AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE MEETING
TUESDAY, FEBRUARY 20, 2024

This meeting will be held in-person at the District's headquarters located at 15600 Sand Canyon Avenue, Irvine, California. The meeting will also be broadcasted via Webex for those wanting to observe the meeting virtually.

To observe this meeting virtually, please join online using the link and information below:

Via Web: https://irwd.webex.com/irwd/j.php?MTID=m12c2d09f23273d098775fe7f9f18c463
Meeting Number (Access Code): 2490 411 5984
Meeting password: umNJx8abx23

PLEASE NOTE: Webex observers of the meeting will be placed into the Webex lobby when the Board enters closed session. Participants who remain in the "lobby" will automatically be returned to the open session of the Board once the closed session has concluded. Observers joining the meeting while the Board is in closed session will receive a notice that the meeting has been locked. They will be able to observe the meeting once the closed session has concluded.

CALL TO ORDER 1:30 p.m.

ATTENDANCE
Committee Chair: Karen McLaughlin _____
Committee Member: John Withers _____

ALSO PRESENT

Paul Cook	_____	Kevin Burton	_____	Wendy Chambers	_____
Neveen Adly	_____	Paul Weghorst	_____	Steve Choi	_____
Jim Colston	_____	Jason Manning	_____	Jose Zepeda	_____
Rich Mori	_____	Eric Akiyoshi	_____	Malcolm Cortez	_____
Jacob Moeder	_____	Harry Cho	_____	Alex Murphy	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

PUBLIC COMMENT NOTICE

If you wish to address the Committee on any item, please submit a request to speak via the "chat" feature available when joining the meeting virtually. Remarks are limited to three minutes per speaker on each subject. Public comments are limited to three minutes per speaker on each subject. You may also submit a public comment in advance of the meeting by emailing comments@irwd.com before 9:00 a.m. on Tuesday, February 20, 2024.

COMMUNICATIONS

1. Notes: Burton
2. Public Comments
3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted and determine which items may be approved without discussion.

INFORMATION

4. UPCOMING PROJECTS STATUS REPORT – AKIYOSHI / CORTEZ / MOEDER / MORI / BURTON

   Recommendation: Receive and file.

5. NATURAL TREATMENT SYSTEM BIOREACTOR PILOT STUDY – SWIFT / CHAMBERS

   Recommendation: Receive and file.

6. TECHNICAL INFORMATION MANAGEMENT SYSTEM – GIATPAIBOON / COLSTON / BURTON

   Recommendation: Receive and file.

ACTION

7. THREE-YEAR CATHODIC PROTECTION SYSTEM MONITORING FOR CALENDAR YEARS 2024 THROUGH 2026 – CONSULTANT SELECTION – MURPHY / CORTEZ / BURTON

   Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $406,337.80 with V&A Consulting Engineers for the Three-Year Cathodic Protection Monitoring for Calendar Years 2024 through 2026.

8. WELLS 6,12,14, AND 15 SITE IMPROVEMENTS CONSULTANT SELECTION – FOO / CORTEZ / BURTON

   Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with Tetra Tech in the amount of $1,094,000 to provide engineering design services for the Wells 6, 12, 14, and 15 Site Improvements, Project 11570.

ACTION, continued

9. PLANNING AREA 1 ORCHARD HILLS NEIGHBORHOOD 4 CONSTRUCTION CHANGE ORDERS – LEW / RIOS / AKIYOSHI / BURTON

   Recommendation: That the Board authorize the General Manager to approve Change Order No. 1 in the amount of $483,529.48 with Irvine Community Development Company, LLC for the Planning Area 1 Jeffrey Road Extension, Project 12784; authorize a budget addition for Project 12784 in the amount of $605,000 for the Planning Area 1 Jeffrey Road Extension Domestic Water Improvements; and authorize a budget addition for Project 12948 in the amount of $259,000 for the Planning Area 1 Orchard Hills Neighborhood 4 Domestic Water Improvements.

10. PLANNING AREA 51 HERITAGE FIELDS CAPITAL FACILITIES – LEW / RIOS / AKIYOSHI

    Recommendation: That the Board authorize the General Manager to accept Heritage Fields' construction contract with FYDAQ Company, Inc. in the amount of $1,667,287 for the Marine Way Capital Domestic Water, Sanitary Sewer and Recycled Water Improvements, Projects 12371, 12386, and 12387; and authorize the General Manager to accept Heritage Fields' construction contract with FYDAQ Company, Inc. in the amount of $232,314.80 for the Lynx Capital Domestic Water and Sanitary Sewer Improvements, Projects 12432 and 12433.

OTHER BUSINESS

11. Directors' Comments

12. Adjournment

****

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available electronically via the Webex meeting noted. Upon request, the District will provide for written agenda materials in appropriate alternative formats, and reasonable disability-related modification or accommodation to enable individuals with disabilities to participate in and provide comments at public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, or alternative format requested at least two days before the meeting. Requests should be emailed to comments@irwd.com. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

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February 20, 2024
Prepared by: E. Akiyoshi / M. Cortez / J. Moeder / R. Mori
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

UPCOMING PROJECTS STATUS REPORT

SUMMARY:

A status report of Irvine Ranch Water District's Upcoming Projects is presented to the Committee for information.

BACKGROUND:

The information, which is provided as Exhibit "A", is a status report submitted quarterly to the Committee for review.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Upcoming Projects Status Report

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UPCOMING PROJECTS STATUS REPORT

Project Name	Planning	Design	Construction	Construction Final Acceptance
HVAC System Replacement at Sand Canyon HQ and Operations Center	In-Process	Mar-24	-	-
UCI Meter Vault Replacement	Completed	In-Process	May-24	-
SR 133 - 36" Trunk Sewer Protection	Completed	Completed	In-Process	Oct-24
Irvine Business Complex Appurtenance Relocations Phase 3	Completed	In-Process	Jun-24	-
Dyer Road Wellfield Facility Rehabilitation Group 1	Completed	Feb-24	-	-
Park Place RW Pipeline to Cooling Tower	In-Process	-	-	-
Silverado Bridge 174 DW Improvements	Completed	In-Process	Oct-24	-
Silverado Bridge 175 DW Improvements	Completed	In-Process	Sep-25	-
Silverado Bridge 177 DW Improvements	Completed	In-Process	Jul-24	-
MWRP Biosolids Lift Station and Sewer Improvement	Completed	In-Process	Aug-24	-
Serrano Creek Raw Water Pipeline Replacement	Completed	Completed	In-Process	May-24
Radio Tower Improvements	Completed	In-Process	Jul-24	-
MWRP Solids Force Main Relocation	Completed	Completed	In-Process	Mar-24
Woodbridge RW Replacement	Completed	Completed	In-Process	Mar-24
Lake Forest Woods Sewer Improvements	Completed	In-Process	Sep-24	-
Turtle Rock Chloramine Booster Station	Completed	Completed	In-Process	May-24
Santiago Canyon Pump Station Improvements	Completed	Completed	In-Process	Nov-24
Coastal Z2 and Z4 Pump Stations Rehabilitation	Completed	In-Process	Jun-24	-
Wells 10 and 12, IDP Well ET1 Rehabilitation	Completed	Completed	In-Process	Jun-24
Rehabilitation of Irvine Desalter Wells 76, 110, 115R and Destruction of Wells 72, 106	Completed	In-Process	Mar-24	-
Santiago Creek Dam Outlet Tower and Spillway Improvements	Completed	In-Process	Dec-24	-
Rattlesnake Dam Risk Reduction Investigation	Completed	In-Process	-	-
Santiago Canyon Fleming Zone 8 Tank and Zone 8-9 BPS	Completed	Completed	In-Process	Jan-25
Generator Fuel Storage Upgrades	Completed	Completed	Apr-24	Nov-25
Orange Heights Zone 6 Reservoir	Completed	On-Hold	-	-
Sand Canyon Dam Instrumentation	Completed	In-Process	Jul-24	-
MWRP MPS-2 Pump Bases Replacement	Completed	Completed	In-Process	Jul-24
Lake Forest Zone B-C BPS	Completed	Completed	In-Process	Apr-24
Lake Forest Zone 4 Tank Rehabilitations	In-Process	Apr-24	-	-
Sewer Siphon Improvements Phase II	Completed	In-Process	Jul-24	-
Wells 51 and 52 Wellhead Equipping and Offsite Pipelines	On-Hold	-	-	-
Well OPA-1 PFAS Treatment	Completed	Completed	In-Process	Apr-24
Well ET-1 PFAS Treatment	Completed	Completed	In-Process	Apr-24
SGU PFAS Treatment	Completed	Completed	In-Process	24-Jun
Zone A to Rattlesnake Reservoir BPS	Completed	Completed	In-Process	Jun-24
Syphon Reservoir Intersection Improvements and Access Road	Completed	Completed	In-Process	Oct-24
Orange Heights SAC/Baker Pipeline Relocation	Completed	Completed	On-Hold	-
Syphon Reservoir Improvements	Completed	In-Process	Apr-25	-

UPCOMING PROJECTS STATUS REPORT

Project Name	Planning	Design	Construction	Construction Final Acceptance
MWRP Compressed Natural Gas and Diesel/Gasoline Fueling Station	Completed	Completed	In-Process	Feb-25
MWRP Tertiary Filter Rehabilitation	Completed	Completed	In-Process	Nov-25
Operations Center Purchasing Warehouse	Completed	In-Process	Jun-24	-
MWRP Phase 3 Expansion	On-Hold	-	-	-
San Joaquin Reservoir Filtration	Completed	Completed	In-Process	Mar-25
Orange Heights Zn 5 to 6 and C+ to E Pump Stations	Completed	On-Hold	-	-
PA 1, Jeffrey Road Extension RW and DW (RA w/CDC)	Completed	Completed	In-Process	Feb-24
PA 51, Serrano Creek Sewer Relocation	Completed	Completed	In-Process	Mar-24
PA 51, District 5 South Chinon DW, RW (RA with Heritage Fields)	Completed	Completed	Dec-23	Jun-24
PA 51, Marine Way from Skyhawk to Treble DW, RW (RA with Heritage Fields)	Completed	Completed	Dec-23	Jun-24
PA 51, Treble from GP5 to Marine Way DW, RW (RA with Heritage Fields)	Completed	Completed	Dec-23	Jun-24
PA 51 Lynx from Harrier to Marine Way DW, SS (RA with Heritage Fields)	Completed	Completed	Dec-23	Jun-24
PA 1, Orchard Hills Neighborhood 4 DW (RA with TIC)	Completed	Completed	In-Process	Mar-24
PA 1, Orchard Hills Neighborhood 4 RW (RA with TIC)	Completed	Completed	In-Process	Mar-24
East Orange, Orange Heights Tract 16199 SS, RW	Completed	On-Hold	-	-
East Orange, Orange Heights Tract 17995 DW, RW	Completed	On-Hold	-	-
East Orange, Orange Heights Jamboree and Chapman DW SS, RW	Completed	On-Hold	-	-
City of Irvine Gateway Preserve Residential Village SAMP	Dec-24	-	-	-
CIP Asset Management Phase II - Linear Asset Prioritization	In-Process	Oct-24	-	-
Mid-Cycle Capital Budget Update	In-Process	May-24	-	-
Lead and Copper Rule Revision - Lead Pipe Inventory	In-Process	Oct-24	-	-

February 20, 2024
Prepared by: I. Swift
Submitted by: W. Chambers
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

NATURAL TREATMENT SYSTEM BIOREACTOR PILOT STUDY

SUMMARY:

Exploring new methods to enhance water quality within the IRWD Natural Treatment System (NTS) supports the District's commitment to watershed protection. Bioreactors, proven to improve nutrient removal in agricultural runoff, are being investigated for their potential use in urban settings like the NTS. In 2022, a pilot study was initiated within the Forge NTS basin, specifically targeting high nitrogen levels and mixed runoff. At the Committee meeting, staff will provide an update on the bioreactor pilot study.

BACKGROUND:

Bioreactors are structures that concentrate flow through carbon-based media like wood chips for the purpose of removing pollutants like nutrients from agricultural runoff. While the effectiveness utilizing bioreactors for nutrient removal in agricultural applications is well understood, their application in urban settings, specifically nutrient removal from urban runoff, is less well understood.

In late 2022, a pilot study was initiated to assess the feasibility of using a bioreactor within the Forge NTS basin. This basis was chosen for its consistently high nitrogen levels and inflow (partially) of agricultural runoff. The goal was to improve overall water quality, measured by outlet nitrogen concentration, and earn credits for potential future water diversions at Sand Canyon Reservoir and/or Michelson Water Recycling Plant. The study also aimed to evaluate bioreactor effectiveness in low-performing NTS basins treating mixed urban and agricultural runoff.

Pilot Study Results:

Over multiple years, water quality at Forge NTS significantly improved, with nitrogen and specific nitrogen fractions (ammonia, nitrate-nitrite) dropping by 50%. Average outlet nitrate-nitrite concentration dropped from 3.74mg/L in 2022 to 1.32mg/L in 2023, demonstrating the pilot's success and potential for broader implementation at other NTS sites. The study did encounter challenges, including damage to the bioreactor matrix due to heavy rainfall. Addressing this issue with improved containment measures will be crucial for future applications.

Staff will provide more details regarding the Pilot Study and the results at the Committee meeting, using the draft powerpoint presentation attached as Exhibit "A".

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

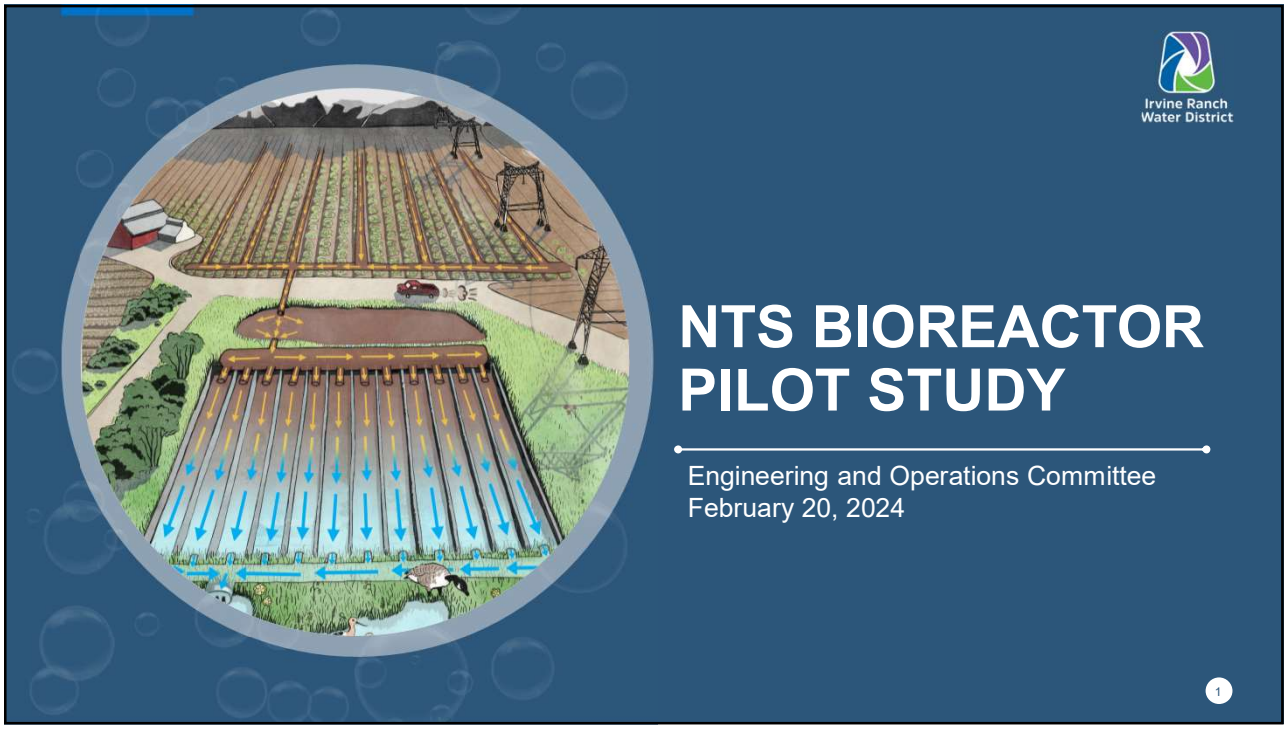
Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit “A” – Draft Presentation



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WHAT IS A BIOREACTOR?

- Passive structures designed to reduce nutrients from polluted sources especially agriculture
- Use matrix such as wood chips or other carbon sources
- Often paired with standard treatment wetlands to enhance pollutant removal in high nutrient environments
- Very low/no maintenance

Irvine Ranch
Water District

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WHY A BIOREACTOR?

- Assist in nitrogen credit accumulation for NPDES permit (offset flows from Sand Canyon Res, and MWRP)
- Improve low-performing NTS basins
- Overall water quality improvements

Irvine Ranch Water District

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FORGE NTS BASIN

- Forge NTS basin along Portola Pkwy
- High [N] inlet and outlet
- Small NTS basin owned by IRWD (good pilot study site)
- First use of bioreactor in Orange County

Irvine Ranch Water District

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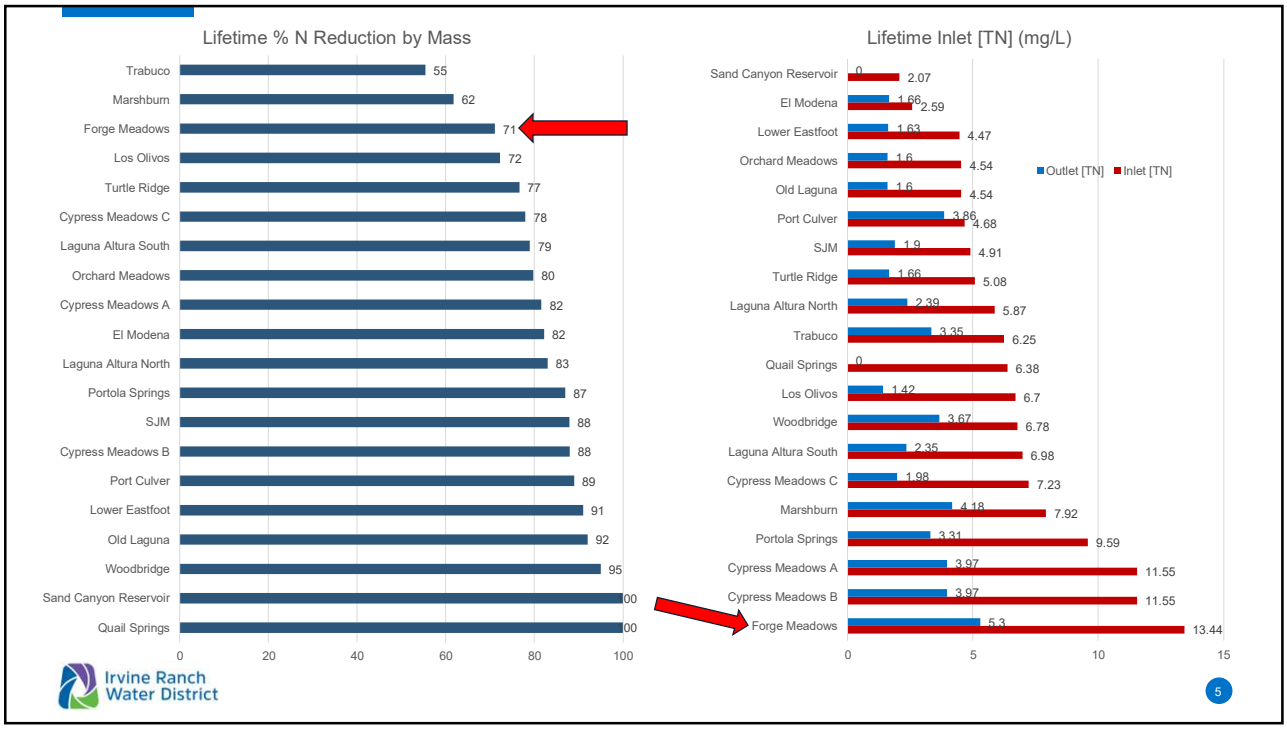
Lifetime % N Reduction by Mass
Trabuco 55
Marshburn 62
Forge Meadows 71
Los Olivos 72
Turtle Ridge 77
Cypress Meadows C 78
Laguna Altura South 79
Orchard Meadows 80
Cypress Meadows A 82
El Modena 82
Laguna Altura North 83
Portola Springs 87
SJM 88
Cypress Meadows B 88
Port Culver 89
Lower Eastfoot 91
Old Laguna 92
Woodbridge 95
Sand Canyon Reservoir 00
Quail Springs 00
0 20 40 60 80 100
Lifetime Inlet [TN] (mg/L)
Outlet [TN]
Inlet [TN]
Sand Canyon Reservoir 0 2.07
El Modena 1.66 2.59
Lower Eastfoot 1.63 4.47
Orchard Meadows 1.6 4.54
Old Laguna 1.6 4.54
Port Culver 3.86 4.68
SJM 1.9 4.91
Turtle Ridge 1.66 5.08
Laguna Altura North 2.39 5.87
Trabuco 3.35 6.25
Quail Springs 0 6.38
Los Olivos 1.42 6.7
Woodbridge 3.67 6.78
Laguna Altura South 2.35 6.98
Cypress Meadows C 1.98 7.23
Marshburn 4.18 7.92
Portola Springs 3.31 9.59
Cypress Meadows A 3.97 11.55
Cypress Meadows B 3.97 11.55
Forge Meadows 5.3 13.44
0 5 10 15
Irvine Ranch Water District
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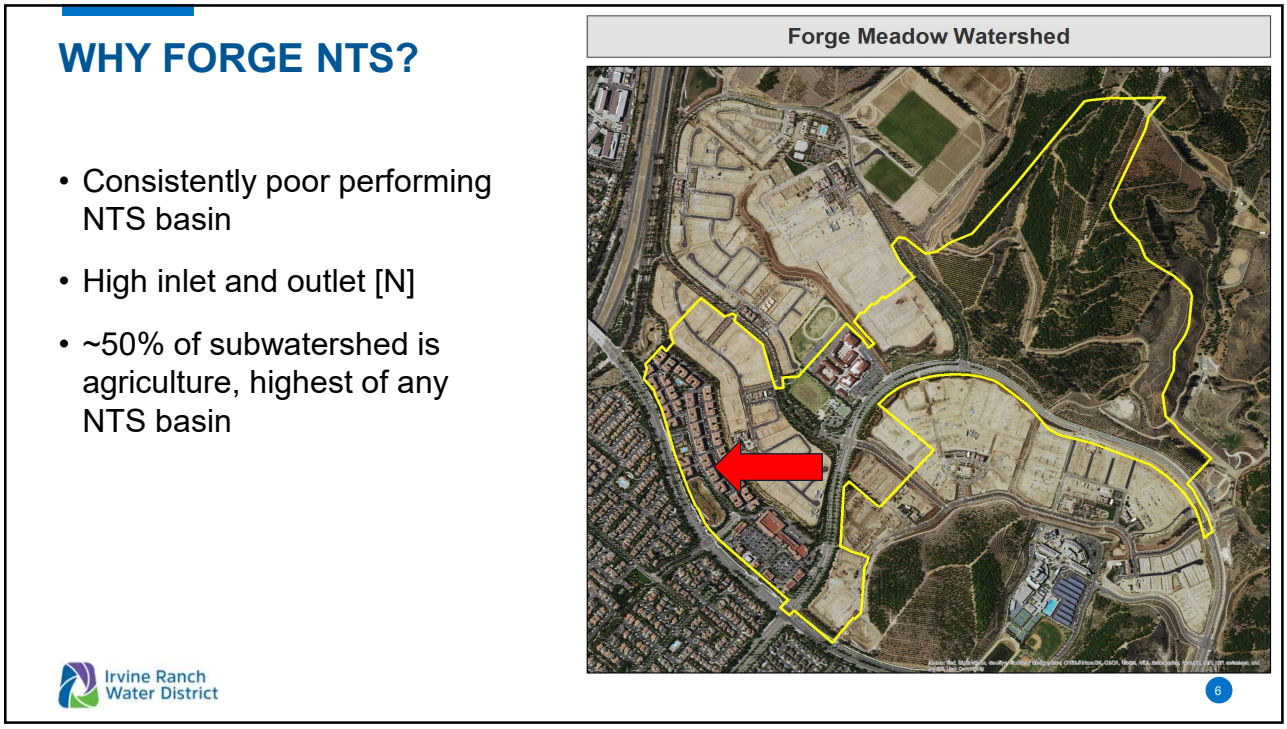
WHY FORGE NTS?
• Consistently poor performing NTS basin
• High inlet and outlet [N]
• ~50% of subwatershed is agriculture, highest of any NTS basin
Forge Meadow Watershed
Irvine Ranch Water District
6

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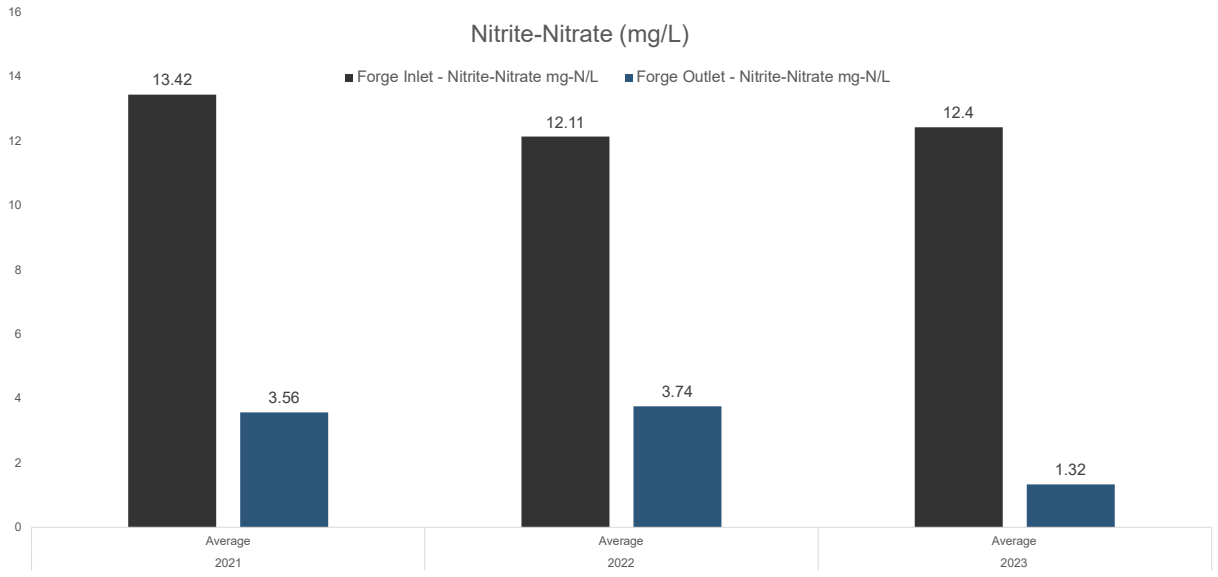
RESULTS



Irvine Ranch Water District

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RESULTS

		Inlet D.O.	Outlet D.O.	Inlet Ammonia	Outlet Ammonia	Inlet Total Nitrogen	Outlet Total Nitrogen	Inlet Total Phosphorus	Outlet Total Phosphorus	Inlet Nitrite-Nitrate	Outlet Nitrite-Nitrate
		mg/L	mg/L	mg-N/L	mg-N/L	mg-N/L	mg-N/L	mg-P/L	mg-P/L	mg-N/L	mg-N/L
2021	**Avg**	7.59	6.6	0.07	0.32	14.08	5	0.56	0.43	13.42	3.56
2022	**Avg**	8.12	4.97	0.1	0.31	12.94	5.31	0.6	0.61	12.11	3.74
2023	**Avg**	7.37	4.96	0.06	0.26	13.4	2.81	0.73	0.71	12.4	1.32

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CONCLUSIONS

Pros:

- Reduces [N]
- Easy to install and maintain
- Passive, low cost

Cons:

- Current design did not withstand storms well
- Reduced DO slightly
- Not applicable to all NTS

Irvine Ranch Water District

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February 20, 2024
Prepared by: S. Giatpaiboon / J. Colston
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

TECHNICAL INFORMATION MANAGEMENT SYSTEM

SUMMARY:

The District has utilized the LabWorks Laboratory Information Management System (LIMS) to record and retrieve laboratory data since its implementation in 1997, and the software can no longer effectively support the District's Environmental Laboratory Accreditation Program (ELAP) requirements. Staff will provide a presentation, as an informational item to the Committee, on the selected new Technical Information Management System that will replace the LIMS and meet the District's ongoing and future information management needs, ensure regulatory compliance and water quality reporting requirements are met, manage field monitoring through a mobile application, and interface a streamlined instrument-technical information transfer.

BACKGROUND:

The District has utilized the LabWorks LIMS to record and retrieve laboratory data since its implementation in 1997. Throughout the years, LabWorks has undergone ownership and company changes that have impacted the quality of the software and services provided by the company. In recent years, since Perkin Elmer sold the company, the quality of the software and the services provided has significantly degraded. LabWorks has not been able to provide the support needed to meet the new requirements of the District's ELAP, mobile application needs, regulatory compliance and water quality regulatory reporting requirements, and data management needs. LabWorks has failed to keep up with the industry standards for the environmental, drinking, and wastewater industry.

Staff performed a thorough evaluation of multiple Technical Information Management System software packages available in the industry to ensure the needs of the District were all met. Accelerated Technology Laboratories, Inc. (ATL) software package was shortlisted based on the evaluation because it encompasses the complete package for managing the collection of samples in the field to the analytical testing and reporting capabilities in the laboratory, and finally, the accessibility of data component that other software packages lacked. As an additional due diligence effort, staff evaluated ATL's success in implementing their software package at other water and sanitation districts, such as the Inland Empire Utilities Agency, Silicon Valley Clean Water, and Arkansas Department of Environmental Quality. Each agency provided positive feedback on the implementation process and how they have been able to improve overall efficiency within their organizations.

