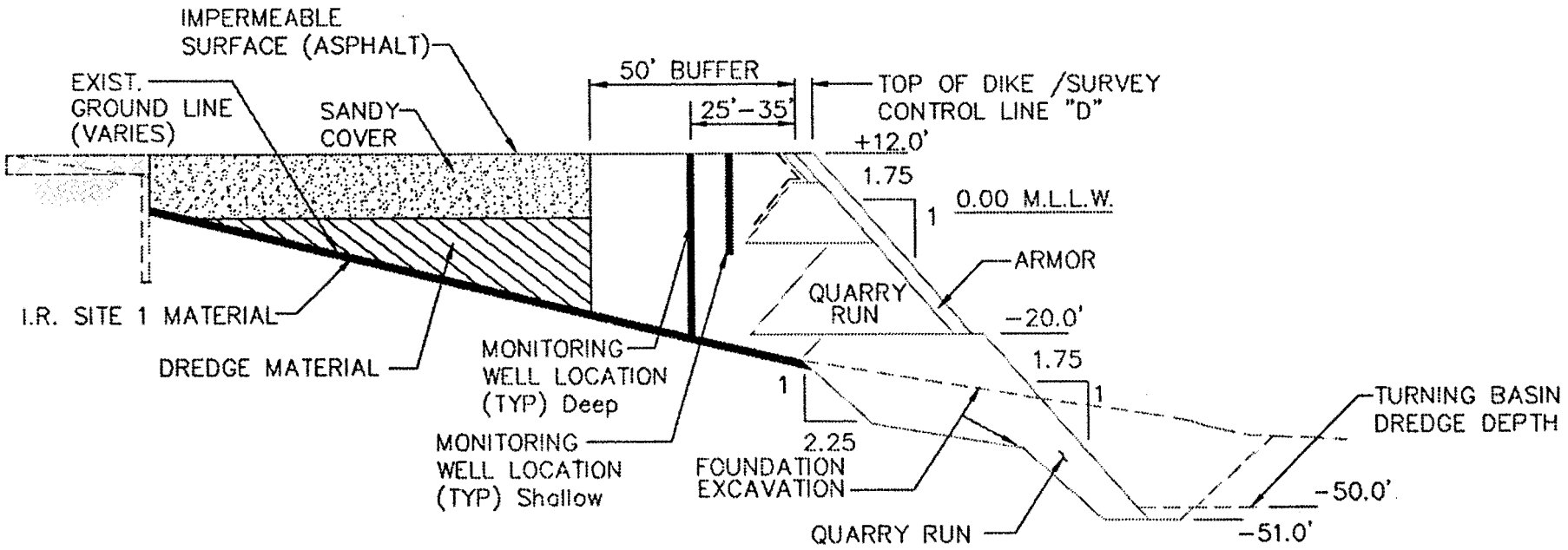
1.2 Site Conceptual Model

As shown in Figure 2, the newly created CDF site consists of a rock dike containment structure, granular dredged material forming a 50 foot barrier along the dike at the bay edge, and dredge sediments containing chemicals of concern placed behind the 50 foot buffer zone. The bottom of the site consists of *in-situ* bay sediments containing some chemicals of concern, the site is capped to a final elevation of +10 to +15 feet mllw with clean sandy material excavated from a mitigation area created for the project. The CDF and dike structure are pervious to both the bay and the existing land at North Island. It is anticipated that the most active groundwater area will be at the tidal interface, or at approximately mean sea level (+2.7 feet mean lower low water). The *in-situ* ocean floor Site 1 sediments are expected to exhibit the highest concentrations of chemicals of concern.

The final surface of the site is expected to be impervious asphalt or building foundations, and accordingly is not considered a potential pathway for the migration of chemicals of concern. Therefore, if any chemicals of concern are detected at the point of compliance (the dike face), the source is expected to be from either:

1. Existing upland groundwater containing chemicals of concern flowing bayward from North Island through the CDF,

2. Subsurface water mixed with dredge sediments within the CDF containing soluble chemicals of concern flowing bayward, or



TYPICAL FILL SECTION

N.T.S.

FIGURE 2

3. *In-situ* Site 1 sediments beneath the CDF containing soluble chemicals of concern also flowing bayward via groundwater or subsurface water.

Given these potential loss pathways, complete water level and chemical monitoring should be provided near the bay edge (point of compliance) both at the bay floor and in the tidal zone. Temporary water level measurements should be provided for the dredge and *in-situ* sediments within the CDF for modeling purposes. Long Term water level monitoring should be provided near the former shoreline in up gradient monitoring wells.

2.0 REGULATORY FRAMEWORK

This report specifically responds to provisions in the Army Corps of Engineers (ACOE) and California Regional Water Quality Control Board (RWQCB) Permits. An ACOE permit[2] (with EPA Region IX concurrence) was issued to the Navy to conduct both the dredging and disposal operations. A requirement of this permit (Special Conditions for Corps Permit NO. 94-20861-DZ at Section V.G.) is to submit a plan for monitoring the concentrations and solubility of the chemicals of concern in the fill material and effectiveness of the CDF in preventing chemicals of concern from migrating into San Diego Bay or groundwater sources. In addition to the ACOE's permit, the San Diego Regional Water Quality Control (RWQCB) issued Order No. 95-118 titled "Waste Discharge Requirements (WDRs) for the U.S. Navy Dredge and Fill Activities, Homeporting Project, San Diego County."[3] A requirement of this order (Monitoring and Reporting Program No. 95-118 at Section D. 1) is to submit a proposal for an ongoing water quality monitoring program to monitor the effectiveness of the site conditions and quaywall construction in preventing chemicals of concern from migrating into San Diego Bay.

The *in-situ* sediments below the CDF fill sediments are the subject of a CERCLA time-critical removal action (TCRA) now taking place. This TCRA located between Outfalls 9-15[4] was selected as an appropriate situation-specific remedy to prevent hazardous chemicals of concern, entrained in the near-shore bay sediments, from entering the surface water and potentially adversely affecting humans, the environment and the ecosystem. A CERCLA Action Memorandum signed by the Commanding Officer, NAS North Island was prepared to document this decision. The groundwater monitoring plan proposed in this document is not intended to serve as the final remedial action for this site, but instead will provide data necessary for evaluating the long term effectiveness of the CDF as a barrier to migration of chemicals of concern.

3.0 DESCRIPTION OF THE SITE

The site is located adjacent to the Naval Air Station North Island (NASNI) at the Turning Basin as shown in Figures 3 and 4. The site consists of newly created land utilizing dredge material and rock dikes. The operation and details of the site are provided in the Final Environmental Impact Statement (FEIS) prepared by the US Department of the Navy dated November, 1995[5] . The sediment characteristics of the dredged material for this project, both chemical and physical, are described thoroughly in the Sediment Characterization Report[6] , and further discussed in the Supplement to Pre-Dredge Monitoring Report.[7] The underlying site geology is thoroughly described in the Geotechnical Investigation Report for the proposed dredging project[8] and generally consists of beach/channel deposits or the Bay Point Formation.

Numerous environmental studies have been conducted on the site, the CDF material and the IR Site 1 beneath the CDF. Table 1 summarizes these reports and is listed here for information purposes. A complete list of the results and findings would be too voluminous for this report, however, Table 1 suggests the type of information available for review.

Table 1

SUMMARY OF PREVIOUS INVESTIGATIONS

1989 Harding Lawson Associates, Remedial Investigation Shoreline Sediments (Site 1), Naval Air Station, North Island, San Diego, California (two volumes)

1992 MEC Analytical Systems, Inc., Results of Chemical Physical and Bioassay Analyses on Sediments form Bravo Pier and the Aircraft Carrier Turning Basin in the San Diego Bay, California

1995 Ogden Environmental and Energy Services, Sediment Characterization Report for Nimitz Class Aircraft Carrier Homeporting Facilities, Naval Air Station, North Island, California (seven volumes)

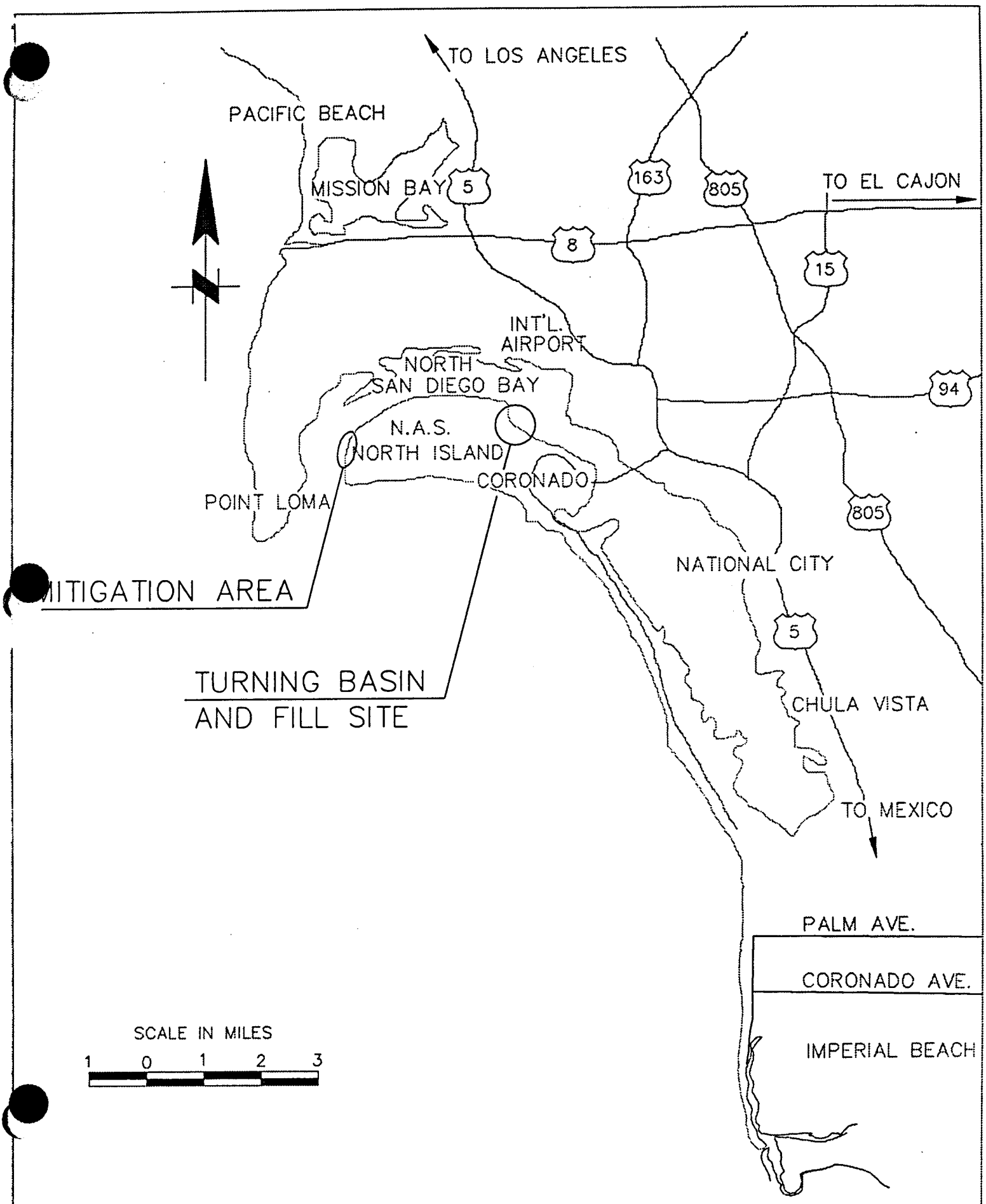
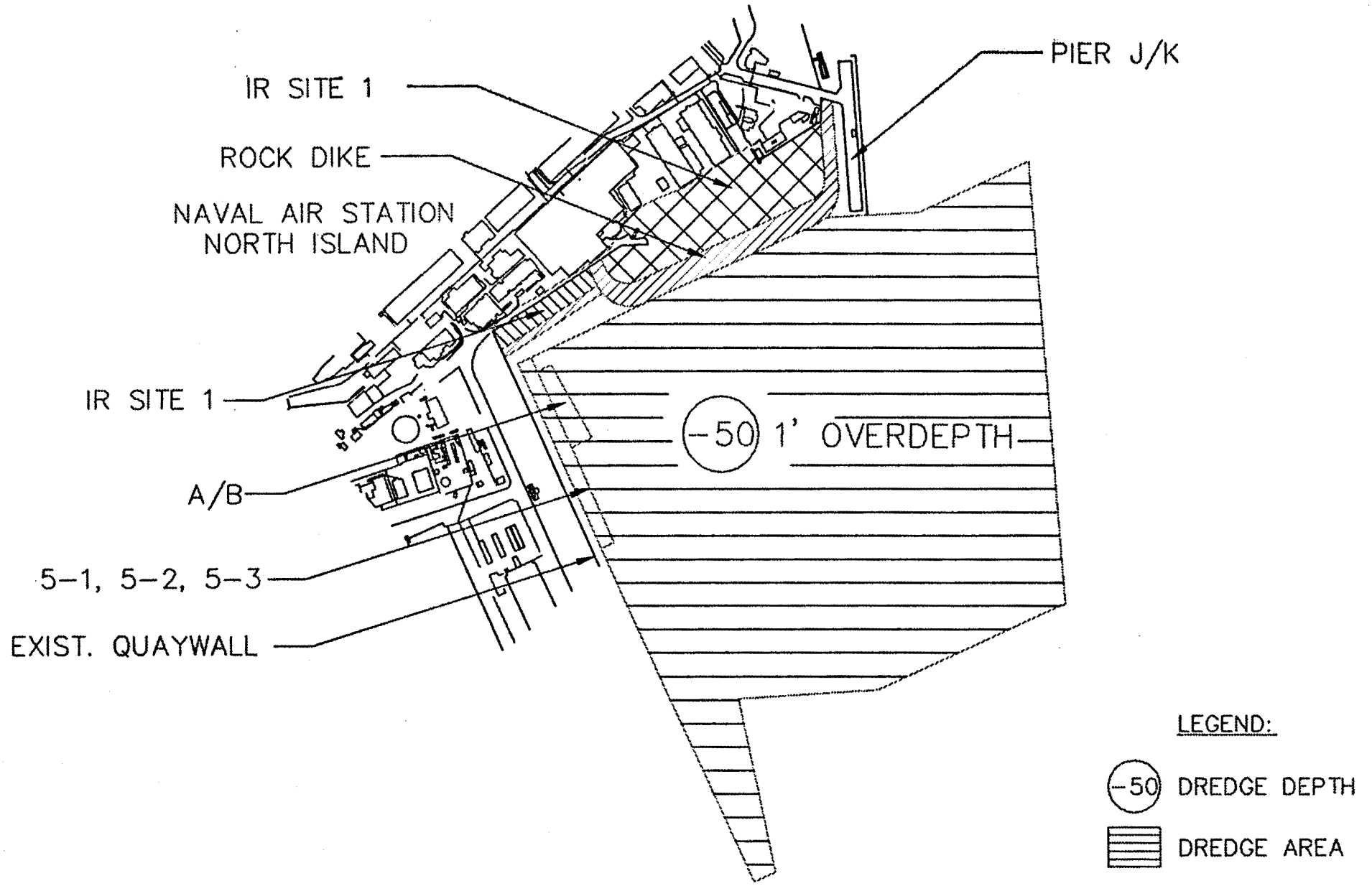


FIGURE 3

VICINITY MAP



TURNING BASIN AND FILL
SITE PLAN

FIGURE 4

4.0 STATUS OF CONSTRUCTION AND MONITORING

Construction of this project began in September, 1996 as outlined in the Pre-Dredge Operations Plan[9]. The first of a series of post-dredging/disposal reports[10] has also been completed which includes the activities of the contractor through March 1997. In summary, the CDF fill and containment dikes were predominantly complete as of March, 1997. Densification to the newly created fill (backland) and armor stone placement is expected to be completed by mid-June 1997. Backland densification is anticipated to be complete by the time monitoring wells are installed and ready to operate. The site improvements to include utility construction and paving (impermeable layer) is scheduled for completion by spring of 1998

Construction monitoring during the dredging operation was also outlined in the ACOE and RWQCB permits. In accordance with the permits, water sampling and testing results were submitted to the RWQCB as the data was processed. There were no instances of non-compliance during removal or placement of the material within the CDF.

5.0 LONG TERM MONITORING PLAN

A long-term monitoring plan has been prepared to comply with the requirements specified in the ACOE & RWQCB permits. In addition, this long term monitoring plan provides a necessary element of investigation to partially address the needs of the CERCLA RI/FS and RCRA RFI/CMS programs for IR Site #1.

5.1 Water Quality Monitoring

Monitoring will consist of groundwater sampling and site inspection over a 2 year period commencing upon completion of the densification of backlands. This will provide for sampling during the long term settlement period of the CDF and during completion of the backland improvements.

Groundwater sampling will be performed quarterly at eight monitoring wells to be installed along the seaward perimeter of the CDF (four deep and four shallow), two reference location monitoring wells onshore, and two temporary wells located within the CDF interior. The reference well locations are proposed as S2-MW1 and MW2 since they are upgradient from the CDF and should provide a reasonable indication of groundwater quality entering the CDF (quarterly or annual reports could revise or add to the reference well locations depending upon reported results).

The groundwater will be sampled using disposable bailers or dedicated, non-cavitating pumps. Groundwater will be analyzed for the constituents and using the methods as shown in Table 2. In addition to the constituents shown in Table 2, groundwater will be sampled and analyzed for volatiles using U.S.EPA Method 8260 for the first quarterly sampling event. If no volatile compounds are reported at or near monitoring action levels (to be established in the Focused RI/FS for this site), no more volatile samples will be collected. Additional constituents may be monitored for the CERCLA/RCRA aspect of the project however, these will be addressed in the RI/FS work plan.

Results of the water quality sample analysis and site inspection will be compiled in quarterly reports and submitted to the Regional Water Quality Control Board (RWQCB) for information. Should results indicate potential problems, the Navy and RWQCB will discuss corrective measures.

Table 2 Ground Water Analysis Constituents and Analytical Methods

Constituent	Analytical Method	Reporting Limit
Chlordane and related components	U.S. EPA Method 8080	*
Polychlorinated biphenyls	U.S. EPA Method 8080	*
Polynuclear aromatic hydrocarbons	U.S. EPA Method 8310	*
Hydrogen sulfide	ASTM 5504-M	*
Ammonia	U.S.EPA 350.3	*
Mercury	U.S.EPA 7470	*
Silver	U.S.EPA 200.7	*
Zinc	U.S.EPA 200.7	*
Arsenic	U.S.EPA 7000 Series	*
Cadmium	U.S.EPA 200.7	*
Hexavalent chromium	U.S. EPA 7196A Colorimetric	*
Copper	U.S.EPA 200.7	*
Lead	U.S.EPA 7000 Series	*
Trybutyl tin	G.C. FPD	*
Nickel	U.S.EPA 200.7	*

*Water Quality data will be compared to benchmarks as determined during the ARARS process for Site 1. Detection limits will be below federal and state water quality objectives where possible, using approved EPA CLP methods or the equivalent.

5.2 Frequency and Collection of Water Level Measurements

Groundwater level measurements will be taken monthly for the first monitoring year at all of the CDF wells and the upgradient reference well so that seasonal variations in potentiometric surface and ground-water flow directions can be assessed. During subsequent years, ground water measurements will be collected at the time of quarterly sampling, barring data gap conditions. Water levels will be measured prior to purging the wells, and the sounding device used to measure levels will be decontaminated prior to use between each well to prevent cross-contamination.

Tidal effects are a significant factor at this site. Therefore groundwater measurements will be recorded in as brief a window of time as possible, and the tide at the time of collection will also be recorded. At the initiation of well water level readings, pressure transducers and data loggers will be installed inside the wells over a 48 hour period to establish average water levels at all locations. Water levels will also be collected in the Bay to establish the time series dependence.