Staff selected and is now implementing the Technical Information Management System from ATL, which includes Titan LIMS, Titan iMobile, and Results Point software. The new software will meet ongoing and future needs to maintain the District's ELAP, ensure regulatory compliance and water quality reporting requirements are met, manage our field monitoring

through a mobile application, and interface a streamlined instrument-technical information transfer. After successful implementation of the Technical Information Management System for the Water Quality and Regulatory Compliance Department, the software could potentially be utilized to manage and access technical information in other areas of the District.

FISCAL IMPACTS:

Implementation and ongoing annual Software as a Service (SaaS) fees for the new Technical Information Management System will be funded through the fiscal year Operating Budget. Implementation of the software will cost $116,245, and the annual SaaS fee for the next three years will cost $160,872.

The current LabWorks LIMS annual cost is $120,442, and this will be canceled in early 2025 when the new Technical Information Management System software is fully implemented and all data from the LabWorks LIMS has been migrated to the new software.

ENVIRONMENTAL COMPLIANCE:

Not Applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit “A” – Technical Information Management System Presentation


Irvine Ranch Water District
TECHNICAL INFORMATION MANAGEMENT SYSTEM (TIMS) UPGRADE PROJECT
ENGINEERING AND OPERATIONS COMMITTEE
FEBRUARY 20, 2024
1

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AGENDA
Historical Background
Evaluation Process
TIMS Software Capabilities
Project Implementation
Questions
Irvine Ranch Water District
2

2

HISTORICAL BACKGROUND

Irvine Ranch Water District

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HISTORICAL BACKGROUND

- The District has used LabWorks to manage technical data since 1997.
- LabWorks software has not been updated to meet regulatory data management requirements.
- LabWorks has not adapted to the growing data management needs of the District.

LABWORKS

Irvine Ranch Water District

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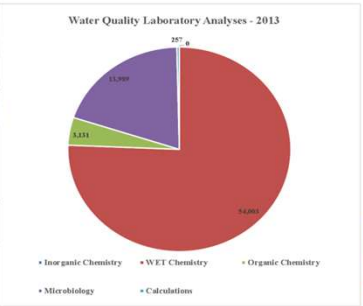
Water Quality Department 2013 Statistical Key Performance Indicators

Laboratory Fields of Analysis Reported in 2013

Inorganic Chemistry	0
WET Chemistry	54,605
Organic Chemistry	3,131
Microbiology	13,989
Calculations	257
Total WQ Lab Analyses in 2013:	**71,380**
Quantity of Samples in 2013:	**23,184**

Note: QA/QC and PT samples are included in this because they are part of sample batches, prepared and analyzed with samples, and reported as samples

Quantity of Reported Results --- 2013



WATER QUALITY'S DATA GENERATION 2013-2023

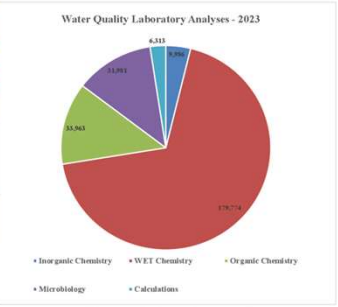
Water Quality Department 2023 Statistical Key Performance Indicators

Laboratory Fields of Analysis Reported in 2023

Inorganic Chemistry	9,986
WET Chemistry	178,774
Organic Chemistry	33,963
Microbiology	31,981
Calculations	6,313
Total WQ Lab Analyses in 2023:	**262,017**
Quantity of Samples in 2023:	**54,348**

Note: QA/QC and PT samples are included in this because they are part of sample batches, prepared and analyzed with samples, and reported as samples

Quantity of Reported Results --- 2023



DATA GENERATION HAS INCREASED IN THE PAST 10 YEARS.

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EVALUATION PROCESS

Irvine Ranch Water District

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EVALUATION OF TIMS SOFTWARE PRODUCTS

- Staff performed a thorough evaluation of multiple TIMS software packages available in the industry.
- Evaluation included software testing, presentations, and reference checks.
- Accelerated Technology Laboratories, Inc was the selected vendor for the TIMS Upgrade project.

Accelerated Technology LABORATORIES INC.

Irvine Ranch Water District

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THE SOLUTION: ATL'S TIMS SOFTWARE PACKAGE

Accelerated Technology LABORATORIES INC.

- Titan iMobile Field Application
- Titan Laboratory Information System (LIMS)
- Result Point Customer Portal

Irvine Ranch Water District

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TITAN IMOBILE FIELD APPLICATION

- Sample collections use mobile devices in the field to instantly upload data into the technical information management system.
- Samples can be managed electronically – electronic chain of custody's can be generated.
- Sampling Locations & Schedules can be managed using iMobile.

ATL iMOBILE TITAN
INFORMATION MANAGEMENT GIANT ON THE GO

Irvine Ranch Water District

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TITAN TIMS

- Data is stored in the cloud and the server is managed by ATL to ensure accessibility & security.
- Chemical & Sample Inventory Management
- Instrument Interfacing & Data Transfer
- Management of Technical Data
- Management of Quality Assurance & Control Parameters

ATL TITAN
BEYOND LABORATORY INFORMATION MANAGEMENT

Irvine Ranch Water District

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RESULT POINT – CUSTOMER PORTAL

- Sample Result Status Information
- Access test results as they become available
- Capability to independently access historical data queries to obtain relevant information immediately
- Query historical data into electronic data deliverables
- Obtain Final Reports with signatures

RESULT POINT
data when you need it

Irvine Ranch Water District

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PROJECT IMPLEMENTATION

Irvine Ranch Water District

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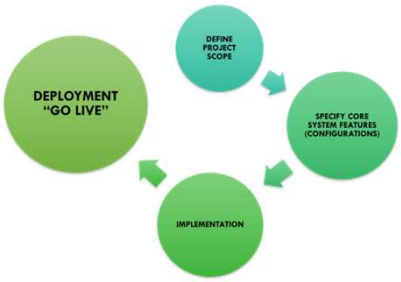
PROJECT IMPLEMENTATION

- The TIMS Project Manager, TIMS Implementation Team, and ATL Professional Services will support this project.
- Implementation of TIMS will cost $116,245 and the annual SaaS fee for the next three years will cost $160,872.
- The estimated completion of the implementation phase is June 2025.
- Overall, the cost and benefit of implementing a new TIMS outweigh the risk of continuing with LabWorks to manage our growing data needs.



Accelerated Technology LABORATORIES INC.

Irvine Ranch Water District

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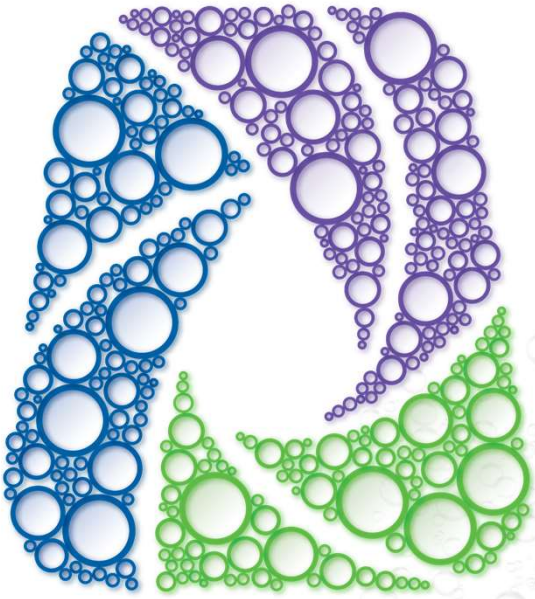
QUESTIONS?



Irvine Ranch Water District

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February 20, 2024
Prepared by: A. Murphy / M. Cortez
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

THREE-YEAR CATHODIC PROTECTION SYSTEM MONITORING FOR CALENDAR YEARS 2024 THROUGH 2026 – CONSULTANT SELECTION

SUMMARY:

IRWD installs and operates cathodic protection systems to minimize the corrosion of essential metallic pipelines and steel tanks that have a high rate of corrosion potential. These cathodic protection systems require periodic monitoring, evaluation, and adjustment to ensure optimal protection of the pipelines and structures. IRWD has typically utilized consultant services to perform these functions. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $406,337.80 with V&A Consulting Engineers for the Three-Year Cathodic Protection Monitoring for Calendar Years 2024 through 2026.

BACKGROUND:

IRWD has installed impressed current and galvanic cathodic protection (CP) systems to prevent the failure of essential metallic pipelines and steel tanks identified as having a high rate of corrosion. CP systems utilize anode beds and electric current, requiring periodic monitoring, evaluation, and adjustment to ensure optimal protection of the metallic structure. IRWD has routinely utilized consultant services to monitor, evaluate, and adjust the 54 metallic pipeline and 15 steel tank CP systems for a term of three years.

Existing IRWD Cathodic Protection Systems				
Pipelines	Systems	Rectifiers	Test Stations	Miles of Pipe
	54	67	586	79
Reservoirs	Reservoirs		Volume of Reservoirs (Millions of Gallons)	
	15		20.15	

Consultant Selection:

Staff sent a Request for Proposal for the three-year cathodic protection monitoring program to four consultants: HDR, Michael Baker International, Universal Corrosion Services, and V&A Consulting Engineers. HDR and V&A submitted proposals, and Universal and Michael Baker International declined to submit a proposal, citing staffing limitations. Staff evaluated the proposals received, and based on their thorough scope of work, experienced team, and cost-effectiveness, staff recommended the selection of V&A.

The Consultant Selection Matrix is provided as Exhibit "A". V&A has previously performed CP design and monitoring services for IRWD and is qualified to perform the requested services.

V&A's proposal includes monitoring and reporting on the CP systems, providing the monitoring data in geographic information systems format, providing recommendations for improvements to the systems, and troubleshooting any irregularities observed in the monitoring data. V&A's proposal is provided as Exhibit "B".

FISCAL IMPACTS:

Funding for the Cathodic Protection Monitoring Program is included in the FY 2024-25 Operating Budget. In the future, staff will propose the needed funding when the FY 2025-26 and FY 2026-27 Operating Budgets are being prepared.

ENVIRONMENTAL COMPLIANCE:

This item is not a project as defined in the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15378.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $406,337.80 with V&A Consulting Engineers for the Three-Year Cathodic Protection Monitoring for Calendar Years 2024 through 2026.

LIST OF EXHIBITS:

Exhibit "A" – Consultant Selection Matrix
Exhibit "B" – V&A Proposal for Cathodic Protection Engineering Services

EXHIBIT "A"
3-Year Cathodic Protection Monitoring Calendar Years 2024-2026
Consultant Selection Matrix

	Weights	V&A Consulting Engineers	HDR
TECHNICAL APPROACH			
*Project Approach	40%	1	2
*Scope of Work	25%	2	1
*Experience	20%	1	2
*Man Hour Estimates	15%	1	2
Forced Ranking System:			
1- Best, 2- Second Best, etc.			
Weighted Score		1.25	1.75
CONSULTANT RANKING		**1**	**2**
FEE/HOURS			
*Hours		1,779	3,176
*Fee		$406,337.80	$672,790.00
*Unit Cost		$228	$212
Professional Liability Insurance		yes	yes
General Liability Insurance		yes	yes

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Professional Services Proposal

Engineering Services for the 3-Year Cathodic Protection Systems Monitoring Program

Irvine Ranch Water District
12.19.2023

V&A Consulting Engineers, Inc.
Brian Briones, Southwest Regional Manager
11011 Via Frontera, Suite C
San Diego, CA 92127
619.322.1272
www.vaengineering.com

11011 Via Frontera
Suite C
San Diego, CA 92127

858.576.0226 Tel
510.903.6601 Fax
vaengineering.com

V&A Project No. 23-0355

December 19, 2023
Willie James, P.E.
Project Manager
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92619

RE: Proposal for Engineering Services for the 3-Year Cathodic Protection Systems Monitoring Program

Dear Mr. James,

We have thoroughly reviewed your request for proposal (RFP) along with all applicable attachments. V&A Consulting Engineers (V&A) is pleased to submit this proposal for the Irvine Ranch Water District's (IRWD) 3-Year Cathodic Protection Systems Monitoring Program. V&A is a firm with a reputation and long-established history providing responsive service and successful solutions specializing in corrosion engineering. For over 44 years, the V&A team has provided corrosion protection services and technical support to water and wastewater agencies throughout California and the western United States.

IRWD is seeking a qualified consulting firm that can perform cathodic protection (CP) monitoring services. Our team provides CP consulting services from testing and design to construction through energization and, most importantly, ongoing monitoring and maintenance. We know how important relationships are between the client and the consultant. V&A has had the opportunity to work with several of IRWD's staff on projects ranging from condition assessments of steel tanks and pipelines to CP systems testing, troubleshooting, and design. We enjoyed the experience greatly.

By signature of this letter, we commit IRWD will receive our full corporate support and necessary resources for the Engineering Services for the 3-Year Cathodic Protection Systems Monitoring Program included in this proposal. As the President, I am duly authorized to contractually bind V&A Consulting Engineers, Inc. This proposal presented to IRWD is valid for 90 days as of the date of this letter. If you have any questions regarding the proposal presented, please feel free to contact me at **619.436.5789 or dkaye@vaengineering.com or Brian Briones, Southwest Regional Manager, at 619.322.1272** or bbriones@vaengineering.com. On behalf of our staff, we would like to thank you for the opportunity to be of service to the Irvine Ranch Water District.

Sincerely,
V&A Consulting Engineers, Inc.

Debra Kaye, PE
CEO & President

Brian Briones, PE
Southwest Regional Manager

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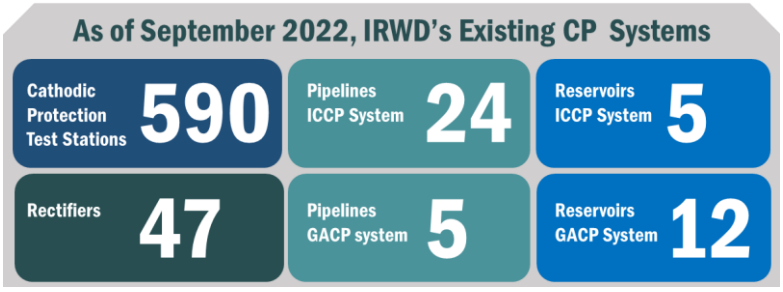
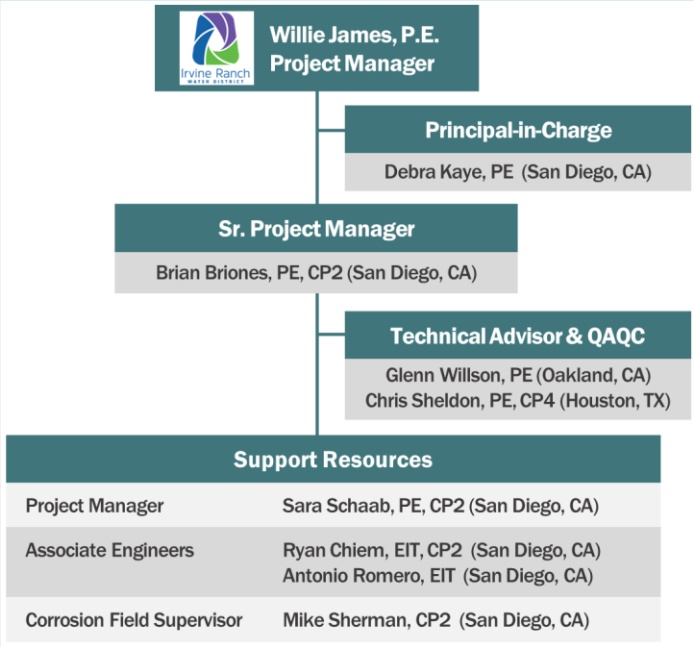
Executive Summary

The Irvine Ranch Water District (IRWD/District) is seeking a qualified consulting firm that can assist the District with performing cathodic protection (CP) consulting services, including testing, evaluation, troubleshooting and recommendations for repair of IRWD's existing corrosion protection systems. The consultant will be responsible for evaluating the systems and identifying repair recommendations for existing CP equipment or new CP equipment installation, including rectifiers, current control equipment, anodes, shunts, bonding, coatings and isolation systems for impressed, sacrificial, and monitoring systems. As of September 2022, IRWD's existing corrosion protection systems include 590 cathodic protection test stations (CPTS), 24 pipelines with an impressed current cathodic protection (ICCP) system including 47 rectifiers, 5 pipelines with a galvanic anode cathodic protection (GACP) system, and 17 reservoirs (5 reservoirs with an ICCP system and 12 reservoirs with a GACP system). There is an unknown number of corrosion monitoring test stations (CMTS) on IRWD's facilities (not associated with a cathodic protection system). The project will include the development of recommendations for the maintenance and monitoring of the existing CP systems. The program's goal is to protect and ensure the structural integrity of IRWD's existing metallic domestic water and recycled water pipeline and steel reservoirs.



A Team You Can Depend On

V&A's Project Team will be led by **Sara Schaab, (AMPP Cathodic Protection Technologist CP3 - #70912)**, with 7 years of corrosion engineering experience. Sara will be supported by a knowledgeable and experienced team that has successfully completed projects of similar magnitude for other agencies throughout California. Technical advisers Glenn Willson (Registered Corrosion Engineer CR1076) and Chris Sheldon (AMPP Cathodic Protection Specialist CP4 - #16394) will provide unmatched experience and knowledge in corrosion protection planning, design, and construction exceeding the expectations of IRWD. Our team of experts – many respected as top-in-their-field – practice industry-standard management techniques, ensuring the delivery of efficient and cost-effective services. As shown in our proposed organizational chart and Personnel section of the proposal, the V&A team offers technical strength and has a proven track record of delivering complex and critical projects. Project Manager, Sara Schaab, with the support of Brian Briones, will lead the team and project from our north county San Diego office. We are fully dedicated to this project.



An Approach to Meet Project Objectives

V&A's Project Approach will achieve the following project objectives:

- Identify monitoring and testing methods to verify the effectiveness of existing CP systems.
- Develop a comprehensive work plan for assessing the actual condition and functionality of each CP system for the identified IRWD facilities.
- Perform diagnostic field testing and survey of CP systems.
- Cross-reference and correlate all existing (identified and non-identified) Cathodic Protection Test Stations (CPTS) with the District's existing GIS system. Non-identified CPTS will be referenced in the GIS database file in a format consistent with IRWD's asset naming conventions.
- Evaluate data and develop recommendations for CP system improvements and repair.
- Develop CP maintenance and monitoring recommendations that can easily be implemented and performed by IRWD staff.

V&A Consulting Engineers, Inc. (V&A) is a consulting firm founded upon corrosion engineering as a core discipline by Jose Villalobos in May of 1979. V&A has 44 years of experience in corrosion engineering, including cathodic protection design, and specializes in evaluating, rehabilitating, and preserving municipal infrastructure. Our firm assists clients in evaluating and extending the remaining useful life of aging infrastructure, primarily in water, wastewater, and transit industries. V&A is made of professionals who are passionate and dedicated to this practice and have the necessary experience and breadth of resources to successfully complete this project. We have performed CP system evaluations and developed Corrosion Control Management Programs for numerous clients throughout California with needs similar to IRWD.

CERTIFICATIONS
WBE
SBE
DBE

V&A's Corrosion Protection Experience includes:

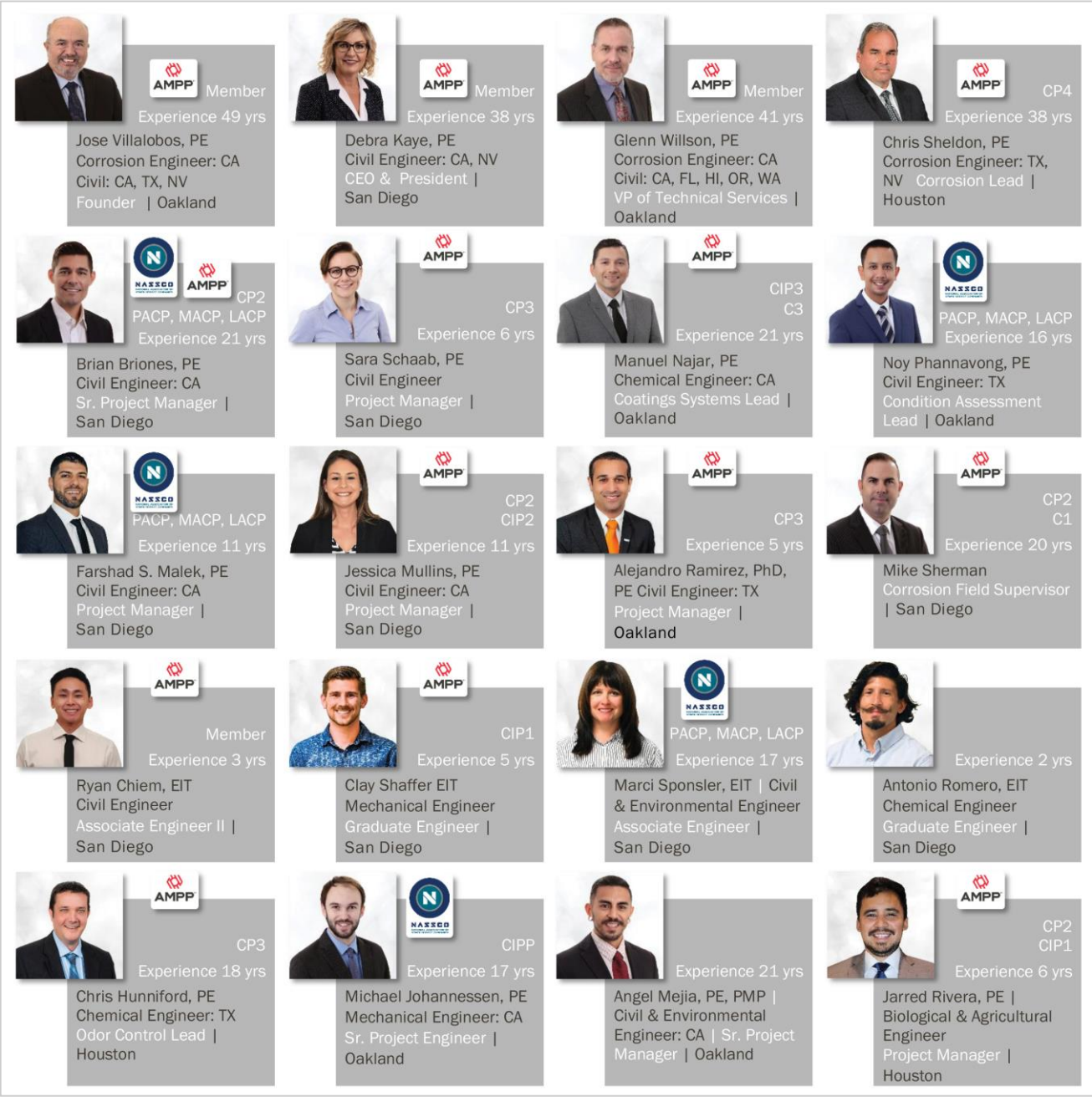
- **Irvine Ranch Water District**
  - Turtle Ridge Pipelines Corrosion Survey and Cathodic Protection Design
  - Detailed Condition Assessment of Steel Tanks (including Cathodic Protection Systems Assessment)
- **San Diego County Water Authority** – As-Needed Corrosion Engineering Services
- **Eastern Municipal Water District**
  - Corrosion Protection Program
  - As-Needed Corrosion Engineering Services
- **Coachella Valley Water District** – Corrosion Protection Consulting Services
- **San Bernardino Valley Municipal Water District** – Pipeline Corrosion and Cathodic Protection Survey
- **East Orange County Water District** – Annual Cathodic Protection Survey and Design (2016 – present)
- **Moulton Niguel Water District** – Central Intertie Pipeline Cathodic Protection Design
- **Sweetwater Authority** – Annual CP System Survey, As-Needed Corrosion, and Steel Reservoir/Tank Condition Assessments (2018 – Present)
- **Vallecitos Water District** – As-Needed Cathodic Protection Design Services

Company Information

Legal name and address of company	V&A Consulting Engineers, Inc. 1000 Broadway, Suite 320 Oakland, CA 94607
Legal form of company	S Corporation, CA Corporation #C1299775
Parent company	V&A Consulting Engineers does not have a parent company
San Diego office address (local)	11011 Via Frontera, Suite C, San Diego CA 92127
Company website	www.vaengineering.com
Number of years that the company has maintained a Southern California office	San Diego: 29
Number of employees in the office	San Diego: 14 / Firmwide: 60
Name, title, address, telephone number, and email of person to contact concerning the Proposal	Brian Briones, PE – Southwest Regional Manager San Diego: 11011 Via Frontera, Suite C, San Diego CA 92127 Phone: 619.322.1272 bbriones@vaengineering.com
Name, title, address, telephone number, and email of person who will sign the agreement if selected for the project	Debbie Kaye, PE – President San Diego: 11011 Via Frontera, Suite C, San Diego CA 92127 Phone: 858.576.0226 dkaye@vaengineering.com

V&A engineers are confined space trained and certified, and we are committed to safety with a robust safety program and excellent safety record. Our team members are certified through the National Association of Corrosion Engineers (NACE), Society of Protective Coatings (SSPC), and the National Association of Sewer Service Companies (NASSCO) to ensure our data meets the rigorous quality standards our clients expect.

V&A's staff includes 20 professionals committed to corrosion engineering practice, many of which are AMPP-Certified (formally NACE).



Over 44 years of providing Corrosion Engineering Services

California | Florida | Texas

A. Scope

Project Scope & Methodology

Project Understanding

IRWD provides domestic water, wastewater, recycled water, irrigation/drainage, regional stormwater protection, and groundwater management services to a population of approximately 380,000 in Central Orange County, California. IRWD's service area encompasses an area of nearly 200 square miles and includes the cities of Irvine, Newport Beach, Orange, and Costa Mesa.

This project involves corrosion protection consulting services, including the testing and surveying of existing CP systems, evaluating data collected in the field, and identifying CP system repair recommendations. Specific CP system equipment under this project scope consists of rectifiers, current control equipment, anodes, shunts, bondings, coatings, isolation, and monitoring systems for both impressed and sacrificial systems. The IRWD facilities included for the corrosion protection consulting services are:

Table 1. IRWD Pipelines with ICCP Systems

Pipeline Description(1)	System Type	No. of CPTS	No. of Rectifiers	Diameter	Material
Cañada Pipeline	DW	43	5	16" – 54"	CML&C
Dyer Road	DW	38	6	16" – 54"	SCC/CCP/CMC&L
Green Acres Line	RW	22	2	24"	CML&C
Harvard Avenue	DW/RW	34	4	20" – 42"	CCP/DIP/CML&C
Michelson Intertie	RW	19	4	24"	SCC/CML&C
Michelson Plant Line	RW	28	3	24"	SCC/CML&C
Newport Coast Drive Segment A	DW/RW	50	14	8" – 24"	DIP/SCC/CML&C
Newport Coast Drive Segment B	DW/RW	74	16	12" – 24"	DIP/SCC/CML&C
Newport Coast Drive Segment C	DW/RW	44	9	8" – 30"	SCC/DIP
Rattlesnake Outfall	RW	34	6	30"/36"	SCC/CCP
Santiago Canyon	DW	8	1	42"/48"	SCC
University	DW	30	5	16"	SCC
University Drive East	RW	8	2	30"	CML&C
Zone 6 to 6A	DW	7	1	16"/24"	CML&C
Zone 9 Pipeline	DW	14	1	24"	SCC
Zone A Strawberry Farms	RW	7	1	20" – 36"	CML&C
Laguna Canyon Road	RW	24	2	24" – 36"	DIP/CML&C
Quail Hill Parkway	DW/RW	22	3	16" – 36"	DIP/CML&C
Turtle Ridge Pipelines(2)	DW/RW	10	1	12" – 16"	DIP/SCC/CML&C

(1) Various segments for each pipeline, excluded for brevity
(2) Recently constructed and not included in 2022 Cathodic Protection Annual Report

Table 2. IRWD Pipelines with GACP Systems

Pipeline Description*	System Type	No. of CPTS	No. of Anode Beds	Diameter	Material
Charter Apartments	DW	7	4	10”/12”	DIP
Culver Drive DW	DW	25	-	16”	SSC
Green Acres Line (1)	RW	22	4	24	CML&C
MacArthur and Tollroad DC	DW	7	3	24”	CML&C
Market Place Tustin	DW	41	13	8”	DIP

Protected by both impressed current and galvanic anodes

Table 3. IRWD Reservoirs

Tank Description*	System Type	CP Type	No. of Rectifiers	Volume (MG)
Zone 1	DW	ICCP	1	1.5
E. Irvine Zone 4	DW	ICCP	1	2.5
Portola Zone 8	DW	ICCP	1	2.5
Zone 2/Zone B (Piping)	DW/RW	ICCP	1 (9 CPTS)	N/A
Zone 2 West	DW	GACP	-	7.8
Zone B West	RW	GACP	-	7.8
Fleming	DW	ICCP	1	0.15
Zone 2 East	DW	GACP	-	7.5
El Toro No. 1	DW	GACP	-	1
El Toro No. 2	DW	GACP	-	2
Zone A No. 1	RW	GACP	-	2
Zone A No. 2	RW	GACP	-	2
Williams	DW	GACP	-	0.5
Benner	DW	GACP	-	0.08
Chapman	DW	GACP	-	0.15
Shaw	DW	GACP	-	0.28
Modjeska	DW	GACP	-	1.4

IRWD’s existing pipelines and reservoirs are constructed of various materials that must be protected from potential failures due to the harmful effects of corrosion. It is critical that the pipelines are protected through measures such as corrosion monitoring, cathodic protection (CP), and coatings/lining systems to allow IRWD to continue to improve the efficiency of its system. The V&A Team understands that there are challenges associated with the existing CP systems, and we are here to help fill in any gaps that may exist in your data sets and CP system management.