5.3 Quality Assurance/Quality Control Plan

This section presents the various elements associated with the assessment of the data generated in connection with this monitoring plan, from sample collection and handling to general quality assurance (QA) issues. The elements discussed are laboratory quality control (QC) samples, data verification and validation, the evaluation of the analytical data based on

precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters, analytical methodologies, field sampling, sample handling, and quality assurance oversight. These areas will be evaluated to assure that the data obtained from the analysis of the samples were adequate to meet the requirements of this Work Plan.

5.3.1 Laboratory Quality Control

Laboratory QC samples are used to:

- assess data quality in terms of precision and accuracy; and

- verify that procedures, such as sample handling, storage, and preparation, are not introducing variables into the sampling chain that could render the validity of samples questionable.

Such QC samples are regularly prepared in the laboratory so that all phases of the sampling process are monitored. The types of laboratory QC samples that will be prepared during the monitoring events are discussed below.

5.3.1.1 Method Blanks

One method blank will be analyzed per batch of samples (not greater than 20 field samples). The method blank is processed following the same preparatory and analytical procedures as the field-collected samples. These QC samples are used to detect the presence and magnitude of contaminants or other anomalies resulting from the sample preparation and analytical procedures.

5.3.1.2 Laboratory Control Samples/Duplicates

A minimum of one laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) is prepared and analyzed with each batch of samples (which will not exceed 20 samples). The LCS is prepared by spiking a known amount of certain analytes of interest for each analytical method into ASTM type II water (for aqueous matrices). The LCS is then carried through the same procedures as the field-collected samples.

5.3.1.3 Matrix Spike/Matrix Spike Duplicates

Sufficient volume of sample will be collected in the field so that one matrix spike (MS)/matrix spike duplicate (MSD) pair can be prepared and analyzed for every 20 samples. The MS/MSD samples are prepared by spiking a known amount of certain analytes of interest for each method into a sample of each ground water and seawater matrix. The spiked samples are then carried through the same procedures as the unspiked field-collected samples.

5.3.1.4 Surrogates

Surrogate compounds (artificial compounds with similar chemical properties and behavior to the compounds of interest) are added to each sample analyzed for applicable organic analytical methods. The percent recoveries of these spiked surrogate compounds are used to assess the accuracy of laboratory preparatory procedures for every sample to be analyzed.

5.4 Data Verification And Validation

The purpose of data verification and validation is to assure that the data collected are of sufficient quality for use in assessing the performance of the CDF.

5.4.1 Data Verification

All data collected will be subjected to the data-verification process. Data verification includes proofreading and editing hard-copy data reports to assure that data correctly represent the analytical measurement. In general, verification identifies non-technical errors in the data package that can be corrected (e.g., typographical errors). Data verification also includes verifying that the sample identifiers on laboratory reports (hard copy) match those on the chain of custody record.

5.4.2 Data Validation

Data validation will be performed by an independent subcontractor to be chosen after the data deliverables are received from the laboratory. Not less than 10 percent of all data collected from samples analyzed by a fixed-base analytical laboratory will undergo data validation in accordance with NFESC (formerly NEESA) Level IV criteria and sampling and chemical analysis quality assurance requirements of the Navy Installation Restoration Program (NFESC 1996). The remaining 90 percent of the data will undergo validation in accordance with Level III criteria.

Data validation is a systematic process used to interpret, define, and document analytical data quality and determine if the data quality is sufficient to support the intended use(s) of the data. Validation of a data package includes a reconstruction of sample preparation and analysis activities from the raw data and reconciliation of the raw data with the reduced results, identification of data anomalies, and qualification of data to identify data usability limitations.

5.4.3 Data Validation Qualifiers

Analytical data will be qualified based on data validation reviews. For chemical data, qualifiers are assigned in accordance with the applicable U.S. EPA National Functional Guidelines for Data Validation (U.S. EPA 1993-1994). Any data that are assigned an "R" qualifier have been deemed to be unusable and as such are not used for any purpose (including, but not limited to, risk assessment, data interpretation, tables, and figures).

5.5 Evaluation of the Analytical Data

This evaluation will compare the validated data sets versus the objective data goals through the use of the Precision Accuracy Representativeness Completeness Comparability (PARCC) parameters.

Precision, accuracy, and completeness goals for the major chemical analyses that are performed on samples collected from the sites are those specified in the U.S. EPA CLP SOW where applicable.

5.5.1 Precision and Accuracy

The procedures in this section are designed to assess QC data for blanks, duplicates, spikes, and surrogates. The review of these data provides information concerning the precision and accuracy measurements conducted by the laboratories.

5.5.1.1 Trip Blanks

Trip blanks will be supplied by the laboratory performing the analysis of the field samples for the first quarter sampling. One set (normally three volatile organic analysis vials) will be included with each daily shipment that contains samples for VOCs. The results from these samples will be used to look for any contamination that may have been introduced during sample container storage and shipment to and from the laboratory.

5.5.1.2 Equipment Rinsate Blanks

Rinsate samples are collected by passing distilled deionized water over and through sampling equipment after decontamination. These samples will be used to judge the thoroughness of the decontamination procedures used in the field. They will be analyzed for all parameters associated with field samples collected with the particular piece of equipment. They will be collected at a frequency of one set per day of field sampling activities and all sets collected will be analyzed (NFESC 1996).

5.5.1.3 Field Blanks

One field blank will be collected and analyzed from the distilled, deionized water source used during decontamination activities. This sample will be used to determine if any contaminants were introduced from the source water prior to use in the decontamination procedure. This sample will be analyzed for all parameters. Should a second source of water be used for decontamination activities during the course of field events, a second field blank will be taken and sent to the laboratory for analysis.

5.5.1.4 Laboratory Control Samples/Duplicates

A minimum of one LCS/LCSD is prepared and analyzed with each batch of samples (which will not exceed 20 samples). The percent recoveries of the spiked compounds will be used to determine if the laboratory processes were within acceptable performance limits for the analytical methods at the time of analysis. This will provide an indication of the accuracy and acceptability of the individual methods as performed by the laboratory.

5.5.1.5 Matrix Spikes/Matrix Spike Duplicates

Sufficient volume of sample will be collected in the field so that one MS/MSD pair can be prepared and analyzed for every 20 samples of groundwater and seawater. The percent recoveries of the spiked compounds will be used as an indication of the accuracy and appropriateness of the methods for each matrix. The precision of the methods are also assessed by calculating and evaluating the relative percent difference between the results of the MS and MSD. Should insufficient volume of field-collected samples exist for preparation of MS/MSD samples, the laboratory will prepare LCS/LCSD pairs for evaluation of the accuracy and precision of the methods without regard to possible sample matrix effects.

5.5.2 Representativeness

Representativeness is the reliability with which a measurement or measurement system reflects the true conditions under investigation (U.S. EPA 1989). Representativeness is influenced by the number and location of the sampling points, sampling timing and frequency of monitoring efforts, and the field and laboratory sampling procedures (U.S. EPA 1989).

The representativeness of data is assured by the use of established field and laboratory procedures and their consistent application.

5.5.3 Completeness

The completeness of the data is described as a ratio of the amount of data expected from the field program to the amount of valid data actually received. Valid data are considered to be those data that have not been rejected (were not R-qualified either from data validation or internal data review). Completeness can be expressed by the following equation:

$$C = \frac{\text{number of valid results}}{\text{total number of requested results}} \times 100$$

The completeness objective for the sample set that will be submitted for analysis is 90 percent.

5.5.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Comparability is dependent upon consistency in sampling conditions and selection of sampling procedures, sample preservation methods, analytical methods and units of data expression. The comparability requirements for field measurements, sampling activities, and analytical methods are met by complying with Standard Operating Procedures during sample collection and analysis.

5.6 Preparation Of Sampling Equipment

Sampling equipment, materials, tools, and field measurement devices will be decontaminated before use at each monitoring well location to reduce accidental sample cross-contamination or flawed field measurements, in accordance with CLEAN II SOP 11, Decontamination of Equipment. In addition, prior to installation the monitoring well screens will be decontaminated and one composite rinsate collected for analytes listed in Table 2 as a "well screen rinse blank" to document the conditions of well material at the time of installation.

5.7 Sample Handling

Sample-handling procedures will follow CLEAN II SOP 9, Sample Containers, Preservation, and Handling. These containers will be provided by the selected analytical laboratory. VOC sample containers will be maintained at 4 degrees Celsius (°C).

The sample containers will be pre-cleaned and QC tested according to prescribed U.S. EPA CLP Sample Bottle Repository Program procedures to assure that the containers are free of contaminants. The procedures described in CLEAN II SOP 10, Sample Custody, Transfer, and Shipment will be followed for packaging samples for shipment. These include:

1. Attach sample label to each container;
2. Secure caps with custody seals;
3. Wrap all glass containers in foam sheet or bubble wrap;
4. Place all samples for shipment in an ice chest and provide bagged or blue ice to keep the samples at approximately 4°C until they are received by the laboratory; and

5. Complete appropriate sampling forms and sample documentation including chain of custody for shipment or pickup by the designated laboratory."

6.0 GROUNDWATER MONITORING WELLS

The siting of monitoring wells, both vertically and horizontally is challenging due to potential conflicts with both on-going construction and future wharf operations. The number of wells and depth of monitoring is also of importance to future data collection. The proposed plan shown in Figure 5 is to place 8 wells, four to the original existing bay floor prior to dredge and dike construction (to monitor the IR Site 1 sediments), and four shallower wells at elevation +5 to -5 feet mean lower low water (mllw) to correspond to the tide range (and most active gradient). In addition, two control wells will be placed up gradient of the previous shoreline for measurement of water levels, and two temporary wells will be placed within the CDF for initial water level readings. The siting of the 4 pairs along the dike face took into account location of future facilities, ease in access, and to represent areas with differences in bathymetry or placement of dredge materials. The details for location and construction are provided in Table 3.

The wells will be monitored on a quarterly basis over a two year period for the chemicals of concern listed in Table 2, with the exception of the temporary wells which will only have an initial reading. The wells are proposed to be sampled once installation is complete (mid June) and every three months hence for a total of eight quarters to assure that data is distributed throughout the hydrogeologic cycle.

Table 3
Proposed Monitor Well Construction Details

Well ID	Northing	Easting	Elevation of TOC (ft) mll	Casing Depth (ft below mllw)	Screened Interval (ft below mllw)	Boring Dia (inches)	Drilling Date	Initial Report
CDF-MW-1	199,776	1,711,434	12.0	28	-26.5 to-21.5	10.0		
CDF-MW-2	199,768	1,711,352	12.0	-5	+5 to -5	10.0		
CDF-MW-3	199,351	1,711,465	12.0	-28.5	-27 to -22	10.0		
CDF-MW-4	199,342	1,711,461	12.0	-5	+5 to -5	10.0		
CDF-MW-5	198,876	1,711,280	12.0	-22	-20.5 to -15.5	10.0		
CDF-MW-6	198,866	1,711,275	12.0	-5	+5 to -5	10.0		
CDF-MW-7	198,353	1,711,087	12.0	-13.5	-12 to -7	10.0		
CDF-MW-8	198,343	1,711,082	12.0	-5	+5 to -5	10.0		
CDF-MW-9	199,065	1,710,666		tbd		10.0		
CDF-MW-10	199,818	1,711,156				10.0		
CDF-MW-11	199,974	1,711,004				10.0		
CDF-MW-12 (T)	199,452	1,711,257	12.0	-5	+5 to -5	10.0		
CDF-MW-13 (T)	199,054	1,711,168	12.0	-5	+5 to -5	10.0		

Datum is Mean Lower Low Water (mllw) based on NAD 1927 Tidal Epoch

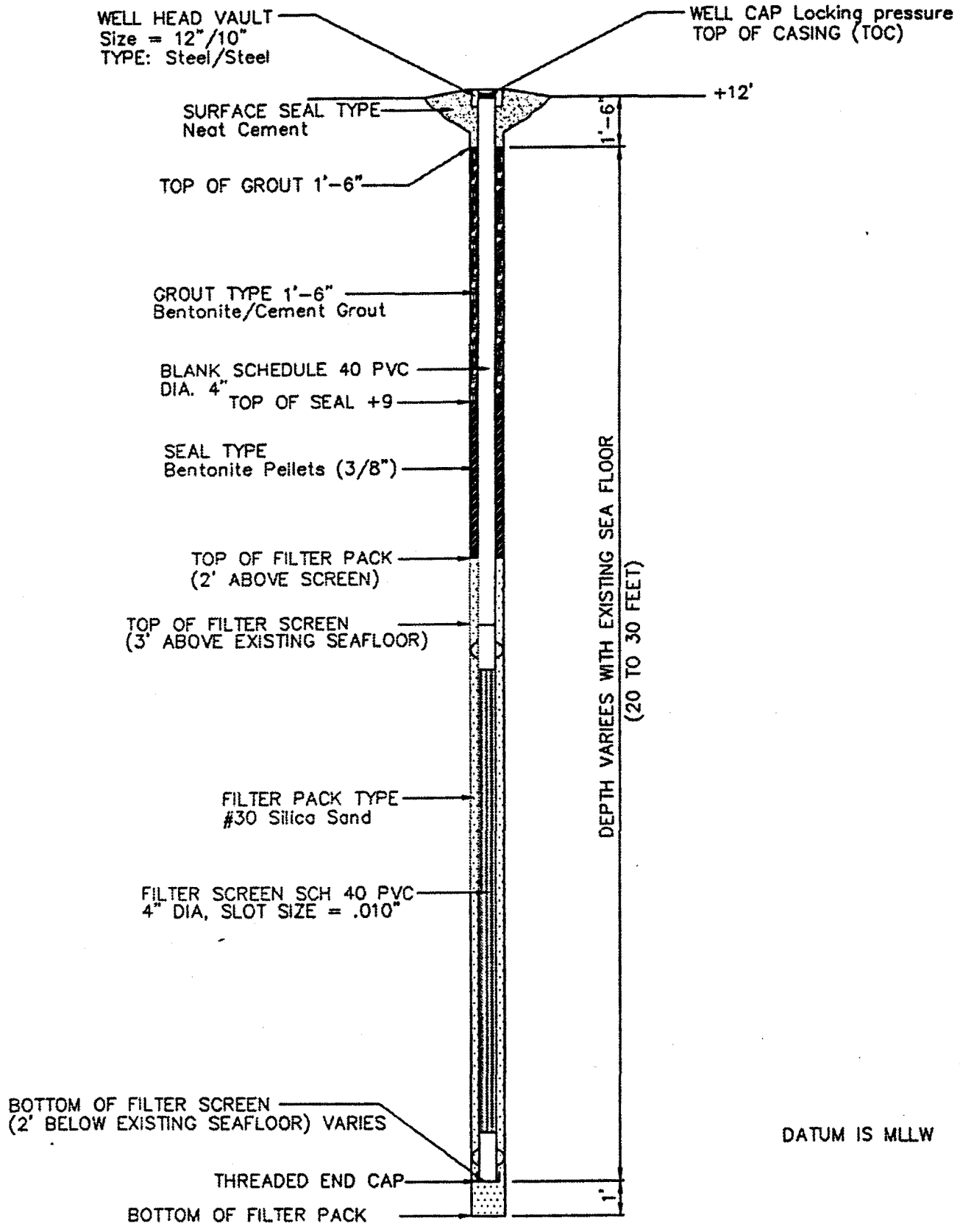
(T) indicates temporary well

7.0 WELL INSTALLATION FIELD PROCEDURES

The monitoring wells will be constructed in accordance with County of San Diego Site Assessment and Mitigation Manual procedures[11]. The well casing will be composed of 4-inch diameter schedule 40 PVC. Screen material will consist of factory cut, 0.01"-slotted schedule 40 PVC. Filter material will be #30 Monterey sand, based on previous experience with constructing wells in hydraulic fill on NAS North Island. The filter pack will be tremmied in place to reduce the chance of bridging. The bentonite seal will be tremmied in place using bentonite chips (fines removed). If the bentonite seal is to be placed at or above the potentiometric surface, then a tremmie pipe will not be necessary. The annular seal will be composed of bentonite-cement slurry. Typical diagrams for shallow and deep well installations are shown in Figures 6 & 7. A typical well construction detail log is included in the Appendix

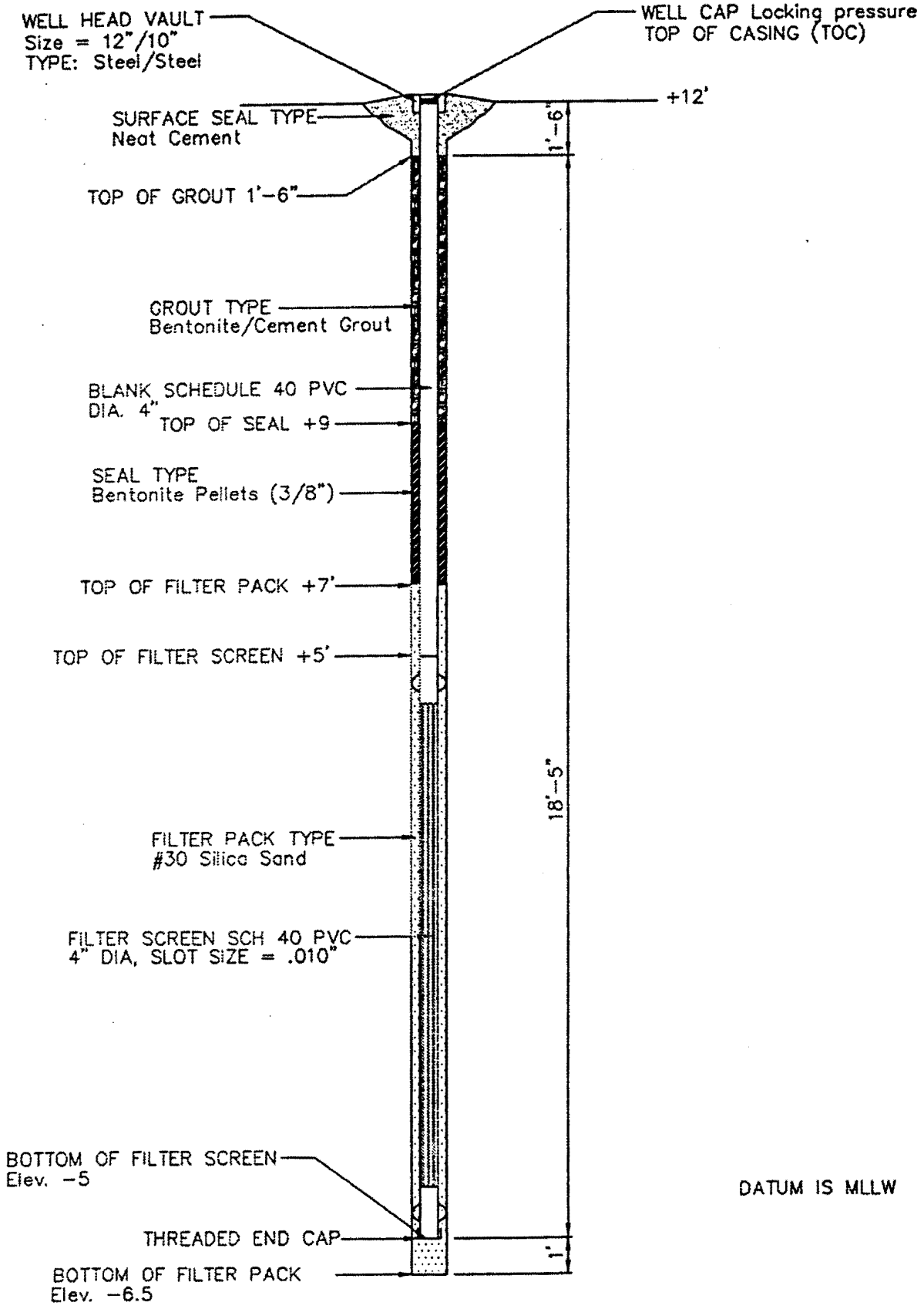
Samples will be collected during well installation at five foot intervals not only for lithographic description but also for laboratory analysis. A 12-inch core sample will be collected with a modified California sampler lined with 6, one inch rings and one, six inch Teflon® sleeve. The core will be sealed top and bottom with Teflon®, capped, taped, and chilled to preserve organic constituents. The plan will provide an SOP for low flow purging as described below. Well borings will be 8 inches in diameter including a 2-inch annulus.