Per your request, the following demonstrates our understanding and proposed approach to providing ***Engineering Design Services for the 3-Year Cathodic Protection Systems Monitoring Program*** and to meet IRWD’s project objectives.

Scope of Work

▶ Task 1. Project Management

V&A understands agency funding and operating challenges, and before any work begins, the project manager asks detailed questions to determine operating and budgetary constraints as well as short and long-term goals. V&A will manage its work for IRWD by adhering to proposed schedules and staying within the proposed budget for each task. We will coordinate and attend necessary meetings between V&A and IRWD staff and provide meeting minutes for each. V&A maintains **close working relationships** with its clients throughout the duration of a project through verbal and written communications to ensure all work is performed as required. In the event our team finds any unusual issues that may impact the project's progress, we will contact the IRWD project team immediately.

V&A uses Ajera, an integrated accounting and project management software system, to continuously monitor the progress of all our projects in real-time. The timesheet feature of the Ajera software is used to record time spent on each project, provide a graphical record of the project progress, record project-related expenses, and create detailed invoices. The project management module is the basis of the project control process used by V&A. Ajera allows continuous comparison of actual project performance against the project plan, identification of deviations in the performance, evaluation of alternatives, and corrective action to complete the scope of work within the project schedule and budget.

Project management tasks will include the following:

- Preliminary Monitoring Kickoff Meeting – one (1) two-hour meeting (in-person)
- Coordination and submittal of prevailing wage documentation with the State of California Department of Industrial Relations
- Quarterly Project Progress Updates (via email)
- Prepare Meeting Minutes
  (within one week of meeting and distribute)
- Quarterly Status Report with Invoice(s)
- Decision Log to track issues and decisions made during the course of the project
- Maintain and implement a QA/QC program for all project deliverables
- Draft Initial 2024 Annual Monitoring Report Submittal – one (1) two-hour meeting (virtual)
- Draft Final 2024 Annual Monitoring Report Submittal – one (1) two-hour meeting (virtual)
- Draft Initial 2025 Annual Monitoring Report Submittal – one (1) two-hour meeting (virtual)
- Draft Final 2025 Annual Monitoring Report Submittal – one (1) two-hour meeting (virtual)
- Draft Initial 2026 Annual Monitoring Report Submittal – one (1) two-hour meeting (virtual)

- Draft Final 2026 Annual Monitoring Report Submittal – one (1) two-hour meeting (virtual)

Quality Assurance/Quality Control Approach

V&A manages risk by requiring a mandatory review of all data, reports, plans and specifications, entailing proper formatting, correct grammar, and technical information reviews. V&A ensures plans and specifications are in accordance with and meet agency/client design guidelines.

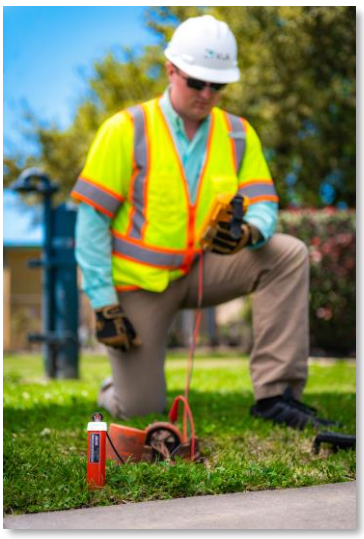
V&A has a well-developed internal **Quality Assurance/Quality Control** (QA/QC) process. The project deliverables, such as reports, drawings, or specifications, will be reviewed by a qualified team of V&A staff for technical accuracy, consistency with the intent of the task's scope of work, grammar, and format. The project manager will usher the deliverables through this process so that each work product delivered to IRWD meets V&A's high-quality standards.

Quality is achieved when work is adequately planned, assigned, executed, and checked. Chris Sheldon, PE (V&A's Corrosion Practice Lead), will be responsible for ensuring QA/QC procedures are followed and documented. This includes field data collection and reporting. Our QA/QC program includes two internal reviews of data collection procedures, field and laboratory test results, design documents, calculations, as well as engineering letters and reports prior to submittal. We recognize the importance of quality control and that it is diligently performed throughout the project and not just immediately prior to delivering to our client. The V&A Team is committed to performing the Scope of Services as outlined in the Request for Proposals. We propose to complete this project in a repeatable seven-step process that will efficiently deliver results. We look forward to discussing our specific approach methods for each Approach Step with IRWD staff and will make any necessary adjustments based on those discussions.

▶ Task 2. Background Material Collection and Review

Our team will collect and review all relevant background information and data for IRWD's existing CP systems, including the pipeline and/or facility GPS/GIS data, design record drawings and specifications, coating/lining specifications, operation and maintenance details, repair and rehabilitation history, service area soils coverage, previous corrosion survey data and reports, and any other information relevant to the project.

V&A will present data in a format acceptable to IRWD and consistent with IRWD naming conventions. Test points are to be collected by pipeline, station number, and IRWD tagged Cathodic Protection ID number.



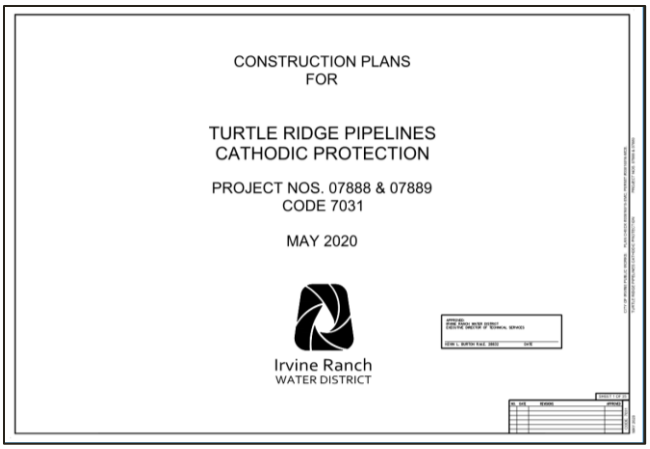
▶ Task 3. Data Collection

Our team will develop a comprehensive Field Testing Plan to assess and evaluate the existing CP systems identified under the project's Scope of Services. Objectives for the diagnostic testing include monitoring and testing to ensure the CP systems are functioning properly, are calibrated, and are providing adequate cathodic protection per NACE standards. The purpose of the Field Testing Plan is to clearly communicate the locations where testing will be performed, the approach and objective for testing the asset, identify access coordination with IRWD, identify any safety precautions or hazard mitigation measures to ensure the safety of all team members, provide contact information for the team members, and document a field testing schedule so that IRWD understands where the field crews will be working at all times.

The brief Field Testing Plan will be developed and, at a minimum, provide details for the following:

1. Summary of Background Information reviewed for each facility
2. Proposed testing methods for each facility
3. Data to be collected
4. Accessibility issues requiring IRWD assistance (the master key for padlocks at reservoir sites will be requested with at least 72-hour notice, checked out, and returned immediately following completion of testing at reservoir sites)
5. Traffic control and permitting requirements
6. Coordination with IRWD for CP system operation/shutdown/isolation
7. Field Testing/Survey Schedule

The Field Testing Plan will be submitted to IRWD for approval and upon approval, V&A will perform the field survey and testing per established industry standards, including NACE, Cal-OSHA, and the NFPA. V&A's field team will be led by Mike Sherman, a certified Corrosion Technician with over 20 years of experience in testing and evaluating CP systems. The proposed testing methods for IRWD facilities are listed as follows:



Pipelines

- GPS coordinates for each Rectifier, Cathodic Protection Test Station (CPTS) surveyed to the sub foot level using the Eos Arrow Gold and the ESRI Collector App.
- ICCP Systems: CPTS pipe-to-soil potentials with rectifier on and instant off
- Galvanic Systems: CPTS pipe to soil potential with anode on and instant off
- Rectifier output, tap settings and individual anode readings
- One-time installation of CP test station ID tags on the CPTS wires per IRWD standard drawings. Tags will be provided by the District.
- V&A understands that traffic control will be required at 32 CPTS locations. V&A has reviewed the sites and has a plan to work with a subcontractor to secure encroachment permits as required and provide traffic control during field testing.

V&A has included the new ICCP system recently installed on the Turtle Ridge Pipelines in this scope of work and is familiar with the system and its operation for corrosion control.

Reservoirs

Tank-to-water potentials at the hatch from the bottom and every foot of elevation

- Tank bottom-to-soil potentials at a minimum of four compass points
- All test equipment will be disinfected prior to insertion into domestic water reservoirs
- IRWD Systems Operations Department will be notified prior to entry of any reservoir site with a 72-hour notice provided to coordinate access
- Rectifier output, tap settings, and individual anode readings

- One-time installation of CP test station ID tags on the CPTS wires per IRWD standard drawings. Tags will be provided by the District

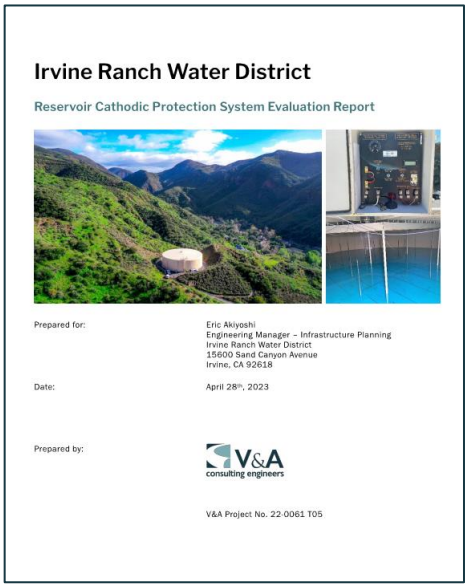
V&A recently completed the Reservoir Cathodic Protection System Evaluation Report that was performed during the winter ('22/'23) and spring of 2023. This work was performed under the Detailed Condition Assessment of Steel Tanks (PR 12252 & 12254). V&A is familiar with reservoir cathodic protection systems and will efficiently and accurately update test data and reports for 2024 through 2026.

▶ Task 4. Impressed Current Cathodic Protection System Adjustments

V&A will adjust the CP systems in order to provide the optimum level of protection for the pipelines and reservoirs in accordance with NACE International standards, including SP-0169 Control of External Corrosion on Underground or Submerged Piping Systems, SP-0196 Internal Galvanic CP for Water Tanks, RP-0193 External On-Grade Tank Bottoms, SP-0388 Internal ICCP for Water Tanks.

▶ Task 5. Initial Report

At the completion of the initial field surveys and testing for each facility, V&A will prepare a technical report that summarizes the testing performed, presents the results of the field testing, photographic documentation, identifies and prioritizes necessary repairs, and provides recommendations. The initial report will be submitted in draft form to IRWD staff for one round of review and comment approximately eight (8) weeks after issuance of the Notice to Proceed (NTP) and at least two (2) days prior to the meeting. V&A will conduct the draft initial meeting with IRWD staff, then within four (4) weeks of that meeting, submit the initial report based on comments received during the preview meeting. All draft and final reports will be submitted in electronic (PDF) format, as well as one (1) hard copy.


Irvine Ranch Water District

Reservoir Cathodic Protection System Evaluation Report

Prepared for: Eric Akiyoshi, Engineering Manager – Infrastructure Planning, Irvine Ranch Water District, 15600 Sand Canyon Avenue, Irvine, CA 92618

Date: April 28th, 2023

Prepared by: V&A consulting engineers

V&A Project No. 22-0061 T05

▶ Task 6. Quarterly Data

V&A will perform quarterly testing and adjustments as requested in the RFP Scope of Services. Fieldwork includes monitoring of rectifier output/anode readings at one CPTS midway between each rectifier/anode bed and at test points at the end of each pipeline. Adjustments to cathodic protection systems will be made as needed. The quarterly testing and adjustments are limited to the pipelines identified in the Project Understanding discussion at the beginning of this section.

▶ Task 7. Final Report

Annually, at the completion of the third quarter testing and adjustments, V&A will submit a Final Report to IRWD staff during a preview workshop. Similar to the Initial Report, five (5) bound hard copies and one electronic submittal will be provided to the District. Within four weeks of the preview/comments meeting, the Final Report will be submitted. V&A's final report will include the following:

- Initial, quarterly, and final data in a tabular and graphical format, including data observations and results from field surveys, calculations, data analysis, and the engineer's recommendations and associated cost estimates.
- Identification of potential CP system interference on project pipelines from other (non-IRWD) CP systems and/or stray currents. Mitigation recommendations will be provided.

- Summary of CP system adjustments made during the initial and/or quarterly monitoring and testing.
- Recommendations for new (type and extent) CP systems to protect District facilities, including additional test stations, joint bonds, insulators, etc. that may be required.
- V&A will include recommendations for maintenance, repair, and replacement of CP systems, including anodes, rectifiers, permanent reference cell electrodes, and additional CPTS that can be performed/installed by IRWD.
- Engineer's estimates for the design and construction of any recommended new CP systems or components.

▶ Task 8. Troubleshooting

V&A includes troubleshooting at an estimation of 40 total hours per year (120 hours total over the 3-year contract). This task will be reserved for evaluating various issues with the existing CP systems identified through the initial and quarterly monitoring.

▶ Task 9. GIS Cathodic Protection Data Provided

V&A will deliver to IRWD the following information and data from the annual and quarterly CP surveys:

1. Updated shapefiles, including GPS locations for each rectifier and CPTS surveyed and tested
2. Updated shapefile will use IRWD's new naming format for each asset surveyed
3. Updated CP survey information collected from field testing and adjustments
4. Geodatabase file with the information provided in the sample table below. Also included in the geodatabase: IRWD ID (CPID), System, Status (typically unit number), Subtype (TS, IJ, RT, SB, AW), Protected Type (GACP or ICCP), Protection (Yes or No), Pipe Diameter, Pipe Material, Wires, CP System (Pipe System Name), System Code (DW, RW, or Both)
5. Other components documented but not incorporated into the GIS are: ASBUILT, STATION, Anode Material, Conduit Size, Conduit Material, Native Read, XCOORD, YCOORD, and Test Quarterly

CTS Name (old format)	IRWD ID (new name)	System	Status	Survey Date On Potential (mV)	Survey Date Instant-Off (mV)	Polarization (Off – Native) (mV)	Native Potential (mV)	GPS Coordinates
36-01	TS061N001	Recycled	Unit 36	-1253	-951	--	--	--

Confined Space Entry

Soil Resistivity Measurement

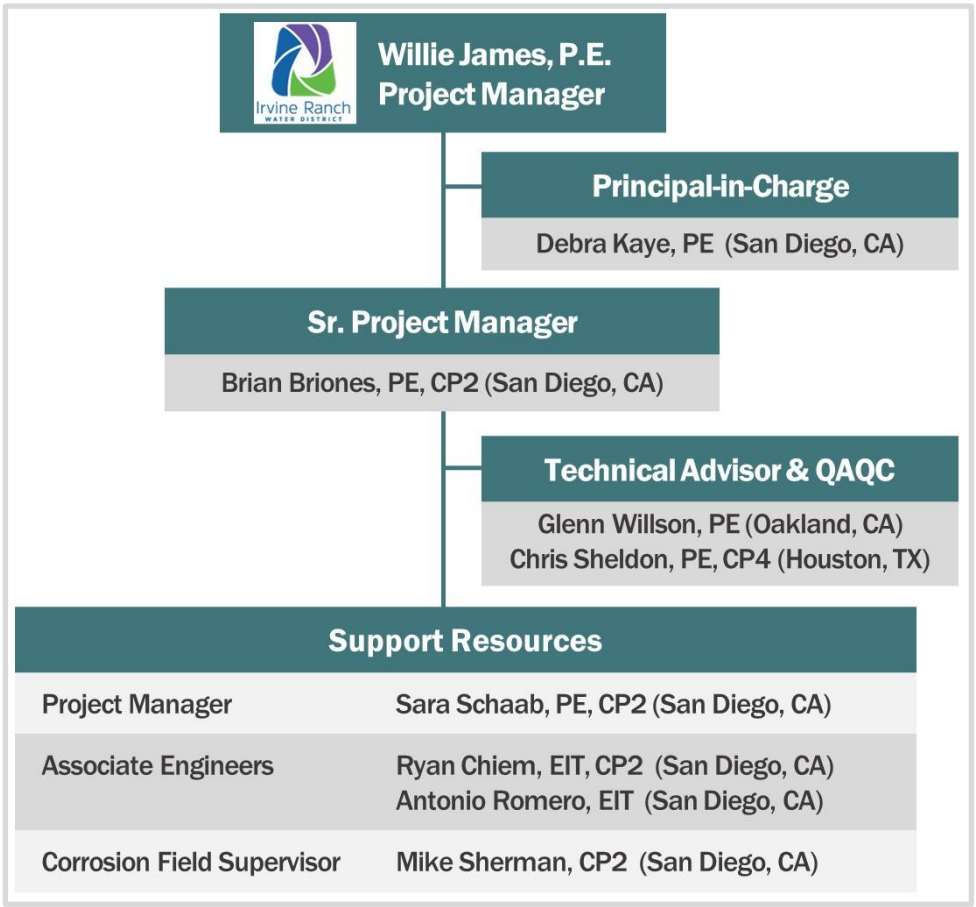
Project Team

V&A's proposed project team has a combined experience totaling more than 100 years providing corrosion engineering services. The team that has been selected for this project has the specific work experience needed to address the scope of services described in your RFP. We are very confident that IRWD will be satisfied with our technical capabilities as well as our abilities to provide excellent client service.

The members of the proposed project team have completed several challenging CP system evaluation projects and can ensure IRWD that we have the experience required to complete the work. The V&A team has completed projects that required extensive field surveys, data evaluation, engineering analysis, program development, and detailed CP design that have resulted in solutions to correct several problems or deficiencies in CP systems at significant cost savings to the client. The proposed project staff is committed to successfully delivering the consulting engineering services that arise from this project.

Additional benefits of hiring the V&A Team for IRWD's corrosion protection needs:

- Extensive experience with large corrosion control and maintenance/monitoring programs that require collecting, analyzing and presenting the data from these complex CP systems
- Proven performance record for cost and schedule control
- Capability to successfully resolve complex corrosion control issues
- Commitment to the provision of training and safety for V&A members



Detailed resumes containing discussions of project experience, education, and certifications for each proposed team member are provided in the Appendix A | Resume section.

	**Principal-in-Charge**	**Debra Kaye, PE**
	Debra will oversee the team, deliverables, and ensure quality control procedures are followed and will serve as a liaison with IRWD in case project issues arise. **San Deigo, CA | 20%**	
	**Senior Project Manager**	**Brian Briones, PE, CP2**
	Brian will be the primary contact for IRWD and will manage the team, work, budget, and deliverables for the project. **San Diego, CA | 55%**	
	**Technical Advisory/QAQC**	**Chris Sheldon, PE, CP4**
	Chris is a subject matter expert in corrosion engineering and will work with the team to review all deliverables for corrosion evaluation technical accuracy. **Houston, TX | 25%**	
	**Technical Advisory/QAQC**	**Glenn Willson, PE**
	Glenn is a subject matter expert in corrosion engineering and will work with the team to review all deliverables for corrosion evaluation technical accuracy. **Oakland, TX | 25%**	
	**Cathodic Protection Systems, Project Manager**	**Sara Schaab, PE, CP2***
	Sara is a Project Manager and will perform methods of field testing/surveys to collect valuable data, including measuring potentials, condition of anodes and rectifiers, adjustments to rectifier outputs in the field, and recommendations for improvements, and development of design packages. **San Deigo, CA | 65%** **Passed PE exam, pending registration*	
	**Cathodic Protection Systems, Associate Engineer**	**Ryan Chiem, EIT, CP2**
	Ryan will assist Sara in analyzing drawings, data, and relevant reports and will bridge results, conclusions, and recommendations of existing and new information. **San Deigo, CA | 50%**	
	**Cathodic Protection Systems, Associate Engineer**	**Antonio Romero, EIT**
	Antonio will assist Sara in analyzing drawings, data, and relevant reports and will bridge results, conclusions, and recommendations of existing and new information. **San Deigo, CA | 50%**	
	**Corrosion Field Supervisor**	**Mike Sherman, CP2**
	Mike will lead the field staff in performing methods of field testing/surveys to collect valuable data, including measuring potentials, determining the condition of anodes and rectifiers, and making adjustments to rectifier outputs in the field. **San Deigo, CA | 50%**	

B. Experience

Today's infrastructure assets were designed for a 60- to 100-year service life. Many systems are past their prime and V&A engineers assist in preserving these assets due to the damaging effects of corrosion. We pinpoint corrosion and its cause—whether atmospheric, immersed, or buried—and recommend solutions for mitigation. We incorporate an evaluation of assets in our process to determine the extent of the corrosion, design corrosion control and cathodic protection systems, and develop corrosion control master programs for long-term protection and operation.

EVALUATION

Our team evaluates the condition of assets in a corrosion control system for rehabilitation and repair. We perform field testing to verify proper operation of existing corrosion control measures, evaluate the extent of the corrosion and identify critical areas that need to be addressed for all facilities and infrastructure within an agency's system.

DESIGN

We help select the materials that will address corrosive environments, including coatings, linings, and cathodic protection systems. We evaluate and design cathodic protection systems that are the appropriate solution for each project. In addition, our corrosion engineers can recommend materials and cathodic protection systems for new water, recycled water or wastewater treatment plants, pump stations, or underground infrastructure.

PLANNING

We develop corrosion control management plans/ programs, including staffing plans, and operation and maintenance standard operating procedure manuals to ensure the system is fine-tuned and providing the intended protection from corrosion.

Through data collection and in-depth reports, we will provide the information required to make intelligent decisions both for immediate needs and future challenges. Our in-house corrosion engineering support services, specialized equipment and capabilities include the following:

- Comprehensive cathodic protection design and analysis
- Detailed summary presentations and reports
- Full-service corrosion testing and services:
  - Soil Resistivity Testing
  - Cell to Cell or Over the Line Surveys
  - Native Potential Surveys
  - CP System Commissioning, Checkouts and Repairs
  - Stray Current Interference (DC and AC) Identification and Mitigation Design Solutions
  - Rectifier Testing, Repair and Adjustments
  - Isolation Joint Testing
  - Discontinuity Testing
  - Non-destructive Testing Equipment
  - Broadband Electromagnetic (BEM)
  - GIS Data Collection and Mapping
  - Rebar Locating Equipment
  - Surface Penetrating Radar
  - Coating Inspection Services
  - Adhesion Test Equipment

Included in this section are project descriptions that V&A has successfully completed or is currently performing for clients with issues and needs similar to those of IRWD. Client reference contact information is provided for each project description.

Irvine Ranch Water District. Irvine, CA

Turtle Ridge Pipelines Corrosion Survey & Cathodic Protection Design

Excavation

Electrical Continuity Testing

Potholing

V&A Consulting Engineers (V&A) has completed a condition assessment and corrosion survey and is currently performing a detailed design of a new impressed current cathodic protection (CP) system for an existing domestic waterline (DW) and reclaimed waterline (RW) installed along Turtle Ridge Drive in Irvine, CA. Owned and operated by Irvine Ranch Water District (IRWD), the DW consists of 1,780 feet of 16-inch ductile iron pipe (DIP) and the RW consists of 1,870 feet of 10-inch DIP. Both pipelines have short spans of cement mortar lined and coated (CML&C) and have experienced a leak due to corrosion in the past 36 months.

The condition assessment performed on the pipelines comprised reviewing data from an existing corrosion investigation report (performed by others) and excavating the pipelines (one excavation per pipeline) where corrosion is most likely to occur. At the excavated pipes, a visual assessment and broadband electromagnetic testing were performed from the outside of the pipe to determine the remaining pipe wall thickness over the entire circumference of the pipe along a 3-foot length. The corrosion survey included soil resistivity testing, current requirement testing, electrical isolation testing, electrical continuity testing, and potholing to identify the recommended CP system to mitigate external corrosion of the project pipelines. V&A prepared a preliminary design report documenting the findings and recommending an impressed current CP system, including recommendations to properly isolate the pipeline, bond discontinuities in the pipeline, and installation of missing test stations. V&A completed a detailed design of the system that is currently commissioned and operating.

Project Owner:	Irvine Ranch Water District	Discipline:	Corrosion Engineering
Project Location:	Irvine, CA	Sub or Prime:	Prime
Contract Fee:	$188,823	Reference Name:	Tom Bonkowski
Construction Cost:	n/a	Reference Company:	IRWD
Start Date:	3.2018	Reference Address:	P.O. Box 57000 Irvine, CA 92619
Completion Date:	Active	Reference Email:	bonkowsk@irwd.com
On-time:	Yes	Reference Phone:	949.453.5300
In Budget:	Yes		
Key Personnel:	Debra Kaye, PE – PIC; Brian Briones, PE – Project Manager; Sara Schaab, EIT – Project Engineer; Mike Sherman – CP2, Engineering Assistant		

Irvine Ranch Water District. Irvine, CA

Detailed Condition Assessment of Steel Tanks.

Corrosion on tank roof

Corrosion around inlet pipe inside a tank

Failure of a tank liner

IRWD retained V&A Consulting Engineers (V&A) to perform condition assessment and corrosion engineering services, including reviewing background information for 14 steel tanks, and performing field testing and cathodic protection surveys.

V&A completed the condition assessments of fourteen (14) steel tanks in spring 2023. The study aimed to identify equipment and infrastructure recommended for repair or replacement documented in a Condition Assessment and 5-Year Prioritized Project Report.

V&A delivered a report that identifies equipment and infrastructure recommended for repair and/or replacement, as well as cost estimates for the implementation of proposed recommendations. Recommendations that IRWD approved were packaged and prioritized into a Capital Improvement Plan that will be provided to the IRWD design teams.

Project Owner:	Irvine Ranch Water District	Discipline:	Condition Assessment
Project Location:	Irvine, CA	Sub or Prime:	Prime
Contract Fee:	$278,119	Reference Name:	Eric Akiyoshi, P.E.
Construction Cost:	Unknown	Reference Company:	Irvine Ranch Water District
Start Date:	9/7/2022	Reference Address:	15600 Sand Canyon Avenue Irvine, CA 92618
Completion Date:	Active	Reference Email:	akiyoshi@irwd.com
On-time:	Yes	Reference Phone:	949.453.5529
In Budget:	Yes		
Key Personnel:	Debra Kaye, P.E. – PIC, Brian Briones, P.E. – Senior Project Manager, Farshad Malek, P.E. – Project Manager, Jessica Mullins, P.E. – Project Engineer, Sara Schaab, EIT – Project Engineer (corrosion), Marci Sponsler, EIT – Associate Engineer II, Khaleel Abdulsattar – Graduate Engineer, Joseph Garcia – Engineering Technician		

San Diego County Water Authority. San Diego, CA

As-Needed Corrosion Support Services

San Vicente Pipeline at Central Shaft

CP test station at Tri-Agencies Pipeline vault

Continuity Testing Ramona Pipeline, Pipeline Air Valve Vault

V&A provides as-needed corrosion engineering support services to the San Diego County Water Authority. Recently, V&A has been providing engineering plan reviews to address corrosion concerns pertaining to the design, construction, and operation of various facilities, including the Mission Trails Flow Regulatory Structure II/ Flow Control Facility project, Olivenhain Reservoir Dam Outlet Tower Gates CP System, Miramar Hill Pipeline 4, and the Northern First Aqueduct Structures and Lining Rehabilitation project.

V&A also works with the San Diego Water Authority to evaluate and troubleshoot existing CP systems. V&A previously tested 23 of the existing systems comprised of 579 test stations and 37 rectifiers. Surveys were performed by a NACE CP2 Technician, while the data analysis and report were provided by a NACE-certified CP4, which documented the CP testing results and provided recommendations for improvements.

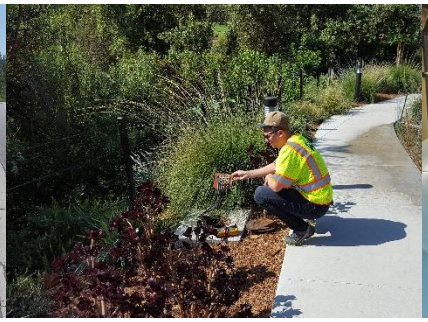
Out of 579 test stations tested, 86 did not meet NACE Standard SP-0169. A total of 69 recommendations were assigned a priority rating between 1 and 4, 4 being the highest priority. V&A conducted further investigation of four structures that did not meet the NACE standard. The investigation included the evaluation of possible structures draining CP current and current requirement testing in accordance with the polarized shift method.

Project Owner:	San Diego County Water Authority	Discipline:	Corrosion Engineering | water
Project Location:	San Diego, CA	Sub or Prime:	Prime
Contract Fee:	$341,120	Reference Name:	Brian DiLuca, EIT, CP3
Construction Cost:	N/A	Reference Company:	San Diego County Water Authority
Start Date:	5.2014	Reference Address:	610 West 5th Avenue Escondido, CA 92025
Completion Date:	Active	Reference Email:	bdiluca@sdcwa.org
On-time:	Yes	Reference Phone:	760.233.3225
In Budget:	Yes		
Key Personnel:	Brian Briones, PE – Sr. Project Manager, Glenn Willson, PE – PIC; Chris Sheldon, PE, CP4 – Corrosion SME; Sara Schaab, PE, CP3 – Project Manager, Antonio Romero, EIT – Associate Engineer, Mike Sherman, CP2 – Engineering Assistant		

Moulton Niguel Water District. Mission Viejo, CA

Central Intertie Pipeline Cathodic Protection Design

Electrical Continuity Testing



Current Requirement Testing

Bridlewood Flow Control Facility

As part of the Central Intertie Pipeline (CIP) Improvements Project, V&A Consulting Engineers (V&A) has completed a detailed design of a new impressed current cathodic protection (CP) system for the existing CIP. Owned and operated by Moulton Niguel Water District (MNWD), the CIP consists of approximately 3.5 miles of 36- to 54-inch cement mortar lined and coated welded steel water pipe installed along Oso Parkway between the Bridlewood Flow Control Facility and Turnout SC-2. The CIP is comprised of two electrically isolated segments and was installed without a CP system.