Borings will be drilled using hollow stem augers. Soil samples for lithographic description will be collected at least every 5 feet of depth. Wells will be constructed through hollow stem auger drills. As the auger pipe is withdrawn, care will be taken not to raise the bottom of the auger above the sand. Potable water may be added to maintain a head of water as protection against heaving sand. Sand will be added to an elevation approximately 2 feet above the water table. The sand pack will be surged at this time to aid in settling the sand. A granular bentonite seal approximately 3 feet thick will be constructed above the surged sand pack.



TYPICAL DEEP MONITORING WELL
(CDF–MW 1, 3, 5, & 7)

FIGURE 7



TYPICAL SHALLOW MONITORING WELL
(CDF-MW 2, 4, 6, & 8)

FIGURE 6

Development will use surge block and bailer or pump methods to achieve a steady water flow with minimal turbidity. Development will remove a volume of water at least equivalent to the volume of potable water added during construction. Purging will be through low flow means due to the presence of fine grain sediments at the site. Pumping rates in excess of 1-2 gallons per minute may cause noticeable increases in turbidity. Sampling will use dedicated Teflon ® bailers or dedicated low flow non cavitating pumps. Samples will be collected in this sequence: volatile organics (first round only), PAHs, PCBs, metals, and other water quality parameters. Groundwater samples for metal analysis will be filtered.

8.0 VISUAL INSPECTION OF CDF AND WELLS

Visual site inspection will be conducted quarterly along the dike perimeter to identify cracks or other features that may suggest undue settlement or dike movement. This activity will be conducted from the surface of the fill during the collection of monitoring well data. Thorough inspection of the dike and wharf structures will be conducted, which may include diver inspection along the dike toe and along the wharf, after major seismic activity occurs.

Visual well inspection will be conducted during each quarterly sampling interval. Maintenance will likely consist of repair or replacement of locks and caps. Redevelopment may be necessary if changes are seen in the flow rate or water color or quality which indicate silting or bacterial growth is interfering with the flow of water into the well.

9.0 GROUNDWATER REPORTING

NAS North Island maintains a Corrective Action Coordinator to monitor and report on Base CERCLA/RCRA response actions involving groundwater monitoring. This coordinator will

provide the ACOE, RWQCB and DTSC quarterly and annual groundwater monitoring reports as described below.

9.1 Quarterly Reports

Quarterly reports will present the previous quarter's data (with the exception of the initial report) and they will include water quality data in tabular form. As a minimum, the report will include the following:

- Water level data
- Water quality data
- Brief summary of:
    - data collection problems and deviation of the plan
    - Data anomalies
    - Obvious changes in water levels and water quality
    - Recommendations (if any) for future actions and improvements to the monitoring program
    - QA/QC results

9.2 Annual Reports

The annual report will summarize the results of the previous four quarters and discuss anomalous data and any long term trends. The annual report will:

- Discuss changes in potentiometric levels and gradients
- Incorporate last four quarters of data with all past data; present this compilation in tabular form. The Table will include the elevations of well screen and filter pack intervals.
- Discuss potentiometric results and trends
- Present water quality data with a discussion of the plume configuration for current and previous years

- discuss analytical results and identify trends
- Identify data gaps and potential deficiencies in the monitoring system or reporting program
- Provide a narrative of the CDF and monitoring well visual inspection.

The report appendices will contain all water quality data and will include as a minimum:

- Water elevation in tabular format with historic data
- Ground water quality data in tabular format with all historic data:
    - Chemicals of concern concentration vs. time for each well
    - Cross section with concentration profiles
- Physical data such as well locations and boring / well logs, site map , well construction logs
- Field Procedures sections
- QA/QC Plan Sections

10.0 OTHER REPORTING

The Consistency Determination issued by the California Coastal Commission provided a suggestion to monitor mussels along the wharf, ostensibly as an indicator for water quality. However, the proposed groundwater monitoring program will provide a more accurate portrayal of the potential contribution of contaminants to San Diego Bay and therefore a better predictive tool for CDF performance. Therefore, a mussel sampling program has been replaced with the groundwater monitoring program.

10.0 REFERENCES

[1] U.S. Department of the Navy, 1995. Sediment Characterization Report for NIMITZ-class Aircraft Carrier Homeporting Facilities, Naval Air Station, North Island, California, Volumes I through VIII.

[2] U.S. Army Corps of Engineers-Los Angeles District, 1996, Permit No.: 94-20861-DZ for San Diego Bay, Imperial Beach, Mission Beach, Del Mar, Oceanside, and the LA-5 Ocean Disposal Site (LA-5), San Diego County, California); and Proposed Modification submitted for public comment from June 27, 1996 through July 12, 1996.

[3] California Regional Water Quality Control Board-San Diego Region. 1995. Waste Discharge Requirements (WDRs) for the U.S. Navy Dredge and Fill Activities Homeporting Project San Diego County, Order No. 95-118.

[4] US Department of the Navy, 1995. Action Memorandum for Removal Action at Site 1, Outfalls 9 through 15, Naval Air Station North Island, San Diego, California.

[5] US Department of the 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.

[6] U.S. Department of the Navy, 1995. Sediment Characterization Report for NIMITZ-class Aircraft Carrier Homeporting Facilities, Naval Air Station, North Island, California, Volumes I through VIII.

[7] US Department of the Navy, 1996. Supplement of Pre-Dredge Monitoring Report CVN Homeporting Project, Naval Air Station, North Island, Coronado, California.

[8] Woodward Clyde Consultants, August, 1994. Geotechnical Investigation Proposed Dredging Along Quaywall and Turning Basin (P-549), Naval Air Station, Coronado, California.

[9] Pre-Dredge/Disposal/Discharge Operations Plan For Corps Permit No. 94-20861-DZ, Contract N68711-93-C-1424; Part A, FY95 Project P-549, Dredging Along Quaywall & Turning Basin: Naval Air Station, North Island, Coronado, CA. 23 May, 1996.

[10] Post-Dredge/Disposal/Discharge Operations Plan For Corps Permit No. 94-20861-DZ, Contract N68711-93-C-1424; Part A, FY95 Project P-549, Dredging Along Quaywall & Turning Basin: Naval Air Station, North Island, Coronado, CA. March, 1997.

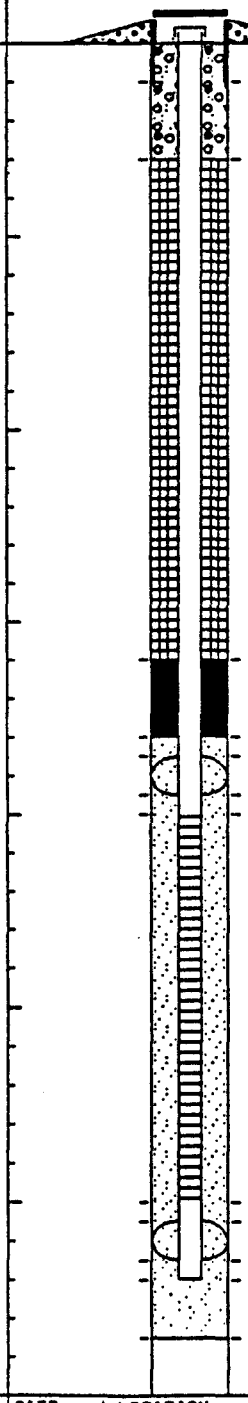
[11] County of San Diego Department of Environmental Health, 1995. Site Assessment and Mitigation 1995 SAM Manual.

APPENDIX-
TYPICAL MONITORING WELL CONSTRUCTION DETAILS FIELD LOG

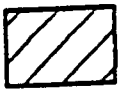
WELL CONSTRUCTION DETAILS

	PROJECT and JOB NUMBER		HOLE NO.	
			SHEET NO.	OF
	SITE and LOCATION		HOLE SIZE	BEGUN
DRILLER / DRILLING METHOD	COORDINATES	LOGGED BY:	TD OF WELL	COMPLETED
ELEV.: TOP of RISER CASING / GROUND /	GROUND WATER DEPTH / ELEVATION ▼ /	CHECKED BY:	TD of HOLE	UPDATE

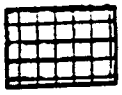
(Template: BWELL)

Well Construction Details	Well Graphics: Depth in Feet / Elevation in Feet	Graphics	Geologic Description and Classification
SURFACE COMPLETION Dia. & Type: Bottom Depth = ___.___ft. CONDUCTOR CASING Dia. & Type: Bottom Depth = ___.___ft. GROUT SEAL Type: RISER CASING Dia. & Type: CENTRALIZERS (above screen) Depths = ___.___, ___.___ft. BENTONITE SEAL Top of Seal = ___.___ft. Type: FILTER PACK Top of Filter Pack = ___.___ft. Type: SCREEN Top of Screen = ___.___ft. Dia. & Type: Slot Size & Type: Bottom of Screen = ___.___ft. CENTRALIZER (below screen) Depth = ___.___ft. SUMP Dia. & Type: Bottom of Sump = ___.___ft.			

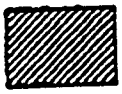
See key for graphic symbols.	SITE and LOCATION	HOLE NO.



SURFACE SEAL

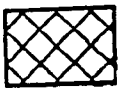


GROUT (ANNULAR) SEAL

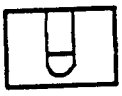


TRANSITION (BENTONITE) SEAL

FILTER PACK



BOTTOM SEAL



BLANK CASING WITH BOTTOM CAP

BLANK CASING WITH CONDUCTOR CASING

WELL SCREEN WITH CENTRALIZERS

Well Construction Graphics

Date:
File No.
Job No:
Rev No.