To assist in the design of the CIP CP system, V&A performed soil resistivity, electrical continuity, and current requirement testing for the subject pipeline. During the fieldwork, V&A also coordinated and observed the deployment of a CCTV camera into 6-inch air vent piping at two manway vaults to determine the alignment and condition of the air vent piping. A Preliminary Design Report was prepared to document the findings of the field testing and recommend an impressed current CP system, including recommendations to install missing test stations. V&A completed a detailed design of the new impressed current CP system which includes three rectifiers and three deep anode wells with a depth of up to 200 feet. Construction of the CP system is scheduled to occur between November 2018 and March 2019. At completion of construction, V&A will develop a long-range monitoring and maintenance plan for the pipeline and related appurtenances. The plan will include the frequency of manway/vault inspections and cleaning, frequency of testing the cathodic protection system, frequency of internal pipeline condition assessments, and frequency of valve assessments.

Project Owner:	Moulton Niguel Water District	Discipline:	Corrosion Engineering
Project Location:	Mission Viejo, CA	Sub or Prime:	Sub
Contract Fee:	$176,683	Reference Name:	Alex Thomas, PE
Construction Cost:	n/a	Reference Company:	MNWD
Start Date:	7.2017	Reference Address:	26161 Gordon Road Laguna Hills, CA 92653
Completion Date:	8.2021	Reference Email:	smyth@irwd.com
On-time:	Yes	Reference Phone:	949.425.3563
In Budget:	Yes		
Key Personnel:	Debra Kaye, PE- PIC; Brian Briones, PE–Project Manager; Mike Sherman–CP2, Engineering Assistant		

Coachella Valley Water District. Coachella Valley, CA

Corrosion Protection Consulting Services

Steel Pipeline belonging to CVWD

Reservoir belonging to CVWD

Canal maintained by CVWD

V&A assisted in the district-wide effort to improve the efficiency of the CVWD's 12 cathodic protection (CP) systems. V&A provided corrosion protection consulting services to assess the CP systems owned by CVWD. The CP systems for the Bombay Beach pipeline have been offline since 2013 when it was found that the pipelines suffered from electrical discontinuities. V&A provided corrosion protection consulting services to assess the locations of discontinuities so the CP system could be brought back online. For the other 11 projects, the purpose of the testing was to document the physical condition of the CP facilities, including rectifiers, current control equipment, anodes, shunts, bonding, coatings, and isolation systems for impressed current, sacrificial anode, and corrosion monitoring systems, and to perform operation testing in the field.

V&A oversaw the assessment of twelve different structures and pipelines. The condition assessment consisted of visual evaluation with photo documentation, rectifier output measurements, and the attenuation, linear resistance, and fixed-cell methods for determining electrical continuity. V&A prepared multiple detailed reports for each facility's CP system that included recommendations for continued monitoring and maintenance of the CVWD systems. The goal of the project was to protect and ensure the structural integrity of the CVWD's existing domestic water, sanitation, stormwater, non-potable, recharge, canal and irrigation facilities.

Project Owner:	Coachella Valley Water District	Discipline:	Condition Assessment, Corrosion Eng.
Project Location:	Coachella Valley, CA	Sub or Prime:	Prime
Original Contract Amount:	$436,966	Reference Name:	Angel Herrera
Final Contract Amount:	$428,051	Reference Title:	Project Manager
Construction Cost:	N/A	Reference Company:	Coachella Valley Water District
Start Date:	09.2019	Reference Address:	51501 Tyler Street Coachella, CA 92236
Completion Date:	06.2023		
On-time:	Yes	Reference Email:	aherrera@cvwd.org
In Budget:	Yes	Reference Phone:	(760) 398-2651, ext. 2426
Key Personnel:	Debra Kaye, PE – PIC; Brian Briones, PE – Southwest Regional Manager; Jessica Mullins, PE – Project Manager; Sara Schaab, EIT – Project Manager; Marci Sponsler, EIT – Associate Engineer II; Clay Shaffer – Graduate Engineer; Michael Sherman – Engineering Associate; Joseph Garcia – Engineering Assistant		

Sweetwater Authority. San Diego, CA

Annual Corrosion Engineering Services

Post-mounted Test Station

Rectifier

At-grade Test Station

Since 2005 and contracted through 2028, V&A has provided design services and annual surveys of the Sweetwater Authority's CP systems for the water transmission system. V&A also conducts regular surveys of the CP systems to verify that adequate corrosion protection is being provided. The surveys include measuring pipe-to-soil potentials at every accessible test station, evaluating the condition of the test stations and rectifiers, and adjusting the rectifier outputs in the field in order to meet the NACE International criteria for corrosion protection. V&A also provides routine maintenance on the CP systems, replacing broken and/or missing test stations and rectifier components.

V&A provides the Sweetwater Authority with a comprehensive report at the conclusion of each annual survey, which provides a summary of the work performed and a prioritized list of project recommendations. Our work history is maintained in a GIS-based database that we provide and update for the Sweetwater Authority each year. As part of the contract for 2018, V&A will provide corrosion technicians and engineering support to develop a CP Master Plan for the reservoirs and tanks within the system.

Project Owner:	Sweetwater Authority	Discipline:	Corrosion Engineering | water
Project Location:	Chula Vista, CA	Sub or Prime:	Prime
Contract Fee:	$50,000/year	Reference Name:	Chris Bauer
Construction Cost:	N/A	Reference Company:	Sweetwater Authority
Start Date:	7.2005	Reference Address:	P.O. Box 2328 Chula Vista, CA 91912-2328
Completion Date:	Active	Reference Email:	cbauer@sweetwater.org
On-time:	Yes	Reference Phone:	619.409.6751
In Budget:	Yes		
Key Personnel:	Glenn Willson, PE – PIC; Brian Briones, PE – Sr. Project Manager; Sara Schaab, PE, CP3 – Project Manager, Mike Sherman, CP2 – Engineering Assistant		

Orange County Water District. Fountain Valley, CA

Green Acres Newport Beach and SE Loop Pipelines Cathodic Protection Design

"Attenuation" Continuity Test Method Setup

Test Station on Pipeline Alignment

Pipeline Test Wires

V&A Consulting Engineers, Inc. (V&A) was retained by Orange County Water District (OCWD) to design a CP system for the Green Acres Project (GAP) Newport Beach and Southeast (SE) Loop Pipelines. The GAP piping is a recycled water system that was installed in the 1990s to treat and distribute water to five water agencies in northern Orange County. The piping included in the CP system design consists of approximately 47,025 feet of ductile iron pipe (DIP) and cement mortar lined and coated (CML&C) steel pipe ranging in diameter from 16 to 36 inches.

V&A performed a site visit to the project location to perform continuity and current requirement testing. Continuity testing was performed using the "attenuation" test method, and current requirement testing was performed using the "polarization shift" test method. The results of the testing were used to assist in the design of the CP systems.

The Design report presents a discussion of corrosion control and the field test methods, summarizes the results of the field testing, discusses the CP system design process, and provides recommendations for corrosion control of each pipeline. The recommendations presented were used to submit a complete set of drawings and specifications for each pipeline's CP system.

Project Owner:	Orange County Water District	Discipline:	Corrosion Engineering | water
Project Location:	Fountain Valley, CA	Sub or Prime:	Prime
Contract Fee:	$114,075	Reference Name:	Fernando Almario, PE
Construction Cost:	N/A	Reference Company:	Orange County Water District
Start Date:	5.2017	Reference Address:	P.O. Box 8300 Fountain Valley, CA 92728-8300
Completion Date:	Active	Reference Email:	falmario@ocwd.com
On-time:	Yes	Reference Phone:	714.378.8220
In Budget:	Yes		
Key Personnel:	Debra Kaye, PE – PIC; Brian Briones, PE – Project Manager; Mike Sherman, CP2 – Engineering Assistant;		

List of Representative Projects

Client - Project Name	Description | Relevance to IRWD
Irvine Ranch Water District Turtle Ridge Pipelines Corrosion Survey and Cathodic Protection Design	▪ Reviewed corrosion investigation reports (prepared by others) ▪ Performed corrosion survey: soil resistivity, current requirement, electrical isolation, electrical continuity, potholing ▪ Prepared PDR, design plans and specifications to install an impressed current CP system ▪ Provided recommendations to properly isolate pipelines, bond discontinuities, and install missing test stations ▪ Providing engineering services during construction and CP system operations manual
East Orange County Water District (EOCWD) 2022-2023 Annual CP Survey	▪ Annual corrosion survey of the cathodic protection and corrosion monitoring systems ▪ Evaluation of the metallic water transmission pipelines and water storage reservoirs
Eastern Municipal Water District (EMWD) Pipeline Corrosion Protection Program	▪ Developed a corrosion protection plan ▪ Developed and recommended best practices ▪ High-level assessments of existing infrastructure ▪ Develops short-, medium-, and long-term optimization plans
Moulton Niguel Water District Central Intertie Pipeline Cathodic Protection Design	▪ Performed corrosion survey: soil resistivity, current requirement, electrical isolation, electrical continuity ▪ Prepared PDR, design plans and specifications to install an impressed current CP system and install missing test stations ▪ Developed long-range monitoring and maintenance plan for pipeline and new CP system ▪ Providing engineering services during construction and CP operations manual
Orange County Water District Green Acres Project Newport Beach and SE Loop Pipelines CP Design	▪ Recycled water piping was installed in the 1990s with no corrosion control system ▪ Performed continuity and current requirement testing ▪ Prepared PDR, design drawings and specifications for each pipeline's recommended CP system ▪ Providing engineering services during construction and CP operations manual
San Diego County Water Authority As-Needed Corrosion Engineering Support Services	▪ Evaluate and troubleshoot existing CP systems, including current requirement testing ▪ Provide engineering design review to address concerns related to the design, construction, and operation of CP systems on SDCWA pipelines and facilities
San Bernardino Valley Municipal Water District	▪ Perform annual CP system evaluation on 11 existing pipelines featuring a corrosion monitoring system, a galvanic anode CP

Client - Project Name	Description | Relevance to IRWD
Cathodic Protection System Evaluation	system, or an impressed current CP system. ▪ Performed troubleshooting and design to move test stations from roadways to back of curb for ease of access and limiting traffic control requirements ▪ Prepared summary report of findings and recommendations including prioritized list for future O&M, locating missing test stations, replacing CP system components, and installing CP system on non-cathodically protected pipes
Sweetwater Authority Annual CP System Survey and Steel Tanks CP Master Plan	▪ Perform annual CP system evaluation on existing pipelines featuring a corrosion monitoring system, a galvanic anode CP system, or an impressed current CP system. ▪ Prepared summary report of findings and recommendations, including prioritized list for future O&M, locating missing test stations, replacing CP system components, and installing CP system on non-cathodically protected pipes ▪ Performed cathodic protection system assessment on 25 steel tanks/reservoirs; measured tank-to-water potentials, performed visual assessments with photo documentation, completed current requirement evaluations ▪ Prepared Steel Tank CP Master Plan report presenting findings of evaluations and provided recommendations for monitoring and maintenance of new and existing cathodic protection systems
Sacramento Regional Sanitation District Corrosion Protection Management Plan	▪ Performed CP system survey, including inventory and condition ratings of assets ▪ Developed long-term monitoring and maintenance program for existing CP systems ▪ Identified and evaluated staffing and resource alternatives
Vallecitos Water District As-Needed Professional Services	▪ Corrosion Control System Repairs ▪ Ductile Iron Pipe Assess Program ▪ Condition Assessment 12-Inch Sanitary Sewer Pipeline ▪ Lead Service Lines Inventory Data Analysis
Western Municipal Water District Corrosion Data Management Services	▪ Develop data entry user interface and work process for the District's CP system ▪ Integrated data entry interface with the District's asset management program ▪ Processed and closed over 900 existing work orders during an annual pipeline corrosion survey ▪ Entered survey data to an interface, including pipeline potentials, anode current outputs, GIS coordinates, test station conditions, etc.

C. Schedule

V&A Consulting Engineers assures IRWD that we have the ability to complete all work, considering the firm's current and planned workload, based on the proposed schedules:

2024 Schedule

- Kick-Off Meeting ..... January 23, 2024
- Initial Annual Monitoring ..... February 5, 2024
- Initial Draft Monitoring Report Submittal ..... April 1, 2024
- Initial Monitoring Report Submittal ..... May 2, 2024
- Quarterly Data Collection ..... May 2024
- Quarterly Data Collection ..... August 2024
- Quarterly Data Collection ..... November 2024
- Draft Final Report ..... December 2024
- Final Annual 2024 Report ..... January 2025

V&A Consulting Engineers assures IRWD that we have the ability to complete all work, considering the firm's current and planned workload, based on the proposed 2024 schedule:

2025/2026 Schedules

- Initial Annual Monitoring ..... January 2025/2026
- Initial Draft Monitoring Report Submittal ..... February 26, 2025/2026
- Initial Monitoring Report Submittal ..... March 25, 2025/2026
- Quarterly Data Collection ..... April 2025/2026
- Quarterly Data Collection ..... July 2025/2026
- Quarterly Data Collection ..... October 2025/2026
- Draft Final Report ..... November 2025/2026
- Final Annual 2024 Report ..... December 2025/2026

D. Budget

A proposed budget, which encompasses the scope of work detailed in Irvine's RFP, is presented in a resource allocation estimate and is provided in a separate file.

F. Joint Venture

V&A is submitting this proposal as a Prime and will not be working with another firm as a joint venture.

G. Conflict of Interest

V&A confirms that personal or organizational conflicts of interest prohibited by law do not exist.

H. Contract

V&A will not request any modifications to IRWD's Professional Services Agreement.

I. Insurance

V&A has included a copy from our provider on the following page for the required coverages as shown in the Professional Services Agreement are satisfied under our existing insurance policy.

J. Public Work Requirement

V&A's DIR registration number is 1000007205.

V&A Consulting Engineers, Inc.
11011 Via Frontera, Suite C
San Diego, CA 92127
858.576.0226
www.vaengineering.com

V&A

11011 Via Frontera
Suite C
San Diego, CA 92127

858.576.0226 Tel
510.903.6601 Fax
vaengineering.com

Resource Allocation Estimate Summary

JOB NO: 23-0355

12/19/2023

CLIENT: Irvine Ranch Water District

PROJECT NAME: Engineering Services for the 3-Year Cathodic Protection Systems Monitoring Program

Task	Description	Principal-in-Charge	Senior Project Manager	Project Manager	Project Engineer	Associate Engineer	Graduate Engineer	Corrosion Field Supervisor	Project Admin/Clerical	Total Labor Hours	Subtotal Labor Cost	Subtotal ODC	Total Labor Cost and ODC by Task
1	Project Management	4	13	58				54	3	132	$ 30,277.00	$ 78.60	$ 30,355.60
2	Background Material Collection and Review					8		18		26	$ 4,580.00		$ 4,580.00
3	Data Collection			1		12	366	566	1	946	$157,476.00	$ 66,543.60	$ 224,019.60
4	Impressed Current Cathodic Protection System Adjustments						38	38		76	$ 12,616.00	$ 5,820.60	$ 18,436.60
5	Initial Report		6	22	22	60		24	3	137	$ 29,020.00		$ 29,020.00
6	Quarterly Data			2			56	136		194	$ 32,420.00	$ 16,799.00	$ 49,219.00
7	Final Report		3	18		84			3	108	$ 22,827.00		$ 22,827.00
8	Troubleshooting							120		120	$ 19,920.00		$ 19,920.00
9	GIS Cathodic Protection Data					40				40	$ 7,960.00		$ 7,960.00
	Subtotal Direct Labor Hours	4	22	101	22	204	460	956	10	1779			
	Hourly	$ 333.00	$ 291.00	$ 274.00	$ 228.00	$ 199.00	$ 166.00	$ 166.00	$ 102.00				
	Subtotal Direct Labor Cost	$ 1,332.00	$ 6,402.00	$ 27,674.00	$ 5,016.00	$ 40,596.00	$ 76,360.00	$ 158,696.00	$ 1,020.00		$317,096.00	$ 89,241.80	$ 406,337.80

Other Direct Costs	Unit Cost	Units	No. of Units							Subtotal ODC	
Truck	$ 100.00	per day	79							$ 7,900.00	
Mileage	$ 0.66	per mile	2,280							$ 1,493.40	
Hotel	$ 200.00	per night	46							$ 9,200.00	
Per Diem for Full Day	$ 75.00	per day	66							$ 4,950.00	
Prevailing Wage Markup (30% of Travel/Onsite Labor)	$ 0.30	30% of Travel/Onsite	134,128							$ 40,238.40	
CP Survey Equipment	$ 100.00	per day	61							$ 6,100.00	
Subcontractor - Traffic Control	$ 1.10	cost + 10%	17,600							$ 19,360.00	
Subtotal Other Direct Costs										$ 89,241.80	
GRAND TOTAL ESTIMATED COST											**$ 406,337.80**

Detailed Resource Allocation Estimate

JOB NO: 23-0355 12/19/2023

CLIENT: Irvine Ranch Water District

PROJECT NAME: Engineering Services for the 3-Year Cathodic Protection Systems Monitoring Program

Task Item		Labor										ODCs								
Task	Description	Principal-in-Charge	Senior Project Manager	Project Manager	Project Engineer	Associate Engineer	Graduate Engineer	Corrosion Field Supervisor	Project Admin/Clerical	Total Labor Hours	Subtotal Labor Cost	Truck (per day)	Mileage (per mile)	Hotel (per night)	Per Diem for Full Day (per day)	Prevailing Wage Markup (30% of Travel/Onsite Labor)	CP Survey Equipment (per day)	Subcontractor - Traffic Control (cost + 10%)	Subtotal ODC	Total Cost by Task
1	**Project Management**	**4**	**13**	**58**	**0**	**0**	**0**	**54**	**3**	**132**	**$ 30,277.00**	**$ -**	**$ 78.60**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 78.60**	**$ 30,355.60**
	Project Setup	*1*	*2*					*8*		*11*	*$ 2,243.00*								*$ -*	*$ 2,243.00*
	DIR Coordination		*2*					*12*		*14*	*$ 2,574.00*								*$ -*	*$ 2,574.00*
	General PM/Quarterly Updates		*2*	*8*						*10*	*$ 2,774.00*								*$ -*	*$ 2,774.00*
	Invoicing			*18*				*18*		*36*	*$ 7,920.00*								*$ -*	*$ 7,920.00*
	Project Controls									*0*	*$ -*								*$ -*	*$ -*
	Kickoff Meeting		*4*	*8*				*4*		*16*	*$ 4,020.00*		*120*						*$ 78.60*	*$ 4,098.60*
	Meetings/Workshops (virtual) + minutes			*24*				*12*		*36*	*$ 8,568.00*								*$ -*	*$ 8,568.00*
	QAQC	*3*	*3*						*3*	*9*	*$ 2,178.00*								*$ -*	*$ 2,178.00*
										0	*$ -*								*$ -*	*$ -*
2	**Background Material Collection and Review**	**0**	**0**	**0**	**0**	**8**	**0**	**18**	**0**	**26**	**$ 4,580.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4,580.00**
	Pipelines with ICCP Systems					*4*		*12*		*16*	*$ 2,788.00*								*$ -*	*$ 2,788.00*
	Pipelines with GACP Systems					*2*		*4*		*6*	*$ 1,062.00*								*$ -*	*$ 1,062.00*
	Reservoirs					*2*		*2*		*4*	*$ 730.00*								*$ -*	*$ 730.00*
										0	*$ -*								*$ -*	*$ -*
3	**Data Collection**	**0**	**0**	**1**	**0**	**12**	**366**	**566**	**1**	**946**	**$ 157,476.00**	**$6,000.00**	**$943.20**	**$ 5,600.00**	**$ 3,150.00**	**$ 27,290.40**	**$ 4,200.00**	**$ 19,360.00**	**$ 66,543.60**	**$ 224,019.60**
	Develop Field Plan			*1*		*12*			*1*	*14*	*$ 2,764.00*								*$ -*	*$ 2,764.00*
	Year 2024									*0*	*$ -*								*$ -*	*$ -*
	Field Coordination, Equipment Prep, Data						*8*	*8*		*16*	*$ 2,656.00*								*$ -*	*$ 2,656.00*
	Travel						*18*	*18*		*36*	*$ 5,976.00*					*$ 5,976.00*			*$ 1,792.80*	*$ 7,768.80*
	PW Field Testing									*0*	*$ -*								*$ -*	*$ -*
	Pipeline ICCP Systems (516 CPTS + 47 rectifiers)						*40*	*160*		*200*	*$ 33,200.00*	*20*	*480*	*12*	*18*	*$ 33,200.00*	*18*	*6400*	*$ 24,864.40*	*$ 58,064.40*
	Pipeline GACP Systems (102 CPTS)						*40*	*40*		*80*	*$ 13,280.00*								*$ -*	*$ 13,280.00*
	Reservoirs (17 total)						*24*	*24*		*48*	*$ 7,968.00*								*$ -*	*$ 7,968.00*
	Year 2025									*0*	*$ -*								*$ -*	*$ -*
	Field Coordination, Equipment Prep, Data						*12*	*12*		*24*	*$ 3,984.00*								*$ -*	*$ 3,984.00*
	Travel						*18*	*18*		*36*	*$ 5,976.00*					*$ 5,976.00*			*$ 1,792.80*	*$ 7,768.80*
	PW Field Testing									*0*	*$ -*								*$ -*	*$ -*
	Pipeline ICCP Systems (516 CPTS + 47 rectifiers)						*40*	*80*		*120*	*$ 19,920.00*	*20*	*480*	*8*	*12*	*$ 19,920.00*	*12*	*5600*	*$ 18,150.40*	*$ 38,070.40*
	Pipeline GACP Systems (102 CPTS)						*24*	*24*		*48*	*$ 7,968.00*								*$ -*	*$ 7,968.00*
	Reservoirs (17 total)						*24*	*24*		*48*	*$ 7,968.00*								*$ -*	*$ 7,968.00*
	Year 2025									*0*	*$ -*								*$ -*	*$ -*
	Field Coordination, Equipment Prep, Data						*12*	*12*		*24*	*$ 3,984.00*								*$ -*	*$ 3,984.00*
	Travel						*18*	*18*		*36*	*$ 5,976.00*					*$ 5,976.00*			*$ 1,792.80*	*$ 7,768.80*
	PW Field Testing									*0*	*$ -*								*$ -*	*$ -*
	Pipeline ICCP Systems (516 CPTS + 47 rectifiers)						*40*	*80*		*120*	*$ 19,920.00*	*20*	*480*	*8*	*12*	*$ 19,920.00*	*12*	*5600*	*$ 18,150.40*	*$ 38,070.40*
	Pipeline GACP Systems (102 CPTS)						*24*	*24*		*48*	*$ 7,968.00*								*$ -*	*$ 7,968.00*
	Reservoirs (17 total)						*24*	*24*		*48*	*$ 7,968.00*								*$ -*	*$ 7,968.00*
										0	*$ -*								*$ -*	*$ -*
4	**Impressed Current Cathodic Protection System Adjustments**	**0**	**0**	**0**	**0**	**0**	**38**	**38**	**0**	**76**	**$ 12,616.00**	**$ 400.00**	**$235.80**	**$ 400.00**	**$ 600.00**	**$ 3,784.80**	**$ 400.00**	**$ -**	**$ 5,820.60**	**$ 18,436.60**
	Year 2024									*0*	*$ -*								*$ -*	*$ -*
	Travel						*2*	*2*		*4*	*$ 664.00*					*$ 664.00*			*$ 199.20*	*$ 863.20*
	PW Field Adjustments						*16*	*16*		*32*	*$ 5,312.00*	*2*	*120*	*2*	*4*	*$ 5,312.00*	*2*		*$ 2,772.20*	*$ 8,084.20*
	Year 2025									*0*	*$ -*								*$ -*	*$ -*
	Travel						*2*	*2*		*4*	*$ 664.00*					*$ 664.00*			*$ 199.20*	*$ 863.20*
	PW Field Adjustments						*8*	*8*		*16*	*$ 2,656.00*	*1*	*120*		*2*	*$ 2,656.00*	*1*		*$ 1,225.40*	*$ 3,881.40*
	Year 2025									*0*	*$ -*								*$ -*	*$ -*
	Travel						*2*	*2*		*4*	*$ 664.00*					*$ 664.00*			*$ 199.20*	*$ 863.20*
	PW Field Adjustments						*8*	*8*		*16*	*$ 2,656.00*	*1*	*120*		*2*	*$ 2,656.00*	*1*		*$ 1,225.40*	*$ 3,881.40*
	ONLY INSERT ROWS ABOVE THIS ROW									*0*	*$ -*								*$ -*	*$ -*
5	**Initial Report**	**0**	**6**	**22**	**22**	**60**	**0**	**24**	**3**	**137**	**$ 29,020.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 29,020.00**
	Year 2024									*0*	*$ -*								*$ -*	*$ -*
	Draft Initial Report		*1*	*4*	*8*	*12*		*8*	*1*	*34*	*$ 7,029.00*								*$ -*	*$ 7,029.00*
	Final Initial Report		*1*	*2*	*2*	*8*				*13*	*$ 2,887.00*								*$ -*	*$ 2,887.00*
	Year 2025									*0*	*$ -*								*$ -*	*$ -*
	Draft Initial Report		*1*	*4*	*4*	*12*		*8*	*1*	*30*	*$ 6,117.00*								*$ -*	*$ 6,117.00*
	Final Initial Report		*1*	*2*	*2*	*8*				*13*	*$ 2,887.00*								*$ -*	*$ 2,887.00*
	Year 2026									*0*	*$ -*								*$ -*	*$ -*
	Draft Initial Report		*1*	*8*	*4*	*12*		*8*	*1*	*34*	*$ 7,213.00*								*$ -*	*$ 7,213.00*
	Final Initial Report		*1*	*2*	*2*	*8*				*13*	*$ 2,887.00*								*$ -*	*$ 2,887.00*
										0	*$ -*								*$ -*	*$ -*

6	**Quarterly Data**	**0**	**0**	**2**	**0**	**0**	**56**	**136**	**0**	**194**	**$ 32,420.00**	**$1,500.00**	**$ 235.80**	**$ 3,200.00**	**$ 1,200.00**	**$ 9,163.20**	**$ 1,500.00**	**$ -**	**$ 16,799.00**	**$ 49,219.00**
	Field Coordination, Equipment Prep, Data			*2*			*4*	*4*		*10*	*$ 1,876.00*								*$ -*	*$ 1,876.00*
	Travel						*12*	*12*		*24*	*$ 3,984.00*					*$ 3,984.00*			*$ 1,195.20*	*$ 5,179.20*
	Field Testing (PW)						*40*	*120*		*160*	*$ 26,560.00*	*15*	*360*	*16*	*16*	*$ 26,560.00*	*15*		*$ 15,603.80*	*$ 42,163.80*
										0	*$ -*								*$ -*	*$ -*
7	**Final Report**	**0**	**3**	**18**	**0**	**84**	**0**	**0**	**3**	**108**	**$ 22,827.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 22,827.00**
	Year 2024									*0*	*$ -*								*$ -*	*$ -*
	Draft Final Report		*1*	*4*		*24*			*1*	*30*	*$ 6,265.00*								*$ -*	*$ 6,265.00*
	Final Report			*2*		*4*				*6*	*$ 1,344.00*								*$ -*	*$ 1,344.00*
	Year 2025									*0*	*$ -*								*$ -*	*$ -*
	Draft Final Report		*1*	*4*		*24*			*1*	*30*	*$ 6,265.00*								*$ -*	*$ 6,265.00*
	Final Report			*2*		*4*				*6*	*$ 1,344.00*								*$ -*	*$ 1,344.00*
	Year 2026									*0*	*$ -*								*$ -*	*$ -*
	Draft Final Report		*1*	*4*		*24*			*1*	*30*	*$ 6,265.00*								*$ -*	*$ 6,265.00*
	Final Report			*2*		*4*				*6*	*$ 1,344.00*								*$ -*	*$ 1,344.00*
										0	*$ -*								*$ -*	*$ -*
8	**Troubleshooting**	**0**	**0**	**0**	**0**	**0**	**0**	**120**	**0**	**120**	**$ 19,920.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 19,920.00**
	Year 2024							*40*		*40*	*$ 6,640.00*								*$ -*	*$ 6,640.00*
	Year 2025							*40*		*40*	*$ 6,640.00*								*$ -*	*$ 6,640.00*
	Year 2026							*40*		*40*	*$ 6,640.00*								*$ -*	*$ 6,640.00*
										0	*$ -*								*$ -*	*$ -*
9	**GIS Cathodic Protection Data**	**0**	**0**	**0**	**0**	**40**	**0**	**0**	**0**	**40**	**$ 7,960.00**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 7,960.00**
	Year 2024					*16*				*16*	*$ 3,184.00*								*$ -*	*$ 3,184.00*
	Year 2025					*12*				*12*	*$ 2,388.00*								*$ -*	*$ 2,388.00*
	Year 2026					*12*				*12*	*$ 2,388.00*								*$ -*	*$ 2,388.00*
										0	*$ -*								*$ -*	*$ -*
	Units	4	22	101	22	204	460	956	10	**1779**		79	2280	46	66	134128	61	17600		
	Rate	$ 333.00	$ 291.00	$ 274.00	$ 228.00	$ 199.00	$ 166.00	$ 166.00	$ 102.00			$ 100.00	$ 0.66	$ 200.00	$ 75.00	$ 0.30	$ 100.00	$ 1.10		
	Total	**$ 1,332.00**	**$ 6,402.00**	**$ 27,674.00**	**$ 5,016.00**	**$ 40,596.00**	**$ 76,360.00**	**$ 158,696.00**	**$ 1,020.00**		**$ 317,096.00**	**$7,900.00**	**$ 1,493.40**	**$ 9,200.00**	**$ 4,950.00**	**$ 40,238.40**	**$ 6,100.00**	**$ 19,360.00**	**$ 89,241.80**	**$ 406,337.80**

February 20, 2024
Prepared by: T. Foo / M. Cortez
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

WELLS 6, 12, 14, AND 15 SITE IMPROVEMENTS CONSULTANT SELECTION

SUMMARY:

The Dyer Road Wellfield (DRWF) provides a critical local groundwater source for IRWD's potable water supply. Many of the well sites have obsolete, deteriorating, non-compliant equipment, and components that require replacement. Under this first of several projects, four of the DRWF wells (Wells 6, 12, 14, and 15) will be rehabilitated to meet current IRWD standards. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement with Tetra Tech in the amount of $1,094,000 to provide engineering design services for the Wells 6, 12, 14, and 15 Site Improvements.