DEPARTMENT OF THE NAVY
SOUTH BAY AREA FOCUS TEAM
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2585 CALLAGAN HWY, BLDG 99
SAN DIEGO, CALIFORNIA 92136-5198

5090.3(a)
Ser 542.WC/100
February 27, 1998

Ms. Alice Gimeno
Department of Toxic Substances Control (DTSC)
Southern California Operations
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

Dear Ms. Gimeno:

Enclosed is the Navy's Response to Regulatory Comments for the Remedial Investigation (RI)/ Resource Conservation and Recovery Act Facilities Investigation (RFI) Work Plan for Site 1, Outfalls 9-15, Shoreline Sediments at Naval Air Station (NAS) North Island (EPA ID NO. CA7170090016).

On November 17, 1997, the Navy completed a Draft RI/RFI Work Plan for the Site 1, Outfalls 9-15, Shoreline Sediment area at NAS North Island. The Navy received official comments from the California Department of Toxic Substances Control, San Diego Regional Water Quality Control Board and The California Coastal Commission. We appreciate the contributions from each agency and we have incorporated these comments into the work plan. Enclosure 1 lists each comment and the Navy's specific response. Please review the responses to confirm that your concerns have been adequately addressed.

There will be a team meeting at the Building 99 Conference Room on March 31, 1998, at 9:00 A.M. We will review the comments and coordinate the upcoming fieldwork. If you have any questions, please contact Mr. Mark Bonsavage at (619) 556-7315.

Sincerely,

William E. Collins

WILLIAM E. COLLINS
Remedial Project Manager
By direction

EXHIBIT NO. 2
APPLICATION NO.
CDF monitoring Plan
Navy

Enclosure: 1. Navy's Response to Regulatory Comments for the Remedial Investigation (RI)/ Resource Conservation and Recovery Act Facilities Investigation (RFI) Work Plan for Site 1, Outfalls 9-15 Shoreline Sediments at Naval Air Station (NAS) North Island

2 March 1998

RESPONSE TO REGULATOR COMMENTS TO DRAFT FOCUSED REMEDIAL INVESTIGATION/RCRA FACILITY INVESTIGATION WORK PLAN, IRP SITE 1, OUTFALLS 9 – 15, SHORELINE SEDIMENTS, NAVAL BASE CORONADO NORTH, SAN DIEGO, CALIFORNIA CTO-0148

Comments from Alice Gimeno

Written on 23 January 1998
Received by facsimile on 27 January 1998

Ms. Alice Gimeno
Southern California Operations
Office of Military Facilities

SUMMARY

Comment 1: Fifth paragraph, page i. DTSC and the RWQCB are jointly overseeing the work at NASNI. Please revise the text to add DTSC to the list of regulators who will receive quarterly and annual groundwater monitoring reports for the Site 1, confined disposal facility (CDF).

Response 1: Comment noted. The text will be revised to include the DTSC in the list of regulators which will receive quarterly and annual groundwater monitoring reports for the CDF.

GENERAL COMMENTS

Comment 1: Potential groundwater migration pathways and Bay discharge areas should be identified and evaluated prior to siting the CDF monitoring system.

Preferential groundwater migration pathways, such as along relatively higher hydraulically conductive layers or conduits within the *in situ* sediments, should be identified and evaluated. These should include areas along pipelines, and whether or not the outfalls have been plugged. These areas could be preferential pathways or areas where contaminants of concern from unplugged outfalls can be introduced from tidal action. As designed, the CDF will act as an impediment to groundwater flow to the Bay and therefore, is not considered a barrier.

Response 1: All utilities within the CDF were installed within the clean fill which ranges from 10 to 14 ft thick. The storm drains were rerouted and then extended through the CDF . The bottom of the deepest storm drain pipe is located at 0 MLLW on 4 inches of gravel bedding. The top of the dredged-fill sediment is located at elevations of -2.5 MLLW which is approximately 10 to 14 ft below grade.

Layers of higher hydraulic conducitvity are not expected in the dredged-fill sediments due to the nature of the construction. However, soils will be logged during drilling activities and these field observations will be used to finalize well design.

2 March 1998

RESPONSE TO REGULATOR COMMENTS TO DRAFT FOCUSED REMEDIAL INVESTIGATION/RCRA FACILITY INVESTIGATION WORK PLAN, IRP SITE 1, OUTFALLS 9 – 15, SHORELINE SEDIMENTS, NAVAL BASE CORONADO NORTH, SAN DIEGO, CALIFORNIA CTO-0148

Comments from Alice Gimeno

Comment 2: The work plan proposes to install the six deep groundwater monitoring wells to the Bay floor prior to construction of the CDF. The proposed depth into the Bay floor is not delineated in the work plan or how the wells will be constructed prior to completion of the CDF. As discussed in the above comment, monitoring wells should be sited in areas of preferential groundwater flow to the Bay and at an elevation below the CDF footings. The CDF groundwater monitoring system should provide monitoring coverage for groundwater flowing below the CDF.	**Response 2:** The groundwater monitoring wells will be constructed after completion of the CDF. The text and figures will be revised to clarify this issue. The 6 deep compliance wells will be installed to the bay floor to monitor the *in situ* Site 1 sediments. Additional information regarding the CDF construction has been received since the issuance of the Work Plan. Details include pre-fill elevations and quay wall cross-sections. This additional information will be incorporated into the work plan and into the well design.
Comment 3: The detection limits for analytical methods should be at least equal to or lower than, if technologically possible, the project-specific threshold levels. Detection limits should be the lowest method detection limits possible.	**Response 3:** Comment noted. If technologically possible, the detection limits for the analytical methods will be equal to or lower than the project-specific threshold levels. Please be aware, however, that reporting limits within a single method vary depending on matrix type, percent moisture, and interferences.
Comment 4: Constituents of concern (COCs) should not be eliminated based on a single sampling event. The heterogeneous nature of the CDF fill and the *in situ* sediments in addition to the tidal influence on groundwater flow and geochemistry creates a complex and dynamic hydraulic regime in the CDF area. COCs may be detected, as in other areas along the Bay, episodically at monitoring wells stationed adjacent to the Bay.	**Response 4:** Comment noted. The statement regarding the potential removal of analytes after the first quarter of monitoring will be removed from the text.

RESPONSE TO REGULATOR COMMENTS TO DRAFT FOCUSED REMEDIAL INVESTIGATION/RCRA FACILITY INVESTIGATION WORK PLAN, IRP SITE 1, OUTFALLS 9 – 15, SHORELINE SEDIMENTS, NAVAL BASE CORONADO NORTH, SAN DIEGO, CALIFORNIA CTO-0148

Comments from Alice Gimeno

Comment 5: The fate and transport modeling should be calibrated by point of compliance monitoring wells located within the Bay dredge fill and wells closest to the Bay within the CDF.	**Response 5:** Although it would be ideal to calibrate the fate and transport modeling using the results of monitoring at the compliance monitoring wells located in the dredged-fill sediments and wells closest to the Bay within the CDF, this will not be possible. The compliance wells will be installed within the 50 ft buffer zone of clean fill between the rock dike and the dredged-fill sediments. Groundwater flowing from the dredged-fill sediments to the compliance wells will have to flow through approximately 25 ft of clean soils before reaching the wells. With anticipated groundwater flow velocities of less than 1 to a few feet per year, it will take a substantial period of time for solutes to reach the compliance wells from up-gradient impacted areas. In addition, the construction of the CDF using low-permeability bay sediments will change the groundwater regime significantly, resulting in changes in groundwater elevations, flow rates, and perhaps flow directions. It will take months to years for the system to equilibrate to the new conditions. The water collected initially from the compliance wells will be the sea-water resident in the Bay at the time the fill was placed at the outer sections of the CDF, and therefore cannot be used to calibrate the model. The model will be calibrated against pre-construction groundwater levels as well as the tidal fluctuations observed in monitoring wells after the construction of the CDF. This will provide good calibration control of the groundwater flow parameters (hydraulic conductivity, gradient, and storage coefficient). The additional parameters needed for solute transport simulation are dispersivity, effective porosity, and solute partitioning coefficients. Conservatively low transverse dispersivity coefficients will be used to maximize the resulting predicted concentrations. Effective porosity varies through a narrow range of possible values (as opposed to order of magnitude variations). Laboratory measurements of this parameter will suffice. Determination of solute partitioning coefficients is the purpose of the batch desorption tests described in the work plan.

RESPONSE TO REGULATOR COMMENTS TO DRAFT FOCUSED REMEDIAL INVESTIGATION/RCRA FACILITY INVESTIGATION WORK PLAN, IRP SITE 1, OUTFALLS 9 – 15, SHORELINE SEDIMENTS, NAVAL BASE CORONADO NORTH, SAN DIEGO, CALIFORNIA CTO-0148

Comments from Alice Gimeno

Comment 6: The asphalt cap should not be considered impermeable. Asphalt caps tend to be somewhat porous and are susceptible to cracking from a variety of causes (e.g., earthquakes, subsurface settlement, heavy equipment [weight damage], heat, age, etc.). Several commercially available impermeable liners and leak collection systems may be incorporated into the CDF cap design to prevent infiltration from the surface.	**Response 6:** Comment noted. The construction of the CDF did not include impermeable liners or leak collection systems. Runoff/stormwater collection systems were included in the CDF construction.
Comment 7: All sampling protocols should ensure volatile organic compound (VOC) volatilization is minimized. Mixing and/or splitting sediment and/or dredge fill samples will cause volatilization and dilution of COCs prior to analysis. Additionally, while DTSC acknowledges U.S. EPA's established holding times for different constituents in SW-846, significant volatilization and biological degradation of VOCs may occur within the established holding period. DTSC recommends transportation (preferably not by air transport) and analysis of samples be accomplished in the shortest time possible.	**Response 7:** The sediment samples are being collected for use in the batch desorption tests in support of the fate and transport modeling effort. VOCs were not detected in the sediment during previous work at Site 1 and are not included in the analyte list for the batch desorption tests. Therefore, for the purposes of the batch desorption tests the sediment will be homogenized and split as described in the Work Plan. As stated in the QAPP (Attachment D; page D4-2) "..all samples will be delivered to the laboratory by PWC personnel, transported by a laboratory courier, or shipped to the analytical laboratory via an express mail service within 12 hours of sample collection." Please note, however, that there is a possibility the samples will be transported by air depending on the location of the selected laboratory.
Comment 8: Dedicated, non-cavitating pumps as opposed to the use of disposable bailers for VOC sampling. Professional literature documents VOC analytical result variations of up to 25 percent during groundwater collection and analysis using bailers. Additionally, DTSC suggests using a low flow purging and sampling protocol for the collection of groundwater samples potentially containing VOCs to minimize volatilization, analytical result variation, and the quantity of investigative derived waste disposal.	**Response 8:** Comment noted. The text will be revised to indicate the use of well dedicated pumps and low flow (minimal drawdown) sampling in the CDF wells. The low flow (minimal drawdown) sampling will be used for the purpose of minimizing the quantity of investigation-derived waste.