BACKGROUND:

IRWD has 18 potable water wells within its DRWF that produce groundwater from the Orange County Groundwater Basin. Sixteen of the DRWF wells collectively produce approximately 28,000 acre-feet per year from the principal aquifer. The water quality of these 16 wells exceeds potable water quality standards and does not require treatment other than chloramination. Wells 6, 12, 14, and 15 were constructed in 1994, 1983, 1987, and 1991, respectively, and have not had any major facility upgrades since.

In 2021, IRWD retained Hazen & Sawyer to develop the "IRWD Well Condition Assessment." As part of this project, Hazen performed a condition assessment of the existing assets at many of the groundwater well sites owned and operated by IRWD, including the 16 DRWF wells. The condition assessment identified several electrical, heating, ventilation, and air conditioning (HVAC), and instrumentation and control (I&C) assets that were in poor condition and in need of replacement. In 2023, IRWD retained Dudek to prepare the "Wellhead Rehabilitation Program Development" report, which assigned well condition scores and prioritized the wellhead rehabilitation projects into two groups: Group 1 well sites needed HVAC and electrical improvements and Group 2 well sites did not. The top four well sites that had the highest well condition scores in Group 1 were Wells 6, 12, 14, and 15.

The scope of work for the Wells 6, 12, 14, and 15 Site Improvements project includes project management, the development of a preliminary design report (PDR), preparation of design documents, and bid assistance. The consultant is responsible for conducting a supplemental condition assessment to augment Hazen's previous assessment and providing rehabilitation recommendations in a PDR for all assets that are poor, obsolete, non-compliant, and/or have outlived their useful service life. The assets include electrical, supervisory control and data acquisition (SCADA), HVAC, civil, mechanical, and structural facilities. This project will not rehabilitate or replace components of the downhole well, well pump, and well motor. The final design documents will be based on the recommendations and design criteria provided in the PDR.

Consultant Selection:

In January 2024, staff issued a Request for Proposal for the design services to five consultants: AECOM, Cannon Corporation, Tetra Tech, West Yost Associates, and Woodard & Curran. AECOM and West Yost Associates declined to submit a proposal citing staffing limitations. Staff evaluated the proposals received and based on their respective project approaches, engineering effort, and the strength of their team and relevant experience, staff recommends the selection of Tetra Tech as discussed below.

Engineering Effort: Tetra Tech, Cannon Corporation, and Woodard & Curran each presented a strong understanding of project requirements. Staff expects the engineering effort required for this project to be high due to the age of the facilities, the number of components to be evaluated, and the coordination effort needed with several IRWD departments and Southern California Edison. Tetra Tech, Woodard & Curran, and Cannon proposed approximately 5,700 work hours, 5,050 work hours, and 2,900 work hours, respectively. Staff believes a rigorous effort is needed to prepare the PDR and final design package for all four wells and will likely take closer to the upper limit of 5,700 hours proposed by Tetra Tech. The proposed final design set sheet count for Tetra Tech is 117 sheets, and their fee is $1,094,000. Woodard & Curran proposed 5,050 work hours, 157 sheets, and a fee of $1,552,934. Cannon Corporation proposed 2,900 hours, 124 sheets, and a fee of $806,436.

Project Team and Experience: Tetra Tech's design team has extensive relevant experience on previous IRWD projects with electrical and SCADA improvements, including the Dyer Road Wellfield Surge Tanks and several pump station projects. Comparatively, Cannon Corporation and Woodard & Curran have little to no experience on electrical projects with the District. In addition, Woodard & Curran's key personnel are out of state or from northern California, whereas Tetra Tech's entire design team is local to the area.

The consultant evaluation matrix is provided as Exhibit "A", and Tetra Tech's proposal and fee is provided as Exhibit "B".

FISCAL IMPACTS:

Wells 6, 12, 14, and 15 Site Improvements, Project 11570, is included in the Fiscal Year 2023-24 Capital Budget. The current budget and Expenditure Authorization are sufficient for this work.

ENVIRONMENTAL COMPLIANCE:

This project is subject to the California Environmental Quality Act (CEQA). In conformance with the California Code of Regulations Title 14, Chapter 3, Section 15004, the appropriate environmental document will be prepared when "meaningful information" becomes available. It is expected that preliminary analysis will lead to the preparation of a Notice of Exemption for the project.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with Tetra Tech in the amount of $1,094,000 to provide engineering design services for the Wells 6, 12, 14, and 15 Site Improvements, Project 11570.

LIST OF EXHIBITS:

Exhibit "A" – Consultant Selection Evaluation Matrix
Exhibit "B" – Tetra Tech's Proposal and Fee

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Exhibit "A"
PR 11570 Wells 6, 12, 14, and 15 Site Improvements
Consultant Selection Matrix

	Weights	Cannon Corporation		Tetra Tech		Woodard & Curran	
TECHNICAL APPROACH							
*Overall Project Understanding	25%	1		2		3	
*Condition Assessment Approach	25%	2		1		3	
*Design Approach	25%	3		1		2	
*Experience	25%	3		1		2	
Forced Ranking System:							
1- Best, 2- Second Best, etc.							
Weighted Score		2.25		1.25		2.50	
CONSULTANT RANKING		2		**1**		3	
Team Members			Yrs		Yrs		Yrs
Project Manager		Gary Roepke	>50	Tom Epperson	42	Mirko Maher	25
Project Engineer				Laurence Esguerra	20	Asa Carrasco	>25
QC/QA		Eric Porkert	32	Mark Bush	28	Xavier Irias	>35
Civil		Mike Kielborn Tina Kuah Anthony Severy	24 20	Matt Vera	10	Chris Dorn	7
Structural		Marshall Pihl Jesse Morales	>30	Eric Yuen	16	Jim Sturgis Tom Scalese	>35 14
HVAC		Curesh Engineering*		Luke Ramirez	20	Vincent Grassi	>20
Mechanical		See Civil		See Civil		Steve Robbins	20
Electrical		Derek Romer Alex Maestre	29 6	Mazen Kassar	31	Donna Rammell	35
I&C		Mehdi Ahmadi Jeff Spannbauer	18 28	Mazen Kassar	31	Kyle Tracy	30
Pipe Assessment		V&A*				V&A Engineering*	
Potholing (Optional)		C-Below*	16			T2 Utility Engineers*	
Surveying/ Mapping (Optional)		Paul Seroka	22	Metz Surveying		Calvada Surveying*	
Geotechnical (Optional)		Ninyo & Moore*	27	Leighton Consulting		Ninyo & Moore*	
3D Laser Scanning (Optional)						Matterport*	
Scope of Work		Workhours		Workhours		Workhours	
Task 1 Project Management		453		290		560	
Task 2 Preliminary Design Report		596		1,666		1,140	
Task 3 Final Design		2,297		4,030		3,908	
TOTAL FINAL DESIGN HOURS		3,346		**5,986**		5,608	
Task 4 Period Bid Assistance		76		56		64	
Total Hours		3,422		6,042		5,672	
Final Design Plan Set Sheets							
General		4		19		4	
Site/Piping		16		18		12	
Structural		12		12		15	
Mechanical		8		12		16	
HVAC		28		12		38	
Electrical		40		32		36	
Instrumentation		16		12		36	
Total Sheet Count		124		117		157	
Final Design Hours/Sheet		19		34		25	
Kickoff Meeting		1		1		1	
PDR Meetings		13		10		10	
Design Meetings		6		4		4	
Total Meetings		20		15		15	
FEE							
Project Management		$98,080		$78,000		$171,404	
Preliminary Design Report (PDR)		$179,936		$280,000		$358,733	
Final Design		$456,336		$672,060		$925,572	
Services During Bid Assistance		$15,974		$11,800		$17,243	
Optional Services		$56,110		$52,140		$79,982	
Total Fee w/o Optional Services		$750,326		$1,041,860		$1,472,952	
Total Fee w/Optional Services		**$806,436**		**$1,094,000**		**$1,552,934**	
Total Sheet Count		124		117		157	
Final Design Cost/sheet)		$3,680		$5,744		$5,895	
Fee/Workhour (w/o Optional)		$219		$172		$260	
Professional Liability Insurance General Liability Insurance		Yes Yes		Yes Yes		Yes Yes	

Note: This page is intentionally left blank.

Exhibit "B"

Proposal for Engineering Design Services
Wells 6, 12, 14, and 15 Site Improvements

January 31, 2024

Prepared for:

Irvine Ranch
WATER DISTRICT

3512 Michelson Drive
Irvine, CA 92612

Prepared by:

TETRA TECH

17885 Von Karman Ave., Suite 500
Irvine, CA 92614
949.809.5000

TETRA TECH

January 31, 2024

Tiffany Foo, PE, Project Manager
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612

Transmitted via email: foo@irwd.com

Reference: Proposal for Engineering Design Services
Wells 6, 12, 14, and 15 Site Improvements (PR 11570)

Dear Ms. Foo,

Thank you for the opportunity to submit our proposal to provide engineering design services for Irvine Ranch Water District's Wells 6, 12, 14, and 15 Site Improvements project. Tetra Tech appreciates the relationship that has been built with the District during our past projects and looks forward to continuing and expanding this association in the future. We have an outstanding team, which combines the experience, depth, and understanding needed for the successful delivery of this project. Our project team brings the following distinct advantages to the District:

- **Extensive IRWD Pump Station/Wells Design Experience:** Tetra Tech **has previously designed over eight (8) pump stations and ten (10) well facilities for IRWD**. We know IRWD's well facility design, preferred materials, operational preferences, electrical and P&ID standards which allow us to deliver a complete design in the most cost-effective manner.
- **Previous IRWD Experience with Dyer Road Well Field:** Tetra Tech completed the design, bidding and construction support services for the Dyer Road Well Field Surge Tank which included installation of new surge tanks at Wells 5 and 7 and replacement of existing surge tanks at Wells 11 and 15.
- **In-House Structural, HVAC, Electrical/SCADA, and Instrumentation Control Capabilities:** Tetra Tech has our own in-house registered structural, HVAC, electrical, and instrumentation control engineers who have worked together as a team on numerous projects for the District.
- **Dedication to the District:** Our approach will include a "teamwork and partnering" relationship. We will do this by exceeding your expectations through innovative and smart solutions, attention to detail, and our understanding of the District's design processes and requirements.

Our project team is committed to the success of this project, and we endeavor to exceed your expectations in delivering the services outlined in our proposal. Should you have any questions regarding our proposal, please feel free to contact me at (949) 809-5156 or via email at tom.epperson@tetratech.com.

Sincerely,

Tom Epperson, PE
Vice President

M:\Marketing\Proposals\FY 2024\IRWD_Wells Site Improvements

17885 Von Karman Avenue, Suite 500, Irvine, CA 92614-5227
Tel 949.809.5000 tetratech.com

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FIRM OVERVIEW

Founded in 1966, Tetra Tech is a nationally recognized engineering and resource management firm of more than 27,000 engineers, scientists, construction specialists, and technical support personnel in 550 offices worldwide. Listed on the NASDAQ Exchange (TTEK), Tetra Tech's annual revenues now exceed $4.5 billion (2023). Thus, we are in an excellent financial position and can provide the necessary resources to rapidly deploy and meet aggressive project schedules.

Tetra Tech consistently ranks among the top engineering firms annually according to the *Engineering News-Record.* Our reputation as a leader in consulting engineering is validated by Top 10 ratings annually by ENR. **In 2023, Tetra Tech was ranked #1 in the water service industry for the 20th year in a row!**

Tetra Tech's goal is to provide the necessary expertise and resources to deliver projects on time, within budget, and in compliance with the design and construction standards of our clients and approval agencies. Leveraging our national presence, multi-disciplinary team, and client focused service, we apply lessons learned from our vast experience to each and every challenge. Clients benefit from this approach with consistently high-quality service, innovative designs, and functional solutions that are responsive to their needs and often exceed their expectations. A cornerstone of our success is our client-focused service, staff qualifications, firm commitment, and desire to successfully complete each assignment to the satisfaction of our clients.

DEDICATION TO THE DISTRICT

Tetra Tech is dedicated to Irvine Ranch Water District (IRWD/District) as illustrated in working together on more than 30 projects for IRWD during the last 20 years. Our approach will include a teaming and partnering relationship with the District. We will strive to exceed your expectations through proactive project management, strong quality control measures, attention to detail, extensive design experience, close communication, and schedule and budget management.

PROJECT UNDERSTANDING

The District has 16 potable water wells within its Dyer Road Well Field (DRWF) that produce groundwater from the Orange County Groundwater Basin. The DRWF wells collectively produce approximately 28,000 acre-feet per year at 35,900 gallons per minute from the principal aquifer of the Main Basin. The water quality of these 16 wells exceeds potable water quality standards and does not require treatment other than chloramination.

In 2021, IRWD retained Hazen & Sawyer (Hazen) to develop the "IRWD Well Condition Assessment Project." As part of this project, Hazen performed a condition assessment of the existing assets at many of the groundwater well sites owned and operated by IRWD, including the 16 DRWF wells. The condition assessment identified several electrical, heating, ventilation, and air conditioning (HVAC), and instrumentation and control (I&C) assets that were in poor condition and in need of replacement.

In 2023, IRWD retained Dudek to prepare the "Wellhead Rehabilitation Program Development" report, which prioritized the wellhead rehabilitation projects.

This Project will design and provide construction improvements at DRWF Wells 6, 12, 14, and 15 to replace existing facility components (e.g., HVAC, electrical, supervisory control, and data acquisition (SCADA), civil, mechanical, and structural) that are poor, obsolete, non-compliant, and/or have outlived their useful service life. DRWF Wells 6, 12, 14, and 15 were constructed in 1994, 1981, 1987, and 1991, respectively. This project ***will not*** rehabilitate or replace components of the downhole well, well pump, and well motor at this time.

The following are the addresses of the wells included within this Project:

- Well 6: 2500 S. Garnsey
- Well 12: 3000 W. Harvard
- Well 14: 2922 W. Warner
- Well 15: 2512 W. Warner

APPROACH

Why Tetra Tech

Our extensive experience with similar projects will ensure that IRWD will receive a high level of service delivered by qualified, knowledgeable engineering professionals. Highly meticulous and coherent plans and specifications greatly benefit all project stakeholders, with the largest benefit realized by the Owner. Quality contract documents clearly lead to a larger number of bidders, lower competitive bid prices due to increased competition, the contractor has less to assume and take the risk for, and a greater overall comfort level in our design based on a long history of successful projects, and lowest overall cost while achieving a very high-quality end product. Quality contract documents mitigates the potential, and impact of change orders, and sets forth a standard of quality the contract must achieve.

Tetra Tech's team brings the following advantages to the District for the Wells 6, 12, 14, and 15 Site Improvements project:

- **Extensive IRWD Pump Station/Wells Design Experience**
  Tetra Tech **has previously designed over eight (8) pump stations and ten (10) well facilities for IRWD**. We know IRWD's well facility design, preferred materials, operational preferences, electrical and P&ID standards which allow us to deliver a complete design in the most cost-effective manner.
- **Previous IRWD Experience with Dyer Road Well Field**
  Tetra Tech completed the design, bidding and construction support services for the Dyer Road Well Field Surge Tank which included installation of new surge tanks at Wells 5 and 7 and replacement of existing surge tanks at Wells 11 and 15.
- **In-House Structural, HVAC, Electrical/SCADA, and Instrumentation Control Capabilities**
  Tetra Tech has our own in-house registered structural, HVAC, electrical, and instrumentation control engineers who have worked together as a team on numerous projects for the District.
- **Dedication to the District**
  Our approach will include a "teamwork and partnering" relationship. We will do this by exceeding your expectations through innovative and smart solutions, attention to detail, and our understanding of the District's design processes and requirements.

General Approach

Tetra Tech fully understands the importance of your project. We are offering an outstanding team, which combines the experience, depth, and understanding needed for the successful delivery of this project. Our core principles establish how we plan to work together with IRWD to successfully complete this project:

✓	**Service:** Tetra Tech puts its clients first. We listen to and better understand our clients' needs and deliver smart, cost-effective solutions that meet those needs. Our philosophy is to "Do it Right."
✓	**Value:** Tetra Tech takes on our clients' problems as if they were our own. We develop and implement real-world solutions that are cost-effective, efficient, and practical.
✓	**Excellence:** Tetra Tech brings superior technical capability, disciplined project management, and excellence in safety and quality to all of our work.
✓	**Opportunity:** Our people are our number one asset. Our workforce is diverse and includes leading experts in our fields. Our entrepreneurial nature and commitment to success provides challenges and opportunities.

We value the relationship that has been established with IRWD and look forward to continuing and further developing this association in the future. We are committed to providing IRWD with the same high-quality service you expect and deserve. Our strength lies in our proven track record that has led to successful completion of multiple projects for IRWD as well as other nearby agencies.

UNDERSTANDING THE KEY ISSUES

The following is a brief summary of the assets at each of the well sites that were average, fair or poor based on Hazen's "IRWD Well Condition Assessment Project" and Dudek's "Wellhead Rehabilitation Program Development".

Asset Description	Well 6	Well 12	Well 14	Well 15
Interior Lighting	Fair	Average	Average	Average
Exterior Lighting	Average	--	Average	Fair
Main Disconnect Switch	Fair	Fair	Fair	--
MCC Cabinet	Fair	Fair	Fair	Fair
Soft Start	Average	Fair	Poor	Fair
4160 V Transformer	Average	--	--	--
Main Switch Board	Fair	Fair	Fair	Poor (and breaker)
Building Cooling System	Poor	Poor	Poor	Poor
SCADA System	Poor	Poor	Poor	--
Fencing and Gates	Average	Average	Average	--
Roof Hatch	Average	--	--	--
Pavement	Average	Average	Poor	--
UPS	Average	Average	Average	Average
Flow/Pressure Switches	Poor/Average	--	Fair	
Protection Relay	Average	Average	--	Average
Flow Switch	--	--	--	Average
Pressure/Level Transducers	Average	Average	Fair	Average (level)
Flow Meter/Level/Pressure Display	Average/Fair	Average	Fair	Average
Air Release Valves	Average	Average	Average	Average/Fair
Double Check Assembly	Average	Average	Average	Average
Flow Meter	Average (16")	Average	Average (12")	Average
Pressure Relief Valve	Average	Average	Fair	Average
Circulating Pump	--	Average	Average	Average
Isolation Valves	Average	Average	Average	Average
Check Valve	Average	Average	Average	Average
Valve Actuator	Average	Fair	Fair	Average

PROJECT MANAGEMENT

Over the years, Tetra Tech has established well defined, rigorous procedures for project management. These techniques have been developed and refined and have contributed to our success and reputation. The keys to our project management system are communications, project planning, monitoring, and quality assurance.

The Tetra Tech team's goal is to keep IRWD staff "in the loop" from day one of the project. Communication tools include the formal progress reports afforded through our project management system and an informal give-and-take approach starting with **Tom Epperson, PE, our Project Manager** and **Laurence Esguerra, PE, our Team Leader** and extending to every member of our project team.

We will use the entire communication spectrum. We will conduct formal meetings with agenda and typewritten notes, and we will use informal meetings with notes to file. We will also have

documentation of telephone communications, with notes to file or letters of understanding as appropriate follow-up. Another important communication link will be our e-mail system.

We are proposing to use e-mail to keep IRWD aware of the status of the project. Weekly, Tetra Tech will prepare a brief (one or two paragraphs or bullet items) e-mail summarizing activities completed in the previous weeks; the activities planned for the upcoming weeks; any critical decisions that need to be made; and schedule of upcoming events/meetings. In addition, each month we will prepare a project status memorandum containing summary of project schedule; description of key issues/concerns which have surfaced along with proposed options and solutions; and a project status summary report showing current schedule and budget.

QUALITY ASSURANCE/QUALITY CONTROL

Tetra Tech's Quality Assurance/Quality Control (QA/QC) program and procedures grow from a business culture in which they are part of every component of program and project work. This is the result of two conditions: 1) a clear and unequivocal emphasis on proactive quality management from its corporate leadership; and 2) the use of proven project-specific quality planning, assurance, and control techniques.

Project-Specific Applications of QA/QC Techniques: A project-specific QA/QC effort must ensure that expectations for controlling costs, schedule, and quality of work are met. This plan establishes lines of communication and procedures for ensuring quality during all phases of the project. The plan is flexible and can be modified to respond to your specific requirements, as our best efforts are fruitless unless they meet your criteria. We recognize that implementation of a QA/QC Plan will be an important element in how the IRWD assesses the success of this project.

Cost: Controlling project cost starts with good planning and management. Tetra Tech's cost control and reporting system starts during project planning with work breakdown structures (WBS) for establishing budgets. The WBS is used to accumulate and report costs internally and to the client. Finally, an earned value management approach to assessing costs and technical completion is used to monitor budget compliance and to identify and address unanticipated costs early in the project.

Schedule: Managing a project schedule efficiently starts with a detailed critical path schedule. The schedule is developed during project planning. Milestone submittal dates and a projected project expenditure curve will be established. The schedule follows the WBS and reports the progress of cost and schedule as planned. Deviations from the schedule are highlighted during monthly reporting; changes threatening its adherence are discussed with the client and corrective action is agreed upon, if necessary.

Technical Services and Reports: QA techniques start during the planning phase, including defining the performance standards with the IRWD and identifying specific QA techniques to be used. Before a technical deliverable is released, a QC review is conducted. It involves the following: 1) an editorial review to ensure clarity and readability; 2) a technical review to ensure recommendations are supported by facts; and 3) a final quality review to ensure all agreed upon performance standards were met and the QC reviews were completed appropriately.

Continuous Improvement: Formal QA/QC reviews are scheduled around project submissions. The review will be completed well ahead of the submission date to allow time to correct potential errors and omissions, including complete subconsultant coordination. **Tom Epperson, PE, and Mark Bush, PE, our QA/QC manager,** review comments for fatal flaws. If none are found, Tom oversees the implementation of the comments by closing each comment on the form with a response and by addressing the changes on the plans by highlighting the revision. Our project team is Tetra Tech's front line for ensuring excellent quality performance. They apply these QA/QC actions to all current projects and apply lessons learned to all future projects.

SCOPE OF WORK

Members of the Project Team have performed a review of the project description and scope of work within the RFP as well as the Exhibits provided. We propose to provide the following scope of work for the preliminary design, final design and bid phase services with each phase being authorized by a separate Notice to Proceed. All work performed on this project will conform to IRWD standards and requirements including, but not limited to, the following IRWD Project Manual, IRWD Construction Manual, and IRWD Electrical and Instrumentation and Control (I&C) Design Standards.

Task 1: Project Management

Tetra Tech will complete all aspects of project management for the duration of the project including management of scope, schedule, and budget. We will prepare weekly and monthly status reports. Each weekly status report will consist of a brief (one or two paragraphs) email summarizing the activities completed the previous week, the activities planned for the upcoming week, and critical decisions that need to be made. Each monthly status report will be submitted along with the billing invoice for that month and shall provide more detail, summarizing the work completed and reviewing work status relative to budget and schedule.

A. Meetings: Tetra Tech will organize, attend, and conduct meetings as required. Tetra Tech will submit meeting minutes to IRWD within one week after each meeting by email with a PDF attachment. For budgeting purposes, Tetra Tech will budget for the following meetings as a minimum.

Meetings/Workshops (virtual unless noted otherwise)	Duration
Kickoff/Site Meeting (in-person)	One (1) 2-hour meeting
Condition Assessment Site Visits (in-person)	Four (4) 1-hour meetings
Individual Discipline Meetings (mechanical operations, electrical operations, electrical/automation, safety)	Four (4) 1-hour meetings
Draft Preliminary Design Report Submittal Presentation (in-person)	One (1) 2-hour meeting
Final Preliminary Design Report Submittal Presentation (in-person)	One (1) 2-hour meeting
Construction Sequencing and Commissioning	One (1) 1-hour meeting
60% Draft Submittal Presentation (in-person)	One (1) 1.5-hour meeting
90% Design Submittal Presentation (in-person)	One (1) 1.5-hour meeting
Final Submittal Meeting	One (1) 1-hour meeting

B. Agency Coordination: Tetra Tech will coordinate with Southern California Edison (SCE) and identify all documentation required to potentially relocate and/or upgrade SCE's facilities. Tetra Tech will present an estimated timeline for SCE to complete their review and work. The District will cover all associated costs owed to SCE for any improvements made by SCE.

C. Quality Assurance/Quality Control (QA/QC): Tetra Tech will develop and implement proven QA/QC measures throughout the Project to ensure ongoing and consistent quality control throughout all Project phases.

D. Safety: It is anticipated that Tetra Tech may be exposed to High Hazards as part of the Project. High Hazards may include, but not be limited to, confined space entry, hazardous environment, and arc flash hazards during inspections or exploratory work. Tetra Tech will provide safety and other written programs applicable to the High Hazards to be encountered.

Task 2: Preliminary Design Report

Tetra Tech will produce a preliminary design report (PDR) that includes a condition assessment section, provides alternatives recommendations for upgrades and improvements, provides selections of the recommended improvements, and presents the basis of design for final design. Tetra Tech will prepare a draft PDR and final PDR for review, meeting, and revision in pdf format. Tetra Tech will include the following items in the PDR:

A. Executive Summary: Tetra Tech will present an overview of the major recommendations included in the PDR, total estimated construction cost per wellsite, and expected design and construction timeframes.

B. Condition Assessment: Tetra Tech will conduct a supplemental condition assessment of all equipment and site features required to operate Wells 6, 12, 14, and 15 through site visits and review of existing documentation. Prior to each site visit, Tetra Tech will create a plan in advance of any testing and/or assessment and indicate which personnel need to be in attendance. Tetra Tech will indicate the remaining service life of each asset and document their findings and assessment in a Condition Assessment Memorandum. A draft shall be submitted for review in pdf format, and the final version shall be incorporated into the Preliminary Design Report. As a minimum, Tetra Tech will incorporate and consider the following in their Memorandum:

- Review of Background Material: Review background material for the Project, including but not limited to record drawings, "IRWD Well Condition Assessment Project," "Wellhead Rehabilitation Program Development" report, maintenance records, pressure surge analysis report, IRWD General Design Requirements, and IRWD Standard Drawings.
- Electrical: Tetra Tech will evaluate all electrical equipment including, but not limited to, motor control centers (MCCs), switchboards or switchgears, main disconnect switches, soft starters, protection relays, lighting, and uninterrupted power supplies. Electrical equipment shall be evaluated based on their age, code compliance, safety, availability of replacement parts, performance, and condition. IRWD desires to relocate the MSB outside of the well building if feasible. This will need coordination with SCE.
- Mechanical Utilities (HVAC): Tetra Tech will evaluate all HVAC systems for dependability, performance, and effectiveness. Many well sites have an ineffective HVAC system that utilizes the well discharge as cooling water, and IRWD desires to replace these systems with Title-24 compliant, effective HVAC systems. All well sites will need new HVAC systems.
- Instrumentation and Control (I&C): Tetra Tech will evaluate all SCADA equipment including, but not limited to, programmable logic controllers (PLCs), telemetry, relays, switches, transmitters, and transducers for age, District standards, safety, availability of replacement parts, performance, and condition.
- Mechanical: Tetra Tech will evaluate all mechanical equipment including, but not limited to, valves, meters, actuators, piping and fittings, couplings, and pipe supports for leakage, corrosion, age, performance, and condition. Tetra Tech will test the pipeline coatings and thickness. The District is not seeking to replace the well pumps as part of this project; however, Tetra Tech will evaluate the condition of the above-grade features of the pump as part of this condition assessment.
- Structural: Tetra Tech will evaluate all structural features, including the condition of wellsite buildings.
- Civil: Tetra Tech will evaluate all civil site features including, but not limited to, pavement, concrete, drainage, and security features. Tetra Tech will determine if the perimeter fence height should be increased as well as coordinating the installation of conduits for future security cameras.
- Safety: Tetra Tech will evaluate that all safety elements comply with CalOSHA design requirements and guidelines.

C. Individual Discipline Meetings: Tetra Tech will meet with IRWD Mechanical Operations, Electrical Operations, Electrical and Automation, and Safety staff individually to discuss preliminary recommendations and to ask any questions about District standards, maintenance requirements, etc. Tetra Tech will present general questions or discussion topics in written form via email three working days prior to each meeting.

D. **Improvements Recommendations:** For all assets that require upgrades, Tetra Tech will present recommendations and their respective design criteria. The improvements must be compliant with the latest applicable codes and IRWD standards. With each recommendation, Tetra Tech will present the expected service life of the replaced asset, life cycle costs, maintenance requirements, and a site plan and building interior plan showing the layout of the recommended improvements. Tetra Tech will also indicate any agency coordination required (e.g., SCE expected schedule) and the estimated lead times for new materials. Alternatives that were considered may be included; however, the final recommendation must be clearly presented.