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Comment 9: COCs upgradient of the CDF should be identified to establish existing water quality prior to sampling of compliance wells.	**Response 9:** Comment noted. Additional information regarding water quality upgradient of the CDF will be obtained and reviewed prior to the sampling of the compliance wells.
Comment 10: In order to comply with RWQCB Waste Discharge Requirements (WDR) Order No. 95-118 for NASNI, the Navy submitted the document entitled, "Nearshore Confined Disposal Facility Post Dredge Monitoring Plan, CVN Homeporting Project, Naval Air Station, North Island, May 1997." This document is Attachment A in this current review of the draft focused RI/RFI work plan, Site 1 CDF, outfalls 9-15.	**Response 10:** Comment noted.
RWQCB has determined that the monitoring plan complies with the requirements of Order 95-118. The plan proposes to install new groundwater monitoring wells and sample for constituents of concern on a quarterly basis for a minimum of two years. RWQCB has no further comments on the plan at this time. In the future, RWQCB will prepare WDR which may require post-closure maintenance of the CDF and performance of water quality monitoring.	Comment noted.
SPECIFIC COMMENTS	
Comment 1: Section 3.9.2, page 3-49. The last sentence states, "No further investigation regarding human health was recommended for Outfalls 1, 2, or 3-8 (DON 1997)." DTSC disagreed with that conclusion and stated such in our comments on the Draft Remedial Investigation/RCRA Facility Investigation Report, Shoreline Sediments, Outfalls 1-8 and 16. That draft document has not been finalized. Please revise the last sentence to reflect this.	**Response 1:** Comment noted. The text will be revised to state that the DTSC disagreed with the conclusions and recommended that baseline risk assessments be performed for the four areas investigated due to excess cancer risk and the non-cancer hazard indices.

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Comment 2: Section 4.3, page 4-5. The analytical method detection limits and the risk-based action levels (water quality criteria) for COCs in Table 4-1 do not coincide with the values in Table 4-2. It is unclear as to where the water and sediment matrix objectives were derived. Provide the source of the matrix objectives and reconcile the matrix objectives and the method reporting limits with the corresponding values in Table 4-1.	**Response 2:** Table 4-1 presents the analytical methods, method reporting limits and project-specific threshold levels for groundwater sampling at the proposed CDF monitoring wells. Table 4-2 presents the analytical methods, method reporting limits, and matrix objectives for sediment and liquid analyses to be conducted as part of the batch desorption tests. The results of the sediment and liquid analyses listed on Table 4-2 will be used to evaluate partitioning coefficeints. The matrix objectives were selected by the modelers to handle potentially low concentrations expected from the batch desorption tests. The results of the sediment and liquid analyses will not be compared to project-specific threshold levels to evaluate whether risk assessments should be conducted. Please note that the units listed in Table 4-2 are incorrect. The correct units are micrograms per liter (ug/L). The work plan will be revised to include the corrected table.
Comment 3: Section 4.3, page 4-5, fourth bullet. The fate and transport modeling should account for vertical migration of COCs from the CDF into *in situ* Site 1 sediments and from COCs in the *in situ* sediments to the Bay. Samples should be collected in the area of predicted or verified groundwater discharge to the Bay (see General Comment 4).	**Response 3:** The fate and transport modeling will account for vertical migration of COCs from the CDF into in-situ sediments and from those sediments into the Bay if that process occurs. Detailed monitoring of groundwater and sea-water flow directions in the vicinity of sea-water/fresh-water interfaces (particularly the U.S. Geological Survey work in Florida) indicate that this process will not occur. The above-noted previous work indicates that below the fresh-water/sea-water interface, sea-water flows inland and up toward the interface, to replace the water and salt lost in the zone of diffusion. Therefore, the direction of groundwater flow is likely to be from the Bay to the in-situ sediments, and from there up into the CDF (except within the tidal flushing zone). In any case, the groundwater flow and solute transport equations are linked in the proposed model and, therefore, all predicted directions of flow will be modeled.

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Comment 4: Section 4.4, page 4-6. Provide the existing onshore monitoring wells and the location of Building 66 on Figure 4-3.	**Response 4:** Figure 4-3 will be revised to show the location of building 66 and the associated groundwater monitoring wells.
Comment 5: Section 4.5, page 4-6, first bullet. Predictions of potential contaminant migration from the use of the fate and transport modeling must be verified by compliance monitoring wells located within the Bay dredge fill and in wells located closest to the Bay within the CDF.	**Response 5:** Please see the response to General Comment 5.
Comment 6: Section 4.5, pages 4-7, 4-9, and 4-11, Tables 4-1 and 4-2. The Method Reporting Limits for Table 4-2 do not coincide with the Water Quality Criteria in Table 4-1. Please reconcile the differences between Table 4-1 and Table 4-2. Also, U.S. EPA has risk-based levels known as the California Toxics Rule that are levels "to be considered."	**Response 6:** Please see the response to Specific Comment 2. The proposed California Toxics Rule contains very few actual numeric criteria for use as "to be considered" criteria and incorporation into the Work Plan. Please see the following summary. The text will be revised to indicate that if the California Toxics Rule and the Enclosed Bays and Estuaries Plan is adopted during the course of this project, the adopted numeric criteria will be used in evaluation of the CDF groundwater monitoring data. The following summary was obtained from U.S. EPA and the California State Water Resources Control Board (SWRCB) internet websites (www.epa.gov/ostwater and /watrhome/pubs, and www.swrcb.ca.gov/pub). On August 5, 1997 EPA published a proposed rule (*the California Toxics Rule*) which will establish numeric criteria for priority toxic pollutants . The rule proposes to establish aquatic life criteria for 29 priority toxic pollutants and human health criteria for 65 priority toxic pollutants to replace those that were struck down as a result of litigation (i.e when the inland surface waters plan [ISWP] and the Enclosed Bays and Estuaries Plan [EBEP] were rescinded by SWRCB in September 1994 after a Sacramento County Superior Court ruling that the plans were not adopted in accordance with State law.) The Proposed CTR is mainly policy and discussion, and contains few actual numeric water quality criteria. Concurrent with the proposed CTR, the SWRCB is proposing implementation of toxic standards for inland surface

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	waters and enclosed bays and estuaries. Both proposals are basically intended to bring California back into compliance with the Clean Water Act (CWA). Neither the CTR or ISWP/EBEP have been adopted as yet. EPA conducted public hearings on the proposed CTR on September 17 and 18, 1997, and public hearings for the ISWP/EBEP were held on November 17 and December 3, 1997. Both agencies are reviewing comments at this time, and both have indicated a tentative adoption date of June 1998 for the respective final documents. However, scientific portions of SWRCB policy that have the effect of a regulation must be reviewed by an external scientific peer review entity, and the adoption date for the ISWP/EBEP may extend beyond this date. Furthermore, the SWRCB intends to implement the ISWP/EBEP in two phases. Phase 1 is the development and adoption of the proposed policy (in process), and Phase 2 will be the establishment of State-adopted water quality objectives for the priority pollutants (i.e., the numeric criteria) included in the CTR and incorporation of the Phase 1 policy in a new ISWP and EBEP. Based on this information, it appears that the earliest that final versions of these water quality standards could be adopted is mid-1998, and probably sometime after this.
Comment 7: Section 4.7.1, page 4-17. See General Comment 1. Onshore monitoring wells proposed as upgradient reference wells should be screened at similar elevations or in the same hydrological regime in relation to the downgradient wells. Provide a discussion of the hydrological regimes of the upgradient and downgradient wells and the relative positions of the up gradient and downgradient wells to contaminant flow from onshore to offshore.	**Response 7:** The text will be revised to include more information regarding upgradient and downgradient well design and location relative to the hydrogeological setting. The proposed plan is to install 10 compliance wells (4 shallow and 6 deep) in the clean buffer zone along the bay edge of the CDF. The 6 deep wells will be installed to the bay floor (prior to CDF construction). The 4 shallow wells will be screened across the water table, in the area of most active groundwater flow and highest gradients. Two temporary wells will be installed in the dredged-fill sediments within the CDF. The two temporary

	wells and the 3 up-gradient monitoring wells will also be screened across the water table, the area of most active groundwater flow. Existing wells, drilled as part of previous investigations of specific sites, may also be used as water level monitoring points for calibration of the model. This study has no control over the screen intervals of those wells, though they typically are screened from above the water table to about 10 ft below the water table, again within the zone of most active groundwater flow. Although the details of the direction of groundwater flow within and immediately up-gradient of the CDF are not known at present, the groundwater flow direction is generally from the land areas toward the Bay, and the flow tends to be perpendicular to the Bay. The proposed compliance wells are located along the bay edge of the CDF and are down-gradient of dredged-fill sediments within the CDF. The two temporary wells in the dredged-fill sediments and the up-gradient wells proposed as part of the work plan are up-gradient of the compliance wells and are generally down-gradient of pre-existing wells in North Island. The temporary and up-gradient wells are not targeted to be down-gradient of any specific points of release in North Island. Down-gradient wells drilled at those points of release (as part of those site-specific investigations) will be used to assess likely concentrations of COCs entering the CDF from up-gradient areas.