E. **Design Drawing and Specification Schedule:** Tetra Tech will prepare a list of design drawings and specifications expected for final design. 30% drawings will be included within the PDR.

F. **Procurement Strategies:** Tetra Tech will determine the lead time for all equipment and materials required for the project. The lead time will include both manufacturing and delivery time. Tetra Tech will also determine procurement strategies of equipment and materials, including review of sole-sourcing equipment. Tetra Tech will present procurement strategies that differ from the traditional design-bid-build model.

G. **Project Schedule:** Tetra Tech will prepare a project schedule that includes design, bid, and construction phases, Contractor's Notice of Award and Notice to Proceed, review and acceptance of Contractor's Submittals, delivery of critical materials and equipment, IRWD's holidays, and construction close out.

H. **Opinion of Probable Construction Cost:** Tetra Tech will prepare a detailed and itemized opinion of probable construction cost for the proposed improvements.

I. **PDR Deliverables:** Tetra Tech will present each submittal with IRWD staff in a meeting. The PDR shall be transmitted via email (PDF file) to IRWD for review at the draft and final submittals. One (1) hard copy of the final PDR shall be submitted.

Task 3: Final Design

Tetra Tech will not commence with final design until written authorization has been provided by the District's Project Manager. The District has developed guidelines and standards for many aspects of the design and construction process. All work performed on this Project must conform to IRWD standards and requirements including, but not limited to, the following:

- IRWD Project Manual: IRWD has developed and periodically updates its IRWD Project Manual which contains front-end documents related to bidding, agreements, general provisions, and special provisions. IRWD will provide its most current Project Manual template to Tetra Tech to create a Project Manual specific to this project.
- IRWD Construction Manual: IRWD has also developed and periodically updates its IRWD Construction Manual, which contains General Technical Specifications and Standard Drawings for the Engineer's use in the preparation of Drawings and Project Technical Specifications. This manual shall be referred to in the Contract Documents for all construction contracts. A copy of this manual can be obtained at www.irwd.com. IRWD will provide its most current electrical specifications that were recently removed from the Construction Manual.

This Project shall complete a Final Design, which shall include plans, sections, details, and traffic control plans for the construction of wellsite improvements. This Project will be designed in accordance with IRWD's current standard details and specifications, and all applicable codes (e.g., NEC and CEC). Tetra Tech will complete the design and specifications, construction cost estimates, and schedule for the Project. Tetra Tech will address the items discussed below:

A. **Topographic Field Survey:** Metz Surveying Inc. (a subconsultant to Tetra Tech) will perform field surveying and produce topographic maps that will be used as a base plan for the proposed improvements. The topographic field survey will include all topographic features, existing structures, and surface utilities within each of the well sites.

1. Include all site improvements within the District's property and easement.
2. Measure invert elevations at cleanouts, manholes, concrete pads, and catch basins.
3. Coordinate with IRWD for access and to minimize interference with IRWD's daily Operations.

B. Utility Review: Perform utility research to locate utilities or other physical features within the project vicinity. Utility research to include completing a desktop evaluation of available record drawings and a site walk to verify surface improvements.

C. Optional Pothole Investigation: If necessary, complete potholes as needed to identify, locate, and verify adjacent and crossing utilities with the pipeline alignment and to determine the locations and depths of proposed point of connections. Tetra Tech will provide a unit cost to complete ten (10) pothole excavations and one (1) slot trench. This work shall include all necessary traffic control measures to perform the excavations and survey of the exposed utilities. If additional potholes or trenches are needed, they will be invoiced at the proposed unit price.

D. Optional Geotechnical Investigation: If necessary, Leighton Consulting, Inc. (a subconsultant to Tetra Tech) will conduct a geotechnical investigation. Drill up to a total of four (4) borings (one soil boring per wellsite) to a depth of 25 feet below existing grade to determine the geotechnical conditions. Provide soils analysis for use in the design. The geotechnical report will include a boring map location, boring logs, and geotechnical testing results, and address the following: site conditions; geologic hazards; seismicity; corrosivity; foundation design; lateral earth pressures; pipe installation; pavements; and construction considerations. This task will be included in the scope of work in the professional services agreement and will be authorized if needed.

E. Electrical: Tetra Tech will complete the design to upgrade the electrical equipment at the wellsites. Tetra Tech will budget for the replacement of all electrical equipment (e.g., main disconnect switches, soft starters, protection relays, MCC cabinets, and switchboards or switchgears) as indicated in Hazen's assessment and any relocation of electrical assets. Tetra Tech will also design a separate breaker and plug-in connection for a portable generator. Additionally, Tetra Tech will coordinate with and prepare all documentation required by SCE to relocate SCE meters and/or upgrade SCE facilities. Tetra Tech will review the District's coordination study and arc-flash hazard study specifications and supplement the requirements as needed.

F. Mechanical Utilities: Tetra Tech will complete the design for new Title-24 compliant HVAC systems at the four wellsites. These designs should include any modifications to the structure to accommodate the new HVAC system as well as any safety elements required for maintaining the HVAC units. All safety elements shall comply with CalOSHA design requirements and guidelines.

G. Instrumentation and Control: Tetra Tech will complete the design for any new control hardware that requires replacement as recommended in the PDR. In addition to providing process and instrumentation drawings, Tetra Tech will also provide control narratives for each site.

H. Mechanical: Tetra Tech will complete the design for all mechanical improvements as recommended in the PDR. For budgeting purposes, Tetra Tech will assume all valves will be replaced.

I. Structural: Tetra Tech will complete the design for all structural improvements and modifications. Modifications may include those required for incorporating the new HVAC systems and/or modifying the roof for pump and motor maintenance events. Additionally, Tetra Tech will budget for replacing select side panels on the interior and exterior of the buildings. No seismic analysis will be performed. We have assumed that no structural

analysis will be performed for the buildings to check them against the current building code unless the added penetration reduces the structural capacity of the existing building beyond the building code threshold that triggers the structural analysis.

J. Civil: Tetra Tech will complete the design for all site improvements, including pavement, concrete, drainage, and fencing as recommended in the PDR.

K. Construction Laydown and Phasing Approach: The District owns the properties that the wellsites are located on; however, the sites and their associated access easements are limited and could be challenging during construction. Tetra Tech will assess the constructability of the upgrades and operational constraints, provide exhibits showing equipment access, and consider the following, as a minimum: temporary fencing requirements; removal and installation of large equipment; and need for rights of ways, easements, or entry and encroachment permits. Tetra Tech will include a recommended construction phasing approach to ensure all operational and construction constraints are addressed. IRWD will only allow the contractor to mobilize and commence work when all materials have been obtained and for only one wellsite to be rehabilitated at a time.

L. Pre-purchase: For any items that can be pre-purchased by the District during the design phase, Tetra Tech will provide all documentation required at the 90% design submittal.

M. Safety: Tetra Tech will include in the design all improvements required to ensure safety and protection for workers when maintaining or replacing equipment. All safety elements shall comply with CalOSHA design requirements and guidelines. The District also desires to include camera surveillance in the future, and the design should include conduit runs.

N. CEQA Documentation: The Project is subject to the California Environmental Quality Act (CEQA). IRWD will prepare CEQA documentation for the Project. Tetra Tech will provide exhibits and other information to assist with preparation of the documentation.

O. Project Manual: Tetra Tech will prepare a Project Manual in standard IRWD format for the Contract Documents. IRWD's front end documents shall be utilized, and Tetra Tech will assess IRWD's documents to determine any needed Supplemental Special Provisions that should be added to comply with IRWD's General Provisions and front end requirements. The Project Manual shall describe the work, schedule, access or constraints, and sequencing associated with the work. The Project Manual shall also include General Technical Specifications, modifications thereto, and any Project Technical Specifications. Tetra Tech will prepare the Project Manual in standard IRWD format. The Project Manual template will be provided in Microsoft Word format. Tetra Tech will complete IRWD templates and shall provide a searchable PDF file of the bidding documents in 8 ½-inch x 11-inch paper size.

P. Improvement Plan Sheet List: Tetra Tech has prepared a list of anticipated construction drawings.

General Sheets (applies to all wells)

- Title Sheet
- Sheet Index, Location Map, Vicinity Map, Agency and Utility Index
- General Notes, IRWD Notes, Erosion Control Notes
- Symbols, Abbreviations, Benchmark and Basis of Bearings
- Construction Notes
- Horizontal Control Plan (Four sites on 1 sheet)
- Typical Civil Details
- Typical Piping Details
- Typical Mechanical Details (2 sheets)
- Typical HVAC/Ventilation Details
- General Structural Notes and Special Inspection Requirements (2 sheets)
- General Structural Details
- Electrical Symbols and Abbreviations
- General Pump Schematics
- General Electrical Details
- I&C Symbols
- General P&ID

Specific Well Sheets

Site Plans

Sheet Description	*Well 6*	*Well 12*	*Well 14*	*Well 15*
Well Access, Phasing, Laydown	1 sheet	1 sheet	1 sheet	1 sheet
Well Site Demolition Plan	1 sheet	1 sheet	1 sheet	1 sheet
Well Site Plan	1 sheet	1 sheet	1 sheet	1 sheet
Well Grading Plan	--	1 sheet	1 sheet	--
Well Site Specific Details	1 sheet	1 sheet	1 sheet	1 sheet

Mechanical Plans

Sheet Description	*Well 6*	*Well 12*	*Well 14*	*Well 15*
Mechanical Demolition Plan	1 sheet	1 sheet	1 sheet	1 sheet
Mechanical Plan and Sections	1 sheet	1 sheet	1 sheet	1 sheet
Mechanical Specific Details	1 sheet	1 sheet	1 sheet	1 sheet
HVAC Demolition Plan	1 sheet	1 sheet	1 sheet	1 sheet
HVAC/Ventilation Plan	1 sheet	1 sheet	1 sheet	1 sheet
HVAC/Ventilation Specific Detail	1 sheet	1 sheet	1 sheet	1 sheet

Structural Plans

Sheet Description	*Well 6*	*Well 12*	*Well 14*	*Well 15*
Building Demolition Plan	1 sheet	1 sheet	1 sheet	1 sheet
Foundation and Roof Plan	1 sheet	1 sheet	1 sheet	1 sheet
Specific Structural Details	1 sheet	1 sheet	1 sheet	1 sheet

Electrical/Instrumentation Plans

Sheet Description	*Well 6*	*Well 12*	*Well 14*	*Well 15*
Electrical Demolition Plan	1 sheet	1 sheet	1 sheet	1 sheet
Well Site Plan	1 sheet	1 sheet	1 sheet	1 sheet
Well Power Plan	1 sheet	1 sheet	1 sheet	1 sheet
Well I&C Plan	1 sheet	1 sheet	1 sheet	1 sheet
Well Lighting & Grounding Plan	1 sheet	1 sheet	1 sheet	1 sheet
Well Single Line Diagram	1 sheet	1 sheet	1 sheet	1 sheet
Well Conduit & Panel Schedule	1 sheet	1 sheet	1 sheet	1 sheet
Well Specific Electrical Details	1 sheet	1 sheet	1 sheet	1 sheet
Well Control Panel Details	1 sheet	1 sheet	1 sheet	1 sheet
Well PLC Network Details	1 sheet	1 sheet	1 sheet	1 sheet
Well Specific I&C Details	1 sheet	1 sheet	1 sheet	1 sheet

TOTAL SHEETS: 117 SHEETS

Q. Construction Drawings: Tetra Tech will prepare detailed Drawings on 22-inch x 34-inch paper size. The Drawings will be developed in the latest version of AutoCAD, using NCS V4.0 layering standards, and utilizing IRWD's standard border template. Drawings prepared in AutoCAD shall use the NAVD 88 and NAD 83 survey standards. The Drawings will include a sheet index/location map/legend, general notes, index map, notes and details, construction sequencing, site plan, details, sections, elevations, and all details necessary for the construction of the Project.

R. **Project Schedule:** Tetra Tech will prepare and update the Project Schedule for each Design Deliverable. The project schedule shall include design, bid, and construction phases, Contractor's Notice of Award and Notice to Proceed, review and acceptance of Contractor's Submittals, delivery of critical materials and equipment, IRWD's holidays, and construction close out.

S. **Opinion of Probable Construction Cost:** Tetra Tech will prepare a detailed and itemized opinion of probable construction cost for the proposed improvements, which shall be updated and submitted with each of the design deliverables described below. The format of the cost opinion shall follow the itemized Schedule of Work within the Bid Documents section of the Engineer-prepared Project Manual.

T. **Design Deliverables:** Tetra Tech will present each submittal with IRWD staff in a meeting. Drawings and Project Manual shall be transmitted via email (PDF file) to IRWD for review at the 60%, 90%, and Final Design Submittals.

1. **60% Draft Submittal:** Tetra Tech will provide a 60% Drawing set further developing the plans, profiles, sections, and details. Drawings should include all sheets, plans, sections, details, schematics, and diagrams for each discipline of the Project. Provide a 60% Project Manual that includes all sections. Searchable PDF files of the Drawings and Project Manual shall be submitted.

2. **90% Design Submittal:** Tetra Tech will provide a 90% Drawing set and 90% Project Manual that has been QA/QC'd by the Engineer. The Drawing Set and Project Manual are expected to be substantially complete. For any items that are recommended for pre-purchase, Tetra Tech will provide complete documentation required for bid. Searchable PDF files of the Drawings and Project Manual shall be submitted.

3. **Final Design Submittal:** Tetra Tech will provide a Final Drawing and Project Manual draft set to be backchecked for inclusion of all previous comments, with the Tetra TEch's Project Engineer electronic stamp and signature added. Once the submittal is reviewed and minor comments addressed by the Tetra Tech, the Final Design Submittal set shall be submitted to be signed by IRWD. Tetra Tech will provide AutoCAD files for the entire Drawing set once signed by the Executive Director. Provide Microsoft Word files used in the preparation of the Project Manual. Searchable PDF files of the Drawings and Project Manual shall be submitted. One (1) hard copy of the Drawings and Project Manual shall be provided after backcheck is complete and signed by IRWD's Executive Director.

Task 4: Bid Period Assistance

During the bidding period, Tetra Tech will assist with providing information and clarification of bid documents to prospective bidders. This shall include the preparation of one addendum for bidding, including revisions to the design plans and specifications, and assistance with addressing bidder questions. At a minimum, addenda preparation activities shall include:

1. **Plan Revisions:** Tetra Tech will budget 16 hours of appropriate staff time for plan revisions to the construction drawings.

2. **Specification Revisions:** Tetra Tech will budget 16 hours of appropriate staff time for revisions or additions to the project specifications.

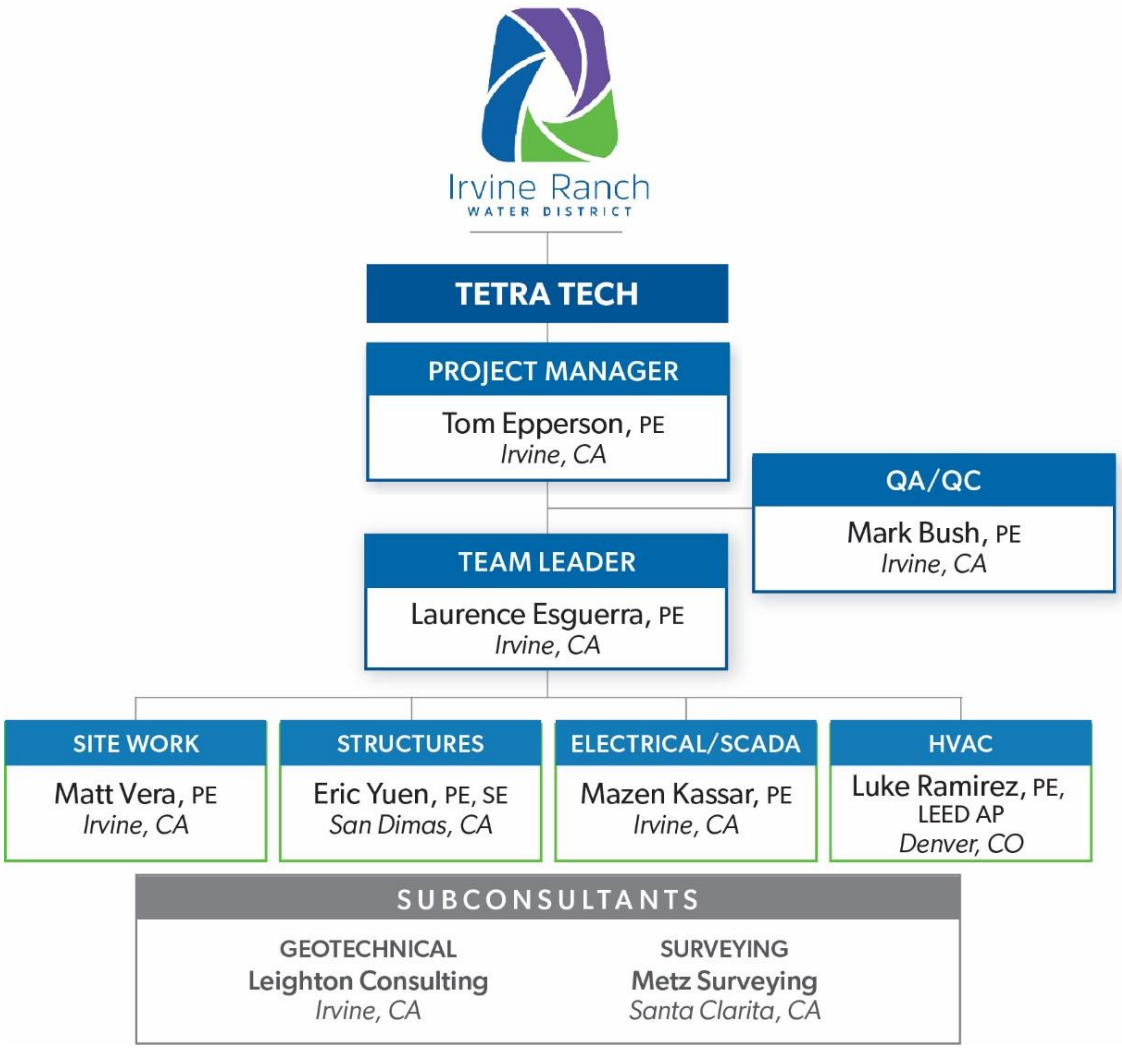
3. **Bidder Questions:** Tetra Tech will budget 16 hours of appropriate staff time to address and respond to bidder questions.

4. **Pre-bid Meeting:** Tetra Tech will attend a pre-bid meeting, which may include site visits with the potential bidding contractors.

PROJECT TEAM

The key for success on this project is our project team and their previous well design experience. As with past assignments for IRWD, we propose to approach this assignment with a spirit of partnership with IRWD. This will enable us to combine the knowledge, ideas, and talents of IRWD's staff with our planning, design, and construction experience to provide extraordinary results. Our organizational chart defines the project role of each key team member and delineates the communication and reporting relationships among key project staff.

PROJECT TEAM CHART



Our Project Team is devoted to completing your project within schedule and under budget, and not only meet, but exceed your expectations. The following summarizes the qualifications of key staff members that will be assigned to this project:

Project Manager: Tom Epperson, PE, will be the Project Manager and will provide the overall project direction, technical oversight, quality management, and ensure that the necessary resources are committed to Laurence Esguerra, PE, to get the job done. Tom has more than 42 years of experience and will provide his technical expertise to assist the design team in the areas of constructability, specifications, review, and as-needed project management support. **Tom has worked on nearly 30 different projects for IRWD.** He has been involved in the design of all of the similar projects listed within the Experience Section of this proposal.

QA/QC: Mark Bush, PE, has more than 28 years of professional experience in water, wastewater, and recycled water engineering; and has been involved in more than 15 IRWD projects throughout his

career. Mark has been responsible for the completion of over 200 miles of potable water, recycled water, and sewer mains in complex environments, including ROWs. His experience also includes more than 20 potable water and recycled water pump station and well projects, and 14 potable and recycled water reservoirs.

Team Leader: Laurence Esguerra, PE, with more than 20 years of experience in water and wastewater he has designed over 15 production wells, 100 miles of potable water, recycled water, and sewer pipelines, pump stations, lift stations, reinforced concrete and steel reservoirs, flow control facilities, and pressure reducing valve vaults. Along with his extensive technical skills in water and wastewater, Mr. Esguerra is experienced in project management, leading complex, multi-disciplinary projects through preliminary design, final design, and construction.

Site Work: Matt Vera, PE, has more than 10 years of water/wastewater experience and has provided design engineering for various domestic and reclaimed water pipelines, gravity sewer mains, sewer main rehabilitations, pump stations, lift stations, wells, flow control facilities, and pressure reducing valve vaults. Matt's responsibilities have included preparing construction plans, specifications, and design calculations as well as project reports and memorandums.

Structural: Eric Yuen, PE, SE, will assist our Project Manager and direct the activities of other members of the design team in the capacity of the Structural Team Leader. For the past 16 years Eric has been involved in the structural design of the majority of our well station structures. Eric is knowledgeable in reinforced concrete, masonry, structural steel and wood frame design, and construction for a variety of building and infrastructure projects including reservoirs and water/wastewater treatment facilities, as well as seismic retrofit of existing structures.

Electrical/SCADA: Mazen Kassar, PE, has 31 years of experience in electrical, instrumentation, and controls engineering. He brings to the team experience in electrical engineering and knowledge of industry standards for water and wastewater engineering. Mazen's project experience includes design of medium and low voltage power distribution, instrumentation, controls systems, and SCADA systems for a wide variety of projects throughout Southern California.

HVAC: Luke Ramirez, PE, LEED AP, has 20 years of professional experience and provides clients with a variety of HVAC and plumbing designs as well as life-cycle assessment of systems and products. Luke's projects have included designs for municipal, industrial, and commercial facilities, construction administration services for water and wastewater treatment plants, energy audit reports, quality assurance measurement for a utility provider in Colorado, pump replacement analyses and design for the U.S. Fish and Wildlife Service, and mechanical renovation of dorms at Misawa Air Force Base in Japan.

Subconsultants

To provide the full range of services required for this project, we have added subconsultants to our Project Team. Tetra Tech will be responsible for coordinating and integrating the efforts of each subconsultant. They will serve IRWD as subconsultants to Tetra Tech.

Geotechnical: Leighton Consulting (DIR Registration #: 1000007443)

Surveying: Metz Surveying (DIR Registration #: 1000045062)

Potholing: Subconsultant will be determined based on availability at time work is scheduled.

The following lists Team Member experience and percentage of contribution to the District's project:

Team Member	Years of Exp.	Percent of Contribution	Number of Wells	Projects
Tom Epperson, PE	42	10%	28	• IRWD Wells • Santa Ana Washington Well • Santa Ana Well No. 32 Rehab • Orange Well Nos. 27 & 28 & 29 • Mesa Water Well Nos. 12 & 13 • OCWD Mid-Basin • YLWD Timber Ridge BPS • South Gate Well No. 29 • Paramount Well Nos. 15 & 16
Mark Bush, PE	28	5%	7	• IRWD Wells • Orange Well Nos. 27 & 28 • OCWD Mid-Basin • IRWD Wells • City of Santa Ana Projects
Laurence Esguerra, PE	20	10%	15	• IRWD Wells • Orange Well Nos. 27 & 28 &29 • Mesa Croddy Well & Pipeline • OCWD Mid-Basin • South Gate Well No. 29 • Seal Beach Bolsa Chica Well
Matt Vera, PE	10	30%	4	• IRWD Wells • Washington Well • Santa Ana Well No. 32 Rehab • Santa Ana Well No. 29 Rehab • YLWD Timber Ridge BPS • SA-7 Relocation • SA-1 Hydro-Generator
Eric Yuen, PE, SE	16	25%	8	• City of Santa Ana Projects • IRWD Projects • Mesa Wells • YLWD Timber Ridge BPS • South Gate Well No. 29 • Paramount Well No. 16 • Mid-Basin Injection Wells
Mazen Kassar, PE	31	25%	9	• City of Santa Ana Projects • IRWD Projects • Mesa Wells • YLWD Timber Ridge BPS • Orange Well No. 27, 28 & 29 • South Gate Well No. 29 • Mid-Basin Injection Wells • Paramount Well No. 16

EXTENSIVE PUMP STATION/ WELL DESIGN EXPERIENCE

During the last 18 years, our Project Team has designed over 50 water/recycled water pump stations and wells within Southern California.

Therefore, our Project Team is high on the learning curve and can apply their expertise to addressing and resolving your project issues in a cost-effective and timely manner. We want to emphasize this is just the experience of our Project Team and not the experience of our company, Tetra Tech.

Type of Project	Last 8 Years (2014 to 2022)	9 to 13 Years (2009 to 2013)	14 to 18 Years (2004 to 2008)	Total During Last 18 Years
Pump Stations	6	7	10	**23**
Wells	14	7	7	**28**
Subtotal	**20**	**14**	**17**	**51**

This experience has allowed our staff to become intimately familiar with all aspects of the design and construction of pump station facilities. Therefore, our Project Team is high on the learning curve and can apply their expertise to addressing and resolving your project issues in a cost-effective and timely manner. The following is a summary of some of our Project Team's specific pump station and well experience:

Client	Project	Capacity (GPM)	Design Complete	Responsible Team
IRVINE RANCH WATER DISTRICT Irvine, CA	Zone 7 to 8 Booster Pump Station Peters Canyon	2,000 1,200	2021 2016	Tom Epperson Mazen Kassar Eric Yuen
ORANGE COUNTY WATER DISTRICT Fountain Valley, CA	Santiago Pump Station Modifications Mid-Basin Injection Wells (4 wells) Burris Bump Station	5,400 3,000 ea. 90,000	2022 2016 2015	Tom Epperson Laurence Esguerra Matt Vera Mazen Kassar Eric Yuen
CITY OF ORANGE Orange, CA	Well 29 and Well 28 Well 27 New Santiago Booster Pump Station Reservoir No. 4 Booster Pump Station	3,000 ea. 3,000 4,500 6,000	2021 2016 2010 2007	Tom Epperson Laurence Esguerra Matt Vera Mazen Kassar Eric Yuen
YORBA LINDA WATER DISTRICT Yorba Linda, CA	Timber Ridge Booster Pump Station Replacement	2,800	2021	Tom Epperson Matt Vera Mazen Kassar Eric Yuen
CITY OF SOUTH GATE South Gate, CA	Elizabeth Booster Pump Station Well 29	5,700 2,500	2016 2016	Tom Epperson Laurence Esguerra Mazen Kassar Eric Yuen

IRWD Pump Station/Wells Design Experience

Our Project Team knows IRWD's design requirements, preferred materials, operational preferences, electrical and P&ID strategies which will allow us to deliver a complete design in the most cost-effective manner. Members of our project team have been involved with the following pump station/well/surge tank projects for IRWD during the last twenty (20) years:

■	Zone 8 to 9 Booster Pump Station	■	IDP Wellhead Facilities: Wells 76, 77, 110 and 107
■	Dyer Road Well Field Surge Tank	■	Shady Canyon Zone B
■	Peter Canyon Reuse Pipeline	■	Coastal RW Pump Station Modifications
■	Well 78, Well 107 and Well 115 Replacements	■	Shady Canyon Booster Pump Station
■	Booster Pump Station Check Valve Replacement	■	Santiago Hills 5-6 and 6-7 BPS (PDR only)
■	South County Zone 1-3 Booster Pump Station	■	Tustin Zone 5 Booster Pump Station

SATISFIED CLIENTS

We believe the District is one of our best references for this project based on the work completed on the Dyer Road Well Field Project. **Client satisfaction is a major objective for Tetra Tech.** This commitment to our clients has earned us the privilege of providing continuous service to several of our below listed references. We believe that our clients will attest to our technical experience and responsive staff, and we encourage you to contact our references to verify our past performance firsthand.

- **Orange County Water District**
  Chris Olsen, PE
  714-378-3232
  colsen@ocwd.com
- **Yorba Linda Water District**
  Reza Afshar, PE, PMP
  714-701-3106
  rafshar@ylwd.com
- **Mesa Water District**
  Andrew Wiesner, PE
  949-207-5458
  andreww@mesawater.org
- **City of Santa Ana**
  Armando Fernandez, PE
  714-647-3316
  afernandez@santa-ana.org
- **Moulton Niguel Water District**
  Matt Collings, PE
  949-425-3552
  mcollings@mnwd.com
- **City of Orange**
  Tuan Cao, PE
  714-288-2492
  tcao@cityoforange.org

SCHEDULE

Tetra Tech has reviewed current and planned workload schedules for our Project Team and are available to immediately begin work on this project. The following presents our proposed project schedule:

Milestone	Key Milestone Dates
Notice of Award	February 28, 2024
Kick-off Meeting	March 11, 2024
Draft PDR	May 23, 2024
Final PDR	June 27, 2024
60% Design Submittal	August 9, 2024
90% Design Submittal	October 4, 2024
Final Design Submittal	November 8, 2024
Construction Bid Advertising	November 18, 2024
Bid Opening	December 19, 2024
Construction Award	January 2025

BUDGET AND MISCELLANEOUS

Budget: As requested in the RFP, Tetra Tech has included our budget proposal in a separate PDF file. Our budget proposal includes estimated hours per task, subconsultant costs, reproduction, and other direct costs. We have also included our proposed Hourly Rate Schedule and a not-to-exceed amount for each phase of the work.

Joint Venture: No joint ventures will be used on the project.

Conflict of Interest: No Conflicts of Interest between the District and Tetra Tech exist.

Contract: Tetra Tech will sign IRWD's Professional Services Agreement.

Insurance: Tetra Tech has insurance coverage in the limits required in the RFP. A copy of our insurance documentation can be provided.

TETRA TECH

January 31, 2024

Tiffany Foo, PE
Project Manager
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612

Transmitted via email: foo@irwd.com

Reference: Fee Proposal for Engineering Design Services
Wells 6, 12, 14, and 15 Site Improvements (PR 11570)

Dear Ms. Foo,

Tetra Tech is pleased to submit our fee proposal to provide engineering design services for the District's Wells 6, 12, 14, and 15 Site Improvements project. All work will be performed on a time and material basis "not-to-exceed" the contract price and no additional compensation will be received beyond the price negotiated to be performed unless changes are approved in advance by an amendment to our contract signed by the Irvine Ranch Water District.

Attached is our work plan with a breakdown of labor hours by employee billing classification, together with the cost of non-labor and subconsultant services. The attached rate schedule includes Tetra Tech's billing rates for this project for all classifications of staff likely to be involved in the project; as well as overhead, profit, and expenses.

Tetra Tech appreciates the opportunity to submit our fee proposal and looks forward to your positive response. Should you require additional information or have any questions regarding our submittal, please don't hesitate to contact us.

Respectfully,

Tom Epperson, PE
Vice President

M:\Marketing\Proposals\FY 2024\IRWD_Wells Site Improvements

17885 Von Karman Avenue, Suite 500, Irvine, CA 92614-5227
Tel 949.809.5000 tetratech.com

TETRA TECH

2024
HOURLY CHARGE RATE AND EXPENSE REIMBURSEMENT SCHEDULE

Project Management	
Project Manager 1	$220.00
Project Manager 2	$260.00
Sr Project Manager	$315.00
Program Manager	$370.00
Principal in Charge	$370.00
Engineers	
Engineering Technician	$80.00
Engineer 1	$120.00
Engineer 2	$130.00
Engineer 3	$145.00
Project Engineer 1	$160.00
Project Engineer 2	$180.00
Sr Engineer 1	$175.00
Sr Engineer 2	$185.00
Sr Engineer 3	$225.00
Principal Engineer	$305.00
Planners	
Planner 1	$106.00
Planner 2	$118.00
Sr Planner 1	$128.00
Sr Planner 2	$154.00
Sr Planner 3	$178.00
Designers & Technicians	
CAD Technician 1	$66.00
CAD Technician 2	$77.00
CAD Technician 3	$92.00
CAD Designer	$102.00
Sr CAD Designer 1	$140.00
Sr CAD Designer 2	$170.00
CAD Director	$170.00
Survey Tech 1	$51.00
Health & Safety	
H&S Administrator	$97.00
Sr H&S Administrator	$118.00
H&S Manager	$148.00

Construction	
Construction Project Rep 1	$80.00
Construction Project Rep 2	$87.00
Sr Constr Project Rep 1	$103.00
Sr Constr Project Rep 2	$118.00
Construction Manager 1	$168.00
Construction Manager 2	$190.00
Construction Director	$238.00
General & Administrative	
Project Assistant 1	$68.00
Project Assistant 2	$77.00
Project Administrator	$97.00
Sr Project Administrator	$135.00
Sr Graphic Artist	$154.00
Technical Writer 1	$100.00
Technical Writer 2	$126.00
Sr Technical Writer	$158.00
Information Technology	
Systems Analyst / Programmer 1	$78.00
Systems Analyst / Programmer 2	$118.00
Sr Sys Analyst / Programmer 1	$132.00
Sr Systems Analyst / Programmer 2	$200.00
Project Accounting	
Project Analyst 1	$92.00
Project Analyst 2	$118.00
Sr Project Analyst	$158.00

Reimbursable In-House Costs:

Photo Copies (B&W 8.5”x11”)
Photo Copies (B&W 11”x17”)
Color Copies (up to 8.5"x11")
Color Copies (to 11"x17")
Compact Discs
Large format copies

Mileage-Company Vehicle
Mileage-POV
*current GSA POV mileage rate subject to change

All other direct costs, such as production, special photography, postage, delivery services, overnight mail, printing and any other services performed by subconsultant will be billed at cost plus 15%.

NOTE: Rates subject to change annually.

Price Proposal

Wells 6, 12, 14 and 15 Site Improvements

Engineering Design Services for Wells 6, 12, 14 and 15 Site Improvements

Submitted to: Irvine Ranch Water District (Attn: Tiffany Foo, PE)

Contract Type: T&M

Price Summary / Totals	
Task Pricing Totals	1,094,000
Specify Add'l Fees on Setup	0
Technology Use Fee	
Total Price	**1,094,000**

Project Phases / Tasks	Total Labor Hrs	Project Manager (Tom Epperson)	QA/QC Manager (Mark Bush)	Team Leader (Laurence Esguerra)	Project Engineer (Matt Vera)	Design Engineer (Jamie McElyea)	Design Engineer (Norma Pablo)	Designer (Patrick Kol)	Designer (Miranda Leibig)	Team Leader (Luke Ramirez)	WP (Deana Escamilla)	Team Leader (Eric Yuen)	Project Engineer (Jose Quiroz)	Design Engineer (Miguel Magpantay)	CADD (Eric Hutchins)	Team Leader (Mazen Kassar)	Project Engineer (Doug Seaman)	Design Engineer (Johnson Le)	Labor	Subs	ODCs	Task Pricing Totals
Bill Rate >		370.00	370.00	260.00	180.00	145.00	145.00	130.00	120.00	220.00	135.00	260.00	160.00	130.00	170.00	315.00	180.00	130.00				
Proj Area >		Project	QA/QC	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	HVAC	Project	Structures	Structures	Structures	Structures	Electrical	Electrical	Electrical				
Pricing by Resource																						
	6,042	100	50	236	732	478	448	532	544	140	52	130	334	80	170	244	808	964	1,029,310	59,312	5,378	**1,094,000**
Task 1: Project Management	**290**	**26**	**50**	**34**	**52**	**4**					**16**	**30**	**4**			**54**	**12**	**8**	**77,710**		**290**	**78,000**
General Project Management (10 mths)	10	10																	3,700			3,700
Weekly e-mails/Monthly Reports (40/10)	50			10	40														9,800			9,800
Meetings/Workshops (15)	74	16		24	8	4						6	4			8	4		19,620		290	19,910
SCE Coordination	18															2	8	8	3,110			3,110
QA/QC	114		50									24				40			37,340			37,340
Safety Program	24				4						16					4			4,140			4,140
Task 2: Preliminary Design Report	**1,666**	**20**	**-**	**72**	**220**	**156**	**96**	**158**	**108**	**12**	**8**	**42**	**132**	**40**	**30**	**56**	**252**	**264**	**279,140**		**860**	**280,000**
Review Background Material	24			4	4					4		4				4	4		5,660			5,660
Supplemental Condition Assessment Plan	20			2	8							2				4	4		4,460			4,460
Supplemental Condition Assessment Field Work	88			8	16	16						8	16			8	16		17,320		220	17,540
Assessment Memo	102	2		8	32							4	16			8	32		20,460			20,460
Improvement Recommendations	176	8		16	40	24						8	16			8	40	16	34,240			34,240
Layouts and Alternatives	180	4		16	32	32						8	16	16		8	24	24	32,720			32,720
Base Map Preparation (4 well sites)	152					12		48					8	24			12	48	20,780			20,780
30% Drawings	660				40	48	72	90	100				40		30		80	160	95,000			95,000
Procurement Strategies	30			2	8		8									4	8		5,820			5,820
Schedule and Costs	106	2		8	16	16	8	4				4	12			4	16	16	18,880			18,880
PDR	100	4		8	16		8	8	8	8	4	4	8			8	16		19,620			19,620
PDR Processing (2 submittals)	28				8	8		8			4								4,180		640	4,820
Task 3: Final Design	**4,030**	**52**		**120**	**448**	**316**	**352**	**370**	**436**	**128**	**28**	**52**	**196**	**40**	**138**	**130**	**536**	**688**	**660,710**	**59,312**	**4,178**	**724,200**
Topographic Field Survey	8				2	4					2								1,210	10,472		11,682
Utility Review	52					16	16		16		4								7,100		440	7,540
Optional Pothole Investigation	16			2	4	8					2								2,670	27,060		29,730
Optional Geotechnical Investigation	4				2						2								630	21,780		22,410
Structural Calculations	70											10	20	40					11,000			11,000
HVAC/Ventilation Calculations	136				8	8				120									29,000			29,000
Electrical Design Coordination	52															4	16	32	8,300			8,300
I&C - Control Narratives	48															8	32	8	9,320			9,320
Construction Laydown and Phasing	76	4		8	16	16						4	4			8	16		15,840			15,840
Pre-purchase	26	2		4	8											4	8		5,920			5,920
CEQA Documentation Support	44				8	16	16				4								6,620		80	6,700
Construction Drawings																						
General Sheets (6 shts)	110				8	16	36		50										14,980			14,980
General Civil/Piping/Mech/HVAC Sheets (5 shts)	124			8	20	16	12	30	30	8									19,000			19,000
General Structural Sheets (3 shts)	44											6	20		18				7,820			7,820
General Electrical/Instrumentation (5 shts)	140															20	40	80	23,900			23,900
Well 6 Site plans (4 shts)	140	4		8	28	40		30	30										21,900			21,900
Well 6 Mechanical Plans (6 shts)	216	4		8	44		60	50	50										32,680			32,680
Well 6 Structural Plans (3 shts)	66											6	30		30				11,460			11,460
Well 6 Electrical/Instrumentation (11 shts)	260															20	100	140	42,500			42,500
Well 12 Site plans (5 shts)	183	5		10	36	52		40	40										28,470			28,470
Well 12 Mechanical Plans (6 shts)	216	4		8	44		60	50	50										32,680			32,680
Well 12 Structural Plans (3 shts)	66											6	30		30				11,460			11,460
Well 12 Electrical/Instrumentation (11 shts)	260															20	100	140	42,500			42,500
Well 14 Site plans (5 shts)	183	5		10	36	52		40	40										28,470			28,470
Well 14 Mechanical Plans (6 shts)	216	4		8	44		60	50	50										32,680			32,680
Well 14 Structural Plans (3 shts)	66											6	30		30				11,460			11,460
Well 14 Electrical/Instrumentation (11 shts)	260															20	100	140	42,500			42,500
Well 15 Site plans (4 shts)	140	4		8	28	40		30	30										21,900			21,900
Well 15 Mechanical Plans (6 shts)	216	4		8	44		60	50	50										32,680			32,680
Well 15 Structural Plans (3 shts)	66											6	30		30				11,460			11,460
Well 15 Electrical/Instrumentation (11 shts)	252															12	100	140	39,980			39,980

Price Proposal

Wells 6, 12, 14 and 15 Site Improvements

Engineering Design Services for Wells 6, 12, 14 and 15 Site Improvements

Submitted to: Irvine Ranch Water District (Attn: Tiffany Foo, PE)

Contract Type: T&M

Price Summary / Totals	
Task Pricing Totals	1,094,000
Specify Add'l Fees on Setup	0
Technology Use Fee	
Total Price	**1,094,000**

	Bill Rate >	370.00	370.00	260.00	180.00	145.00	145.00	130.00	120.00	220.00	135.00	260.00	160.00	130.00	170.00	315.00	180.00	130.00
	Proj Area >	Project	QA/QC	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	Civil/Mechanical	HVAC	Project	Structures	Structures	Structures	Structures	Electrical	Electrical	Electrical
	Total Labor Hrs	Project Manager (Tom Epperson)	QA/QC Manager (Mark Bush)	Team Leader (Laurence Esguerra)	Project Engineer (Matt Vera)	Design Engineer (Jamie McElyea)	Design Engineer (Norma Pablo)	Designer (Patrick Kol)	Designer (Miranda Leibig)	Team Leader (Luke Ramirez)	WP (Deana Escamilla)	Team Leader (Eric Yuen)	Project Engineer (Jose Quiroz)	Design Engineer (Miguel Magpantay)	CADD (Eric Hutchins)	Team Leader (Mazen Kassar)	Project Engineer (Doug Seaman)	Design Engineer (Johnson Le)
Project Phases / Tasks	**6,042**	100	50	236	732	478	448	532	544	140	52	130	334	80	170	244	808	964
Project Manual	112	8		16	40						8	4	16			8	12	
Schedule and Construction Cost	90	4		8	16	8	8					4	16			6	12	8
Design Deliverables (3 submittals)	72			6	12	24	24				6							
Task 4: Bid Period Assistance	**56**	**2**		**10**	**12**	**2**		**4**				**6**	**2**		**2**	**4**	**8**	**4**
Plan Revisions (16 hours)	16					2		4					2		2		2	4
Specification Revisions (16 hours)	16			2	4							4				2	4	
Bidder Questions (16 hours)	16	2		4	4							2				2	2	
Pre-Bid Meeting	8			4	4													
Totals	**6,042**	**100**	**50**	**236**	**732**	**478**	**448**	**532**	**544**	**140**	**52**	**130**	**334**	**80**	**170**	**244**	**808**	**964**

Pricing by Resource

	Labor	Subs	ODCs	Task Pricing Totals
Project Phases / Tasks	**1,029,310**	**59,312**	**5,378**	**1,094,000**
Project Manual	23,680			23,680
Schedule and Construction Cost	17,450			17,450
Design Deliverables (3 submittals)	11,490		3,658	15,148
Task 4: Bid Period Assistance	**11,750**		**50**	**11,800**
Plan Revisions (16 hours)	2,350			2,350
Specification Revisions (16 hours)	3,630			3,630
Bidder Questions (16 hours)	4,010			4,010
Pre-Bid Meeting	1,760		50	1,810
Totals	**1,029,310**	**59,312**	**5,378**	**1,094,000**

February 20, 2024
Prepared by: K. Lew / B. Rios / E. Akiyoshi
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

PLANNING AREA 1 ORCHARD HILLS NEIGHBORHOOD 4
CONSTRUCTION CHANGE ORDERS

SUMMARY:

Irvine Community Development Company, LLC (ICDC) is proceeding with the development of Planning Area 1 (PA1) Orchard Hills Neighborhood 4 (NH4), which includes the construction of streets, storm drains, domestic water, sanitary sewer, and recycled water improvements. As part of the development, ICDC will construct IRWD capital facilities under an existing Supplemental Reimbursement Agreement. Staff recommends that the Board:

- Authorize the General Manager to approve Change Order No. 1 in the amount of $483,529.48 with ICDC for the PA1 Jeffrey Road Extension Domestic Water Improvements, Project 12784;
- Authorize a budget addition for Project 12784 in the amount of $605,000 for the PA 1 Jeffrey Road Extension Domestic Water Improvements; and
- Authorize a budget addition for Project 12948 in the amount of $259,000 for the PA 1 Orchard Hills NH4 Domestic Water Improvements.

BACKGROUND:

ICDC is moving forward with the first phase of residential and commercial development of PA1 Orchard Hills NH4. Orchard Hills NH4 is bound by Portola Parkway to the south, Rattlesnake Reservoir to the west, Jeffrey Road to the east, and National Community Conservation Plan conservation land to the north. The project location map is shown as Exhibit "A". As part of this development, ICDC is designing and constructing IRWD's capital domestic water and recycled water improvements. The required IRWD capital facilities are documented in the February 2005 Planning Areas 1 and 2 Sub-Area Master Plan and all subsequent addenda and updates prepared by Stantec Consulting Services, Inc.

The design and construction of the IRWD capital facilities will be performed under the terms of the Master Reimbursement Agreement between IRWD and ICDC approved by the Board in May 1997 and as further refined in the Supplemental Reimbursement Agreement. The Supplemental Reimbursement Agreement for PA1 was approved in May 2005.

During the construction of NH4 backbone facilities, the City of Irvine modified their plans for the Gateway Residential Village that is located adjacent to NH4. In the fall of 2023, the City of Irvine finalized a plan to build a residential village at a 70-acre site on the corner of Portola Parkway and Jeffrey Road. The City and ICDC had their consultants analyze the impacts for this future residential village on the planned backbone water and sewer systems in the area and shared the results with IRWD that indicated a required looped 12-inch domestic water pipeline with two sources. One source is included as part of Change Order No. 1 for project 12784 in

Jeffrey Road, and the other source is included as part of Change Order No. 2 for project 12948. These domestic water capital facilities need to be constructed along with ICDC's construction for Orchard Hills NH4. The future Gateway Residential Village will connect and extend these facilities as part of their future residential construction project.

Jeffrey Road Extension Domestic Water Change Order No. 1:

Change Order No. 1 consists of 2,630 feet of 12-inch domestic water pipeline to replace the originally planned 10-inch pipeline and the cost to upsize approximately 500 feet of 6-inch to 8-inch recycled water pipeline as shown in Exhibit "B". Staff has reviewed the total cost of $483,529.48 and finds it to be reasonable based on a unit price comparison to similar recent bids. Staff requests Board approval of this change order and the addition of project 12784 in the amount of $605,000 to the FY 2023-24 Capital Budget.

NH4 Domestic Water Change Order No. 2:

Change Order No. 2 consists of approximately 500 feet of 12-inch pipeline to replace the originally planned 10-inch pipeline in the NH4 backbone loop. This change order in the amount of $157,023.50 will be approved at the General Manager's approval level. Staff requests the Board authorize the addition of Project 12948 in the amount of $259,000 to the FY 2023-24 Capital Budget to fund this change order.

FISCAL IMPACTS:

Staff requests the addition of Projects 12784 and 12948 to the FY 2023-24 Capital Budget as follows:

Project No.	Current Budget	Addition <Reduction>	Total Budget
12784	$ 0	$ 605,000	$ 605,000
12948	$ 0	$ 259,000	$ 259,000
	$ 0	$ 864,000	$ 864,000

ENVIRONMENTAL COMPLIANCE:

Construction of capital facilities for Orchard Hills NH4 is subject to CEQA. In conformance with the California Code of Regulations Title 14, Chapter 3, Article 7 an Environmental Impact Report was certified by the City of Irvine, the lead agency on June 14, 2005 (SCH#2004041080).

RECOMMENDATION:

That the Board authorize the General Manager to approve Change Order No. 1 in the amount of $483,529.48 with Irvine Community Development Company, LLC for the Planning Area 1 Jeffrey Road Extension, Project 12784; authorize a budget addition for Project 12784 in the amount of $605,000 for the Planning Area 1 Jeffrey Road Extension Domestic Water Improvements; and authorize a budget addition for Project 12948 in the amount of $259,000 for the Planning Area 1 Orchard Hills Neighborhood 4 Domestic Water Improvements.

LIST OF EXHIBITS:

Exhibit "A" – Location Map
Exhibit "B" – Change Order No. 1, PA 1 Jeffrey Road Extension Domestic Water Improvements

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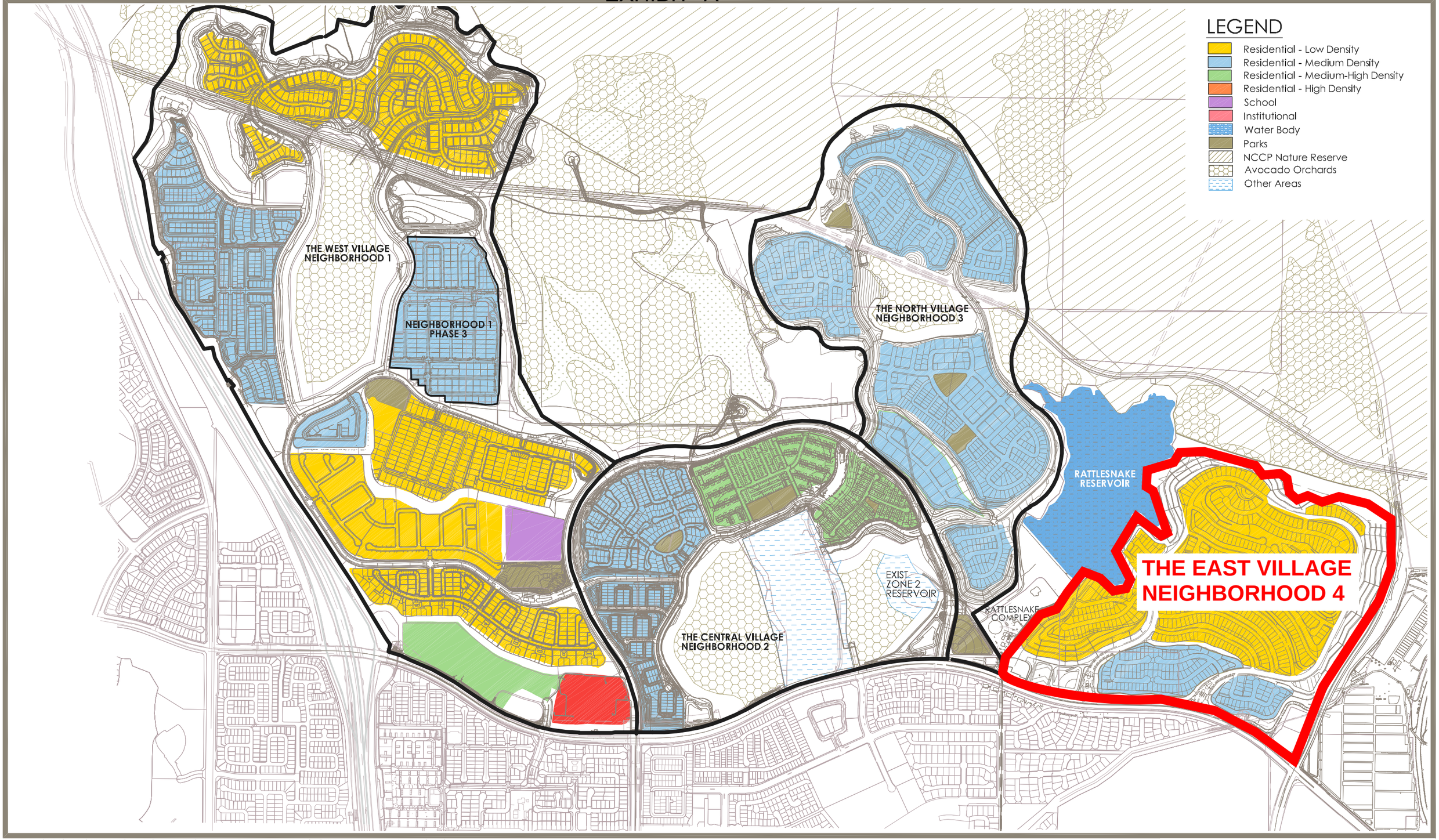
EXHIBIT "A"



DRAWING: v:\1840\active\184031168\drawing\exhibit_files\31168c-ex7021.dwg PLOTTED: 9/17/2019 1:11 PM BY: Lu, Michael (Irvine)

Stantec
38 TECHNOLOGY DRIVE, SUITE 100
IRVINE, CA 92618
949.923.6000 stantec.com

PREPARED FOR THE:

IRVINE RANCH WATER DISTRICT

Scale: 0 1100 Ft

LOCATION MAP

EXHIBIT "A"

Note: This page is intentionally left blank.

Exhibit "B"

CHANGE NO.:
DATE: 11/20/23

POTENTIAL CHANGE OF WORK ACKNOWLEDGEMENT & VALUE
(FOR IRWD CAPITAL IMPROVEMENTS)

The purpose of this form is to acknowledge a change in work for the intent of reimbursement of costs. Upon acceptance a change order will be issues.

IRWD P.O. No.: 7547
ICDC Original PO No.: 4500196731 /4500209663 co03
Owner: Irvine Community Development Company
Consultant/Contractor: FYDAQ Company Inc.

Sewer	
Domestic Water	x
Reclaim Water	x
Other	

Design Engineer: Wilson Mikami
IRWD Mgr. Kelly Lew

Project Description: Orchard Hills, Jeffrey Rd. Ext + 6" IRWD AD/PW WET B1,Gateway Project Water System Upgrades.

PART A – POTENTIAL CHANGE OF WORK:

Plan Revision Required: ☐ YES ☐ NO **Estimated Cost:** $483,529.48

Change Initiated By: Irvine Ranch Water District

Work Description: Reclaimed water delta-IRWD Capital upsizing from 6" to 8". Domestic water delta upsizing from 10" AD to 12" IRWD Capital

1. Submitted by: Jacob O'Hair - 11/20/23
Owner Representative / Date

2a. In IRWD's opinion the aforementioned work qualify as a potential change in work. **does** ☐ **does not** ☐

2b. IRWD comments (required if representative does not concur with the potential change):

2c. Reviewed by:
IRWD Representative / Date

3. Received and Recorded by:
Owner Representative / Date

PART B – CHANGE OF WORK VALUE: **$**

Detailed Backup Attached ☐

1. Submitted by: Jacob O'Hair 11-20-23
Owner Representative / Date

2. Recommended by:
IRWD Representative / Date

CHANGE ORDER REQUEST

Request Date: **November 20, 2023**

To: Contracts Administration Dept. (MS: T1-7-5)

Requestor*: **Jacob O'Hair** 11-20-23

** Requestor = the person directing/managing the work effort.*

Manager**: **Ryan Rasmussen**

*** Manager = the person with signature authority and managing budget.*

Vendor Name: **Fydaq Company, Inc.**

Project Title: **ORCHARD HILLS-PA1-JEFFREY RD EXT +6" IRWD AD_PW WET B1-GATEWAY PROJECT WATER SYSTEM UPGRADES**

For House Construction (Vertical Only): CM to check boxes:

- ☐ Base House Only (Single Home/Ph)
- ☐ Base House Only (All Future Homes)
- ☐ Structural Option (Single Home/Ph)
- ☐ Structural Option (All Future Homes)
- ☐ **Other - Requires Additional Input from VP, Homebuilding Purchasing Prior to Processing**

CODING *(To be completed by Manager)*

ORIGINAL CONTRACT PO NO. *(Generated by SAP):*	**4500196731**		
BUSINESS LINE (A):	**LD**	MASTER PROJECT (B):	**0001**
TASK (C):	**ST**	TASK ID (D):	**50**
POTENTIAL CONTRACT:	**XX**	POTENTIAL CONTRACT ID:	**00**
FUNDING SOURCE (E):	**3 (IRWD)**		
WBS ELEMENT (A-B.C.D.E)	**LD - 0001 . ST . 50 . 3 (IRWD)**		
FUNCTIONAL AREA:	**OALL**		
COST ELEMENT or G/L ACCT:	**9600450**		
PO DOCUMENT CODE:			

Coding approved by Manager:
Signature: PER CONTRACT / Date:

CHANGE ORDER INFORMATION:

Change Order Description: *[Itemize what change(s) occurred.]*

Changes proposed by the COI Gateway development have required upsizing in domestic and reclaimed water lines originally contracted for the Jeffrey Road improvements. Costs include restocking already purchased pipe and fittings and the restaking of survey markers in the field. Changes include increasing the Reclaimed water from 6" to 8" and Domestic 10" AD to 12" IRWD Capital.

Why is this Change Order necessary? *[Itemize where the change(s) occurred, why the change(s) occurred, and who requested the change(s).]*

In order for the Gateway Development to operate as designed. The water lines on Jeffrey Road needed to be upsized causing an escalation in cost. Since the design was not completed prior to the design of Jeffrey Road Improvements, restocking and restaking were needed in order to install the correct size needed to account for the adjusted development.

Total Change Amount: **$483,529.48** **Fixed Fee (LS)**

Reimbursable Amt Chg: **$483,529.48** Note: This amount is part of the total Change Order amount above.

CHANGES IN CONTRACT TERMS:

Does this Change Order require the Contract Time to be extended?

Contract Time Extended By:

Note: For Construction Contracts, the new completion date shall be reflected the in the Weekly Statement of Working Days.

ITEMS REQUIRED TO BE ATTACHED AS SUPPORTING DOCUMENTS TO CHANGE ORDER:

- ❑ Scope of Services
- ❑ Price Quote (Proposal)
- ❑ Backup Documentation (as applicable)
- ❑ T&M Tickets (signed)
- X PCOW (as applicable)
- ❑ >$250K Memo (as applicable)
- ❑ Engineer's Estimate (Construction Contracts Only)
- ❑ Engineer's Justification Memo (Construction Contracts Only)
- ❑ Contractor's Price (Construction Contracts Only)
- ❑ Final Quantity Certification (Construction Contracts Only)
- ❑ Other:

CODING APP SIGNATURE: DocuSigned by: Kristen Frangente 09CD2522B48D4A1...	DATE: 11/22/2023 | 08:58 AM PST		CHANGE ORDER PURCHASE ORDER NO. *(Generated by SAP):*		
CHANGE ORDER NO. *(Generated by SAP):*		CHANGE ORDER FULLY EXECUTED ON:		REQUESTOR NOTIFIED ON:	

CONTRACTOR'S ESTIMATE
ORCHARD HILLS (PA 1)
NEIGHBORHOOD 4
JEFFREY ROAD EXTENSION
CONTRACT "B1" WET UTILITIES (DOMESTIC & RECYCLED WATER)
ASSESSMENT DISTRICT NO. 05-21 AND IRWD CAPITAL IMPROVEMENTS
(PREVAILING WAGE)
TASK/PC ID NO. LD-0001.ST.50.cn01
CONTRACT NO. 45000___

CONTRACTOR:
FYDAQ COMPANIES, INC.