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Comment 8: Section 4.7.1, page 4-17. The sediment sampling for the two temporary well locations is not considered adequate to properly characterize the dredge fill sediments. The proposed wells are sited approximately 400 feet apart. It is recommended that additional dredge fill sampling locations be incorporated into the work plan to provide a more accurate characterization of the dredge fill and more statistical representation of the partitioning coefficients potentially present in the dredge fill.	**Response 8:** As discussed in Section 3 of the Work Plan, the dredged-fill sediments were characterized using chemical and physical analyses as well as bioassay and bioaccumulation tests as part of the Sediment Characterization Study (DON 1995). Due to the results of these analyses the dredged-fill sediments were designated as unsuitable for ocean disposal and placed in the CDF. The sediment sampling at the temporary well locations is proposed as a means of obtaining dredged-fill sediment samples for use in the batch desorption test to evaluate partitioning coefficients for the fate and transport model. The text will be revised to indicate that dredged-fill sediment will be sampled from 2 additional locations to provide a more statistically valid representation of the partitioning coefficients. Three samples of the dredged-fill sediments will be collected from each of the four locations. Please note, however, that wells will not be installed at these additional locations.
Comment 9: Section 4.7.2, page 4-18. DTSC recommends that both filtered and unfiltered water samples be collected for metals analyses.	**Response 9:** The commentor is referring to a discussion of the batch desorption tests. After the batch desorption tests are conducted the water is siphoned out of the sample, filtered, and both the sediment and water are analyzed. The purpose of the analyses is to assess the partitioning coefficient or the amount of the initial sediment contaminant that desorped from the sediment into the water. In order to obtain meaningful results the liquid must be filtered to remove the sediment particles. Both filtered and unfiltered groundwater samples will be submitted for metals analyses during the first quarter of monitoring. The results will be compared and the need for both filtered and unfiltered metals analyses will be assessed.

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Comment 10: Section 4.7.3, page 4-21, Table 4-3. The potential exists for the presence of chlorinated and other volatile petroleum hydrocarbons in the dredge fill. Mixing (compositing) and splitting of samples for VOC analysis is inappropriate. Discrete samples should be collected for VOC analysis.	**Response 10:** The sediment samples are being collected for use in the batch desorption tests in support of the fate and transport modeling effort. VOCs were not detected in the sediment during previous work at Site 1 and are not included as an analyte for the batch desorption tests. Therefore, for the purposes of the batch desorption tests the sediment will be homogenized and split as described in the Work Plan.
Comment 11: Section 5.2.1.3, page 5-3. The work plan proposes to install the six deep groundwater monitoring wells to the Bay floor prior to construction of the CDF. The proposed depth into the Bay floor is not delineated in the work plan or how the wells will be constructed prior to completion of the CDF. Wells should be screened and samples collected in the area of predicted or verified groundwater discharge and/or flow to the Bay. Provide a detailed discussion of the siting and well design, for the six deep compliance wells, relative to the Site's hydrological regime.	**Response 11:** The groundwater monitoring wells will be constructed after completion of the CDF. The text and figures will be revised to clarify this issue. The text will be revised to include more information regarding well design and location relative to the hydrogeological setting.
Comment 12: Section 5.2.1.4, page 5-3. See Specific Comments 8, 9, and 10.	**Response 12:** Please see the Responses to Specific Comments 8, 9, and 10.
Comment 13: Section 5.2.1.5, page 5-4. See General Comment 3 and Specific Comment 9. Tidal fluctuations should be evaluated over at least three complete tide cycles to properly assess the tidal influence on the Site's potentiometric surface. The calculated hydraulic conductivity from tidal influence data should be compared to any available pump test data conducted during previous investigations. Provide the rationale for well selection for the tidal influence investigation. Dissolved oxygen and turbidity should be added to the field parameters collected during groundwater sampling.	**Response 13:** Comment noted. The text will be revised to state that the tidal fluctuations will be conducted over three complete tidal cycles. The 10 compliance wells and the two temporary wells will be included in the tidal fluctuation study. Slug injection/withdrawal tests will also be conducted on the wells used for tidal fluctuation and the results will be compared. In addition, the results of multiple approaches for determining the soil hydraulic conductivity (including previous aquifer tests) will also be compared. The text will be revised to include dissolved oxygen and turbidity in the field parameters to be measured during groundwater monitoring.

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Comment 14: Section 5.5, page 5-6. DTSC and RWQCB are jointly overseeing the activities at NASNI. Quarterly and annual groundwater monitoring reports should also be submitted to DTSC for review. Please revise text.	**Response 14:** Comment noted. The text will be revised to include the DTSC in the list of regulatory agencys which will receive quarterly and annual monitoring reports for the CDF.
Comment 15: Section 9.2, page 9-1. Both DTSC and RWQCB are regulatory agencies under Cal-EPA and are jointly overseeing the activities at NASNI. This section should be revised to reflect this.	**Response 15:** Comment noted. The text will be revised to indicate that the DTSC and the RWQCB are jointly overseeing the activities at Site 1.
Comment 16: Appendix A. General and Specific Comments pertaining to siting, well design, monitoring parameters and system, hydrologic regime, and sampling protocols should be incorporated into this Appendix. VOCs should be added to the COCs in Table 2 on page 13.	**Response 16:** The comments have been forwarded to Moffatt and Nichol Engineers for incorporation into Attachment A, the Nearshore Confined Disposal Facility Post Dredge Monitoring Plan.
Comment 17: Appendices B and C. Provide a list of the input parameters used in the groundwater models and the sensitivity analysis. Also, see General Comment 4.	**Response 17:** The text will be revised to include a list of input parameters used in the groundwater models and sensitivity analysis. The groundwater flow model requires as input: • The upper and lower surface elevation of any layers used in the model (coinciding with soil changes where possible), • the recharge rate to the aquifer, • the horizontal and vertical hydraulic conductivity of each of the soils, • the specific yield of the soil layer at the water table • and the elastic specific storage of any soil layers below the water table, • the longitudinal, horizontal transverse, and vertical transverse dispersivities, • the partition coefficients (soil/water) of each of the COCs, and • the effective porosity of the soil. Of the above, the elevations of the top and bottom of each of the model layers will be evaluated from pre-existing and newly acquired borehole data and will be input into the model deterministically. They will not be varied as

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part of the sensitivity analysis.

Recharge will be calculated from rainfall and irrigation data and this will be varied in the sensitivity analysis only linked to changes in hydraulic conductivity. This is due to the fact that the model will be calibrated to the observed hydraulic gradient, so calibration to an increased recharge rate would result in a lower hydraulic conductivity.

The horizontal hydraulic conductivity will be measured using slug tests and pre-existing aquifer test data and will be adjusted during the calibration process. The population distribution of hydraulic conductivities will be evaluated after the testing program. During sensitivity analysis, hydraulic conductivities up to the upper 90% and down to the lower 90% confidence interval will be substituted into the model for the calibrated values. As noted above, changes in recharge rates will be linked to those changes in hydraulic conductivity to preserve the calibrated gradient. Vertical hydraulic conductivity will be assumed to be equal to horizontal in the dredged-fill sediment. In native soils, the vertical heterogeneity will be used to assess the ratio of horizontal to vertical hydraulic conductivity. The ratio of horizontal to vertical hydraulic conductivity will be increased and decreased by one order of magnitude during the sensitivity analysis.

The storage coefficients will be evaluated from the tidal fluctuation data and from model calibration. During sensitivity analysis, elastic storage coefficients will be varied up and down by an order of magnitude, values of specific yield will be varied by $\pm$ 50%.

Longitudinal dispersivity will be estimated from the literature, as will transverse dispersivities. Transverse dispersivities will be kept to a minimum, resulting in maximized COC concentrations.

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	Partition coefficients will be determined based on the results of the batch tests. These will be measured by plotting soil phase concentrations versus water phase concentrations from the batch tests. The resulting partition coefficient is calculated as the slope of the best-fit, linear regression line relating the two. To evaluate uncertainty, the 95% confidence interval about the best-estimate slope will be calculated, and the upper and lower 95% confidence limit will be used in the sensitivity analysis. A best-estimate of effective porosity will be derived from the literature. During sensitivity analysis, this value will be varied by ± 50%.

Fax Cover Sheet

DATE:	March 14, 1998	**TIME:**	2:08 PM	
TO:	Mark Delaplaine CCC	**PHONE:** **FAX:**	 415-904-5400	
FROM:	Laura Hunter	**PHONE:**	619-235-0281	**FAX: 619-232-3670**
RE:	Navy Monitoring Proposal			

Number of pages including cover sheet: 1

Mark--

There are a couple of major concerns we have with the Navy's proposal that I wanted to give you notice about. First, the "long-term" monitoring program must extend longer than 2 years. A monitoring term of only 2 years is short term at best when it comes to groundwater. EHC recommends that the quarterly monitoring (provided there are no hits of contaminants) be done for at least 3 years, then move to every 6 months for 2 years and then a longer, graduated schedule. **In no case should the site be monitored less than once every 5 years**. Since this is effectively an in-bay hazardous waste landfill, it must be monitored as long as the contaminants can be expected to be a potential problem. There is precedent for this kind of true long-term monitoring program in San Diego Bay. The Convair Lagoon capping of a PCB site requires a graduated monitoring program, but finally it must be remonitored every 5 years. THIS IS VERY IMPORTANT. In two years, the material in the landfill will still be settling and moving. The monitoring program must provide for monitoring at some time interval as long as the waste site is there.

Also, please remind the Commissioners that the in-situ sediments, were "remediated" by covering them first with even more contaminated dredge spoils from the turning basin. The contaminated cover material poses as great or greater threat to releases to the Bay than do the in-situ materials.

Also, it is impossible to tell the effectiveness of their plan without a map of where the wells are going to be located. The location of the wells could very well mean the difference between a program that works and a program that won't.

Further, samples should be taken during outgoing tides, it is under these conditions that hydrologic pressures may draw contaminants out of the bay-fill. It is also important to note that this fill will be subject to both groundwater intrusion and tidal influence--a terrible flaw in the design and even more reason why the long-term monitoring must be long-term.

Thank you, Laura Hunter, EHC

EXHIBIT NO. 3
APPLICATION NO.
CDF Monitoring Plan
Navy