Item #	Description	Estimated Quantity	Unit	Unit Price	Total
I.	**BASE CONTRACT (ASSESSMENT DISTRICT NO. 05-21 IMPROVEMENTS)**				
A.	**GENERAL**				
1.	MOBILIZATION (NOT TO EXCEED 2% OF CONTRACT PRICE (SECTIONS A-D)	-1	LS	$ 5,000.00	$ (5,000.00)
2.	PAYMENT & PERFORMANCE BONDS (SECTION A-D)	-1	LS	$ 4,865.00	$ (4,865.00)
4.	TRAFFIC CONTROL (SECTIONS A-D)	-1	LS	$ 750.00	$ (750.00)
5.	INTERIM EROSION AND SEDIMENT CONTROL (SECTIONS A-D)	-1	LS	$ 750.00	$ (750.00)
B.	**DOMESTIC WATER IMPROVEMENTS (NON-CAPITAL)**				
	NOTE: All tees, bends and other fittings are to be included in the pipe unit price				
9.	INSTALL 10" PVC C-900, DR-14 DOMESTIC WATER MAIN PER IRWD STD. NO. W-17	-2,335	LF	$ 80.25	$ (187,383.75)
10.	INSTALL TEMPORARY FLUSH-OUT ASSEMBLY PER IRWD STD. NO. W-12	-1	EA	$ -	$ -
11.	INSTALL 6" RESIDENTIAL FIRE HYDRANT ASSEMBLY PER IRWD STD. NO. W-8 WITH BLUE REFLECTIVE PAVEMENT MARKER PER O.C.F.A. GUIDELINES	-3	EA	$ 11,235.00	$ (33,705.00)
12.	INSTALL 8" RESIDENTIAL FIRE HYDRANT ASSEMBLY PER IRWD STD. NO. W-8 WITH BLUE REFLECTIVE PAVEMENT MARKER PER O.C.F.A. GUIDELINES	-2	EA	$ 15,727.00	$ (31,454.00)
13.	INSTALL 1" AIR AND VACUUM RELEASE PER IRWD STD. NO. W-11	-1	EA	$ 5,780.00	$ (5,780.00)
14.	INSTALL 10" GATE VALVE (FE X FE) PER IRWD STD. W-22	-3	EA	$ 3,514.00	$ (10,542.00)
16.	ADJUST EXISTING VALVE COVER TO GRADE PER IRWD STD. NO. W-22	-1	EA	$ 525.00	$ (525.00)
17.	ADJUST VALVE CAP TO BASE PAVE GRADE	-3	EA	$ 525.00	$ (1,575.00)
18.	ADJUST VALVE CAP TO FINAL GRADE	-3	EA	$ 525.00	$ (1,575.00)
	TOTAL ASSESSMENT DISTRICT NO. 05-21 IMPROVEMENTS CHANGE ORDER PRICE (SECTIONS A-C)				**$ (283,904.75)**
NEW	**NON-ASSESSMENT DISTRICT IMPROVEMENTS**				
NEW	**DOMESTIC WATER IMPROVEMENTS (NON-CAPITAL)**				
NEW	RE-STOCK 10" DOMESTIC WATER ALREADY PURCHASED AND ANY APPURTENANCES. LIST OF POTENTIAL ITEMS INCLUDES;	1	LS	$ 3,482.00	$ 3,482.00
	2,335 LF; 10" PVC C-900, DR-14 DOMESTIC WATER MAIN				
	3 EA; 10"X6"X10" TEE				
	2 EA; 10"X8"X10" TEE				
	10 EA; 10" FE X PO ADAPTER				
	3 EA; 10" GATE VALVE				
NEW	**RECYCLED WATER IMPROVEMENTS (NON-CAPITAL)**				
NEW	RE-STOCK 6" RECYCLED WATER ALREADY PURCHASED. LIST OF POTENTIAL ITEMS INCLUDES;	1	LS	$ 672.00	$ 672.00
	498 LF; 6" AWWA PURPLE PVC C-900, DR-14 RECYCLED WATER MAIN				
	TOTAL NON-ASSESSMENT DISTRICT IMPROVEMENTS CHANGE ORDER PRICE				**$ 4,154.00**
D.	**GENERAL - IRWD CAPITAL FACILITIES**				
22.	MOBILIZATION (NOT TO EXCEED 2% OF CONTRACT PRICE (SECTIONS D-E & NEW)	1	LS	$ 5,000.00	$ 5,000.00
23.	PAYMENT & PERFORMANCE BONDS (SECTION D-E & NEW)	1	LS	$ 6,863.98	$ 6,863.98

CONTRACTOR'S ESTIMATE
ORCHARD HILLS (PA 1)
NEIGHBORHOOD 4
JEFFREY ROAD EXTENSION
CONTRACT "B1" WET UTILITIES (DOMESTIC & RECYCLED WATER)
ASSESSMENT DISTRICT NO. 05-21 AND IRWD CAPITAL IMPROVEMENTS
(PREVAILING WAGE)
TASK/PC ID NO. LD-0001.ST.50.cn01
CONTRACT NO. 45000___

CONTRACTOR:
FYDAQ COMPANIES, INC.

Item #	Description	Estimated Quantity	Unit	Unit Price	Total
26.	INTERIM EROSION AND SEDIMENT CONTROL (SECTIONS D-E & NEW)	1	LS	$ 750.00	$ 750.00
E.	**IRWD RECYCLED WATER CAPITAL FACILITIES**				
	NOTE: All tees, bends and other fittings are to be included in the pipe unit price				
29.	INSTALL 6" AWWA PURPLE PVC C900, DR-14 PER IRWD STD. NO. W-17	-498	LF	$ 47.75	$ (23,779.50)
NEW	INSTALL 8" AWWA PURPLE PVC C900, DR-14 PER IRWD STD. NO. W-17	498	LF	$ 69.25	$ 34,486.50
NEW	**IRWD DOMESTIC WATER CAPITAL FACILITIES**				
	NOTE: All tees, bends and other fittings are to be included in the pipe unit price				
NEW	INSTALL 12" PVC C-900, DR-14 DOMESTIC WATER MAIN PER IRWD STD. NO. W-17	2,630	LF	$ 129.50	$ 340,585.00
NEW	INSTALL TEMPORARY FLUSH-OUT ASSEMBLY PER IRWD STD. NO. W-12	1	EA	$ 233.50	$ 233.50
NEW	INSTALL 6" RESIDENTIAL FIRE HYDRANT ASSEMBLY W/ BFV PER IRWD STD. NO. W-8 WITH BLUE REFLECTIVE PAVEMENT MARKER PER O.C.F.A. GUIDELINES	3	EA	$ 2,860.00	$ 8,580.00
NEW	INSTALL 8" RESIDENTIAL FIRE HYDRANT ASSEMBLY W/ BFV PER IRWD STD. NO. W-8 WITH BLUE REFLECTIVE PAVEMENT MARKER PER O.C.F.A. GUIDELINES	2	EA	$ 13,715.00	$ 27,430.00
NEW	INSTALL 1" AIR AND VACUUM RELEASE PER IRWD STD. NO. W-11	1	EA	$ 15,462.00	$ 15,462.00
NEW	INSTALL 12" BUTTERFLY VALVE (FE X FE) PER IRWD STD. W-22	5	EA	$ 5,594.00	$ 27,970.00
NEW	INSTALL END OF LINE FLUSH-OUT ASSEMBLY (WITH BUTTERFLY VALVE) PER IRWD STD. NO. W-13 & DETAIL ON PLAN	1	EA	$ 11,539.00	$ 11,539.00
NEW	INSTALL END OF LINE FLUSH-OUT ASSEMBLY (WITHOUT VALVE) PER IRWD STD. NO. W-13 & DETAIL ON PLAN	1	EA	$ 8,264.00	$ 8,264.00
NEW	INSTALL CONCRETE SLOPE ANCHOR PER IRWD STD. NO. G-10	9	EA	$ 710.00	$ 6,390.00
NEW	ADJUST VALVE CAP TO BASE PAVE GRADE	5	EA	$ 725.00	$ 3,625.00
NEW	ADJUST VALVE CAP TO FINAL GRADE	5	EA	$ 550.00	$ 2,750.00
NEW	REMOVE AND RECONSTRUCT PORTION OF EXISTING CONCRETE TERRACE DRAINS AS REQUIRED TO CONSTRUCT 12" DOMESTIC WATER LINE WITHIN SLOPE.	1	LS	$ 5,880.00	$ 5,880.00
NEW	ALL ELSE REQUIRED AS SHOWN ON THE PLANS AND SPECIFICATIONS, BUT NOT LISTED ON THE SCHEDULE OF VALUES	1	LS	$ 1,500.00	$ 1,500.00
	TOTAL IRWD CAPITAL CHANGE ORDER PRICE (SECTIONS D-E & NEW)				**$ 483,529.48**
	GRAND TOTAL CHANGE ORDER PRICE (SECTIONS A-E & NEW)				**$ 203,778.73**

February 20, 2024
Prepared by: K. Lew / B. Rios / E. Akiyoshi
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

PLANNING AREA 51 HERITAGE FIELDS CAPITAL FACILITIES

SUMMARY:

Heritage Fields, LLC is proceeding with the development of Planning Area 51 (Great Park), which includes the construction of streets, storm drains, domestic water, sanitary sewer, and recycled water improvements. As part of the development, Heritage Fields will construct IRWD capital facilities under an existing Supplemental Reimbursement Agreement (SRA). Staff recommends that the Board:

- Authorize the General Manager to accept Heritage Fields' construction contract with FYDAQ Company, Inc. in the amount of $1,667,287 for the Marine Way Capital Domestic Water, Sanitary Sewer, and Recycled Water Improvement project; and
- Authorize the General Manager to accept Heritage Fields' construction contract with FYDAQ Company, Inc. in the amount of $232,314.80 for the Lynx Capital Domestic Water and Sanitary Sewer Improvement project.

BACKGROUND:

Heritage Fields is moving forward with the residential development of Districts 5 and 6. District 5 South is south of Cadence, west of Lynx, north of Harrier, and east of Treble. District 6 North is north of Marine Way, south of Harrier, and east of Treble. The project location map is shown as Exhibit "A". As part of this development, Heritage Fields will design and construct IRWD's domestic water, sanitary sewer, and recycled water capital improvements. The required IRWD capital facilities are documented in the September 2016 Planning Area 51 Sub-Area Master Plan Update and all subsequent addendums and updates prepared by Stantec.

The design and construction of the IRWD facilities will be performed under the terms of the Master Reimbursement Agreement approved by the Board in August 2012 and as further refined in the SRA dated November 25, 2019.

Marine Way Capital Domestic Water, Sanitary Sewer and Recycled Water Improvements:

The Marine Way Capital Domestic Water, Sanitary Sewer, and Recycled Water Improvements consist of installing approximately 6,600 feet of 12-inch domestic water pipeline, 1,700 feet of 16-inch and 18-inch sewer pipeline, and 6,600 feet of 8-inch and 16-inch recycled water pipeline in Marine Way from Skyhawk to Lynx. Heritage Fields retained Hunsaker and Associates and Proactive Engineering Consultants to prepare the plans and received bids from three contractors. Heritage Fields recommends awarding the construction contract to the low bidder, FYDAQ Company Inc., for a bid amount of $1,667,287, as shown in Exhibit "B". In addition, Heritage Fields has received consultant proposals for geotechnical observation and testing, surveying, and construction support services. Field archeological and paleontological monitoring were provided

during mass grading and are not included in the bid. Staff reviewed the consultant proposals and the construction bids and found the amounts to be acceptable. A summary of the Marine Way Capital Domestic Water, Sanitary Sewer, and Recycled Water Improvement costs are shown below:

Design (Hunsaker)	$9,000.00
Design (Proactive)	$93,700.00
Construction (FYDAQ)	$1,667,287.00
Geotechnical Services (Engeo)	$35,395.00
Surveying (Hunsaker)	$59,700.00
Construction Engineering (Proactive)	$14,600.00
Heritage Fields Administration Fee (1%)	$16,672.87
	$1,896,354.87

Lynx Capital Domestic Water and Sanitary Sewer Improvements:

The Lynx Capital Domestic Water and Sanitary Sewer Improvements consist of installing approximately 650 feet of 12-inch domestic water pipeline and 600 feet of 16-inch sewer pipeline on Lynx from Marine Way to Harrier. Heritage Fields retained Hunsaker and Associates to prepare the plans and received bids from three contractors. Heritage Fields recommends awarding the construction contract to the low bidder, FYDAQ Company Inc., for a bid amount of $232,314.80, as shown in Exhibit "C". In addition, Heritage Fields has received consultant proposals for geotechnical observation and testing and field coordination/surveying. Field archeological and paleontological monitoring were provided during mass grading and are not included in the bid. Staff has reviewed the consultant proposals and the construction bids and find the amounts to be acceptable. A summary of the Lynx Capital Domestic Water and Sanitary Sewer Improvement costs is shown below:

Design (Hunsaker)	$60,700.00
Construction (FYDAQ)	$232,314.80
Geotechnical Services (Engeo)	$20,700.00
Field Coordination/Surveying (Hunsaker)	$13,300.00
Heritage Fields Administration Fee (1%)	$2,323.14
	$329,337.94

FISCAL IMPACTS:

Projects 12371, 12386, 12387, 12432, and 12433 are included in the FY 2023-24 Capital Budget and are funded by Improvement Districts 1120 and 2120.

ENVIRONMENTAL COMPLIANCE:

Construction of capital domestic water, sewer, and recycled water facilities for the Great Park Development is subject to CEQA. In conformance with the California Code of Regulations Title 14, Chapter 3, Article 7 an Environmental Impact Report was certified by the City of Irvine, the lead agency on April 4, 2012 (SCH# 2002101020).

RECOMMENDATION:

That the Board authorize the General Manager to accept Heritage Fields' construction contract with FYDAQ Company, Inc. in the amount of $1,667,287 for the Marine Way Capital Domestic Water, Sanitary Sewer and Recycled Water Improvements, Projects 12371, 12386, and 12387; and authorize the General Manager to accept Heritage Fields' construction contract with FYDAQ Company, Inc. in the amount of $232,314.80 for the Lynx Capital Domestic Water and Sanitary Sewer Improvements, Projects 12432 and 12433.

LIST OF EXHIBITS:

Exhibit "A" – Location Map
Exhibit "B" – Bid Summary, Marine Way Capital Domestic Water, Sanitary Sewer and Recycled Water Improvements, Projects 12371, 12386 and 12387
Exhibit "C" – Bid Summary, Lynx Capital Domestic Water and Sanitary Sewer Improvements, Projects 12432 and 12433

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EXHIBIT "A"

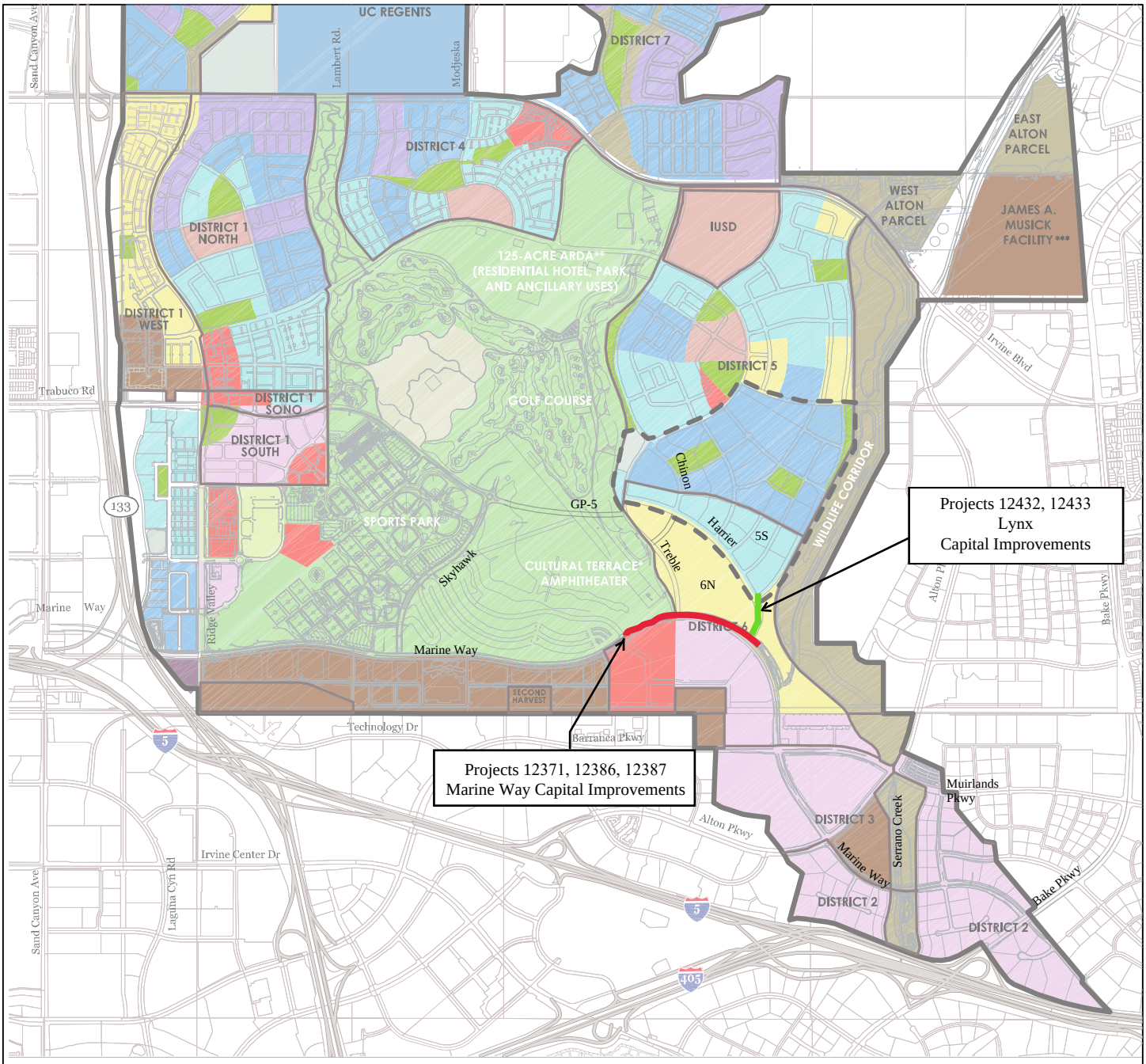

EXHIBIT A

LOCATION MAP

not to scale

Note: This page is intentionally left blank.

PROJECT: Marine Way Stage 2 Wet Improvements
IRWD Code 7902 & MW Stage 2 Storm Drain Imp.

OWNER: Heritage Fields El Toro, LLC

IRWD CAPITAL CODE# 7902 BID SPREAD

Engineer's Estimate	Fydaq - Low	L&S	Leatherwood

CAPITAL - MARINE WAY STAGE 2 IRWD - CODE 7902

Capital - Marine Way Stage 2 IRWD Code 7902

		Engineer's Estimate	Fydaq - Low	L&S	Leatherwood
C	Capital - Marine Way Stage 2 IRWD Code 7902				
C.1	SUB-TOTAL, SUBSECTION C.1 - General Items	$ 62,500.00	$ 31,397.00	$ 59,000.00	$ 77,000.00
C.2	SUB-TOTAL, SUBSECTION C.2 - Sewer - Capital	$ 218,170.00	$ 162,736.00	$ 212,051.00	$ 234,595.00
C.3	SUB-TOTAL, SUBSECTION C.3 - Domestic Water - Capital	$ 715,880.00	$ 659,715.00	$ 697,020.00	$ 722,300.00
C.4	SUB-TOTAL, SUBSECTION C.4 - Recycled Water - Capital	$ 1,040,100.00	$ 813,439.00	$ 1,039,300.00	$ 1,040,800.00
C.5	SUB-TOTAL, SUBSECTION C.5 - Additional Capital Construction Items on Plans not Identified in the Bid CPS (List Items)	$ -	$ -	$ -	$ -
	TOTAL CAPITAL CONTRACT PRICE SCHEDULE	$ 2,036,650.00	$ 1,667,287.00	$ 2,007,371.00	$ 2,074,695.00

CAPITAL IMPROVEMENTS - Marine Way Stage 2

Marine Way from Skyhawk to 3800' Easterly

NO.	CODE	General Items	QTY	UNIT	Engineer's Estimate UNIT PRICE	Engineer's Estimate AMOUNT	Fydaq - Low UNIT PRICE	Fydaq - Low AMOUNT	L&S UNIT PRICE	L&S AMOUNT	Leatherwood UNIT PRICE	Leatherwood AMOUNT
001	126-01	Mobilization, (Not to Exceed 2% of Section A)	1	LS	$ 15,000.00	$ 15,000.00	$ 5,000.00	$ 5,000.00	$ 13,000.00	$ 13,000.00	$ 40,000.00	$ 40,000.00
002	126-01	Develop Construction Water Supply & Storage	1	LS	$ 5,000.00	$ 5,000.00	$ 1,000.00	$ 1,000.00	$ 5,000.00	$ 5,000.00	$ 7,500.00	$ 7,500.00
003	126-01	Performance, Labor and Payment Bond	1	LS	$ 30,000.00	$ 30,000.00	$ 23,397.00	$ 23,397.00	$ 31,000.00	$ 31,000.00	$ 26,000.00	$ 26,000.00
004	126-01	SWPPP & BMP's (Interim Erosion Control)	1	LS	$ 10,000.00	$ 10,000.00	$ 1,000.00	$ 1,000.00	$ 7,500.00	$ 7,500.00	$ 2,500.00	$ 2,500.00
005	126-01	Traffic Control	1	LS	$ 2,500.00	$ 2,500.00	$ 1,000.00	$ 1,000.00	$ 2,500.00	$ 2,500.00	$ 1,000.00	$ 1,000.00
C.1		SUB-TOTAL, SUBSECTION C.1 - General Items				$ 62,500.00		$ 31,397.00		$ 59,000.00		$ 77,000.00

NO.	CODE	Sewer - Capital	QUAN	UNIT	Engineer's Estimate	Engineer's Estimate AMOUNT	Fydaq - Low UNIT PRICE	Fydaq - Low AMOUNT	L&S UNIT PRICE	L&S AMOUNT	Leatherwood UNIT PRICE	Leatherwood AMOUNT
006	130-05	Furnish and install 18" PVC Green C900 (DR14) sewer main including sewer indicator tape per IRWD std. dwg. S-6 and specifications, bedding, backfill, presure test , complete.	317	LF	$ 500.00	$ 158,500.00	$ 345.00	$ 109,365.00	$ 495.00	$ 156,915.00	$ 500.00	$ 158,500.00
007	130-05	Furnish and install 6" PVC SDR 35 sewer lateral including sewer indicator tape per IRWD std. dwg. S-6 and specifications, bedding, backfill, presure test , frame and cover, concrete pad, fittings, complete.	30	LF	$ 130.00	$ 3,900.00	$ 104.00	$ 3,120.00	$ 110.00	$ 3,300.00	$ 300.00	$ 9,000.00
008	130-10	Construct 60" diameter manhole per IRWD std. dwg. S-1 with 30" diameter manhole frame and cover, complete.	2	EA	$ 20,000.00	$ 40,000.00	$ 16,575.00	$ 33,150.00	$ 18,500.00	$ 37,000.00	$ 20,000.00	$ 40,000.00
009	130-10	Furnish and Install temporary terminal cleanout per IRWD std. dwg. S-5 and specifications, complete (deletable)	1	EA	$ 2,000.00	$ 2,000.00	$ 7,500.00	$ 7,500.00	$ 1,400.00	$ 1,400.00	$ 1,500.00	$ 1,500.00
010	130-10	Furnish and Install temporary 18" PVC plug per IRWD specifications, complete (deletable)	1	EA	$ 1,000.00	$ 1,000.00	$ 1,250.00	$ 1,250.00	$ 2,500.00	$ 2,500.00	$ 500.00	$ 500.00
011	130-10	Base pavement adjust manholes to grade per IRWD specifications, complete	2	EA	$ 750.00	$ 1,500.00	$ 600.00	$ 1,200.00	$ 850.00	$ 1,700.00	$ 750.00	$ 1,500.00
012	130-10	Cap pavement adjust manhole to grade per IRWD specifications, complete	2	EA	$ 800.00	$ 1,600.00	$ 600.00	$ 1,200.00	$ 850.00	$ 1,700.00	$ 750.00	$ 1,500.00
013	130-05	Join Existing sewer per IRWD specifications, complete	1	EA	$ 5,000.00	$ 5,000.00	$ 2,500.00	$ 2,500.00	$ 4,500.00	$ 4,500.00	$ 10,000.00	$ 10,000.00
014	130-06	Remove and dispose of existing temporary cleanout, complete	1	EA	$ 1,500.00	$ 1,500.00	$ 2,500.00	$ 2,500.00	$ 500.00	$ 500.00	$ 1,000.00	$ 1,000.00
015	130-05	Preform and provide copy of video of sewer main to IRWD inspector per IRWD specificatins, complete	317	LF	$ 10.00	$ 3,170.00	$ 3.00	$ 951.00	$ 8.00	$ 2,536.00	$ 35.00	$ 11,095.00
C.2		SUB-TOTAL, SUBSECTION C.2 - Sewer - Capital				$ 218,170.00		$ 162,736.00		$ 212,051.00		$ 234,595.00

NO.	CODE	Domestic Water - Capital	QUAN	UNIT	Engineer's Estimate	Engineer's Estimate AMOUNT	Fydaq - Low UNIT PRICE	Fydaq - Low AMOUNT	L&S UNIT PRICE	L&S AMOUNT	Leatherwood UNIT PRICE	Leatherwood AMOUNT
016	131-05	Furnish and install 12" APPW C-900 PVC (DR-14) water main including indicator tape per and tracer wire per IRWD std. dwg. W-17 and specifications, bacterial testing, pressure test, complete	3,752	LF	$ 140.00	$ 525,280.00	$ 115.00	$ 431,480.00	$ 135.00	$ 506,520.00	$ 150.00	$ 562,800.00
017	131-15	Furnish and Install 12" Butter Fly Valve CL-150B (FE x FE) and valve box per IRWD standard drawing W-22 and specifications, complete	14	EA	$ 5,500.00	$ 77,000.00	$ 5,545.00	$ 77,630.00	$ 5,400.00	$ 75,600.00	$ 5,000.00	$ 70,000.00
018	131-05	Furnish and Install 12" DI Adapter (FE x PO) per IRWD specifications, complete	32	EA	$ 1,000.00	$ 32,000.00	$ 975.00	$ 31,200.00	$ 1,300.00	$ 41,600.00	$ 500.00	$ 16,000.00

019	131-05	Furnish and install temporary flush-out assemble per IRWD standard drawing W-12 and specifications, complete	1	EA	$	3,000.00	$	3,000.00	$	5,000.00	$	5,000.00	$	2,500.00	$	2,500.00	$	2,500.00	$	2,500.00
020	131-05	Furnish and Install 1" air-vac assemble per IRWD standard drawing W-11 and specifications, complete	1	EA	$	7,500.00	$	7,500.00	$	6,700.00	$	6,700.00	$	7,200.00	$	7,200.00	$	7,500.00	$	7,500.00
021	131-05	Furnish and Install 12"x12"x10"x10" DI Cross (FE x FE), complete	2	EA	$	3,500.00	$	7,000.00	$	4,275.00	$	8,550.00	$	1,650.00	$	3,300.00	$	3,500.00	$	7,000.00
022	131-05	Furnish and Install 12"x12"x10" DI Tee (FE x FE) and thrust block per IRWD standard drawing W-16 and specifications, complete	1	EA	$	2,500.00	$	2,500.00	$	3,185.00	$	3,185.00	$	1,500.00	$	1,500.00	$	2,500.00	$	2,500.00
023	131-05	Furnish and Install 12"x12"x8" DI Tee (FE x FE) and thrust block per IRWD standard drawing W-16 and specifications, complete	8	EA	$	2,000.00	$	16,000.00	$	2,715.00	$	21,720.00	$	1,450.00	$	11,600.00	$	2,000.00	$	16,000.00
024	131-05	Furnish and Install 12"x12"x6" DI Tee (FE x FE) and thrust block per IRWD standard drawing W-16 and specifications, complete	3	EA	$	2,000.00	$	6,000.00	$	2,560.00	$	7,680.00	$	1,400.00	$	4,200.00	$	2,000.00	$	6,000.00
025	131-05	Furnish and Install 12"x12"x4" DI Tee (FE x FE) and thrust block per IRWD standard drawing W-16 and specifications, complete	2	EA	$	2,000.00	$	4,000.00	$	2,450.00	$	4,900.00	$	1,350.00	$	2,700.00	$	2,000.00	$	4,000.00
026	131-20	Furnish and Install Blow off assembly per IRWD standard drawing W-14 and specifications, complete	2	EA	$	7,500.00	$	15,000.00	$	19,610.00	$	39,220.00	$	8,500.00	$	17,000.00	$	5,000.00	$	10,000.00
027	131-15	Base pavement adjust valve can to grade per IRWD specifications, complete	13	EA	$	600.00	$	7,800.00	$	575.00	$	7,475.00	$	750.00	$	9,750.00	$	500.00	$	6,500.00
028	131-15	Cap pavement adjust valve can to grade per IRWD specifications, complete	13	EA	$	600.00	$	7,800.00	$	575.00	$	7,475.00	$	750.00	$	9,750.00	$	500.00	$	6,500.00
029	131-05	Remove and dispose temporary flush-out and Join existing 12" PVC per IRWD Specifications, complete	1	EA	$	5,000.00	$	5,000.00	$	7,500.00	$	7,500.00	$	3,800.00	$	3,800.00	$	5,000.00	$	5,000.00
C.3		**SUB-TOTAL, SUBSECTION C.3 - Domestic Water - Capital**					**$**	**715,880.00**			**$**	**659,715.00**			**$**	**697,020.00**			**$**	**722,300.00**

NO.	CODE	Recycled Water - Capital	QUAN	UNIT		AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT
030	132-02	Furnish and install 16" APPW C-900 PVC (DR-14) purple water main including indicator tape per and tracer wire per IRWD std. dwg. W-17 and specifications, bacterial testing, pressure test, complete	3,808	LF	$ 225.00	$ 856,800.00	$ 163.00	$ 620,704.00	$ 225.00	$ 856,800.00	$ 225.00	$ 856,800.00
031	132-15	Furnish and Install 16" Butter Fly Valve (FE x FE) and valve box per IRWD standard drawing W-22 and specifications, complete	7	EA	$ 10,000.00	$ 70,000.00	$ 7,040.00	$ 49,280.00	$ 11,000.00	$ 77,000.00	$ 12,000.00	$ 84,000.00
032	132-15	Base pavement adjust valve can to grade per IRWD specifications, complete	9	EA	$ 600.00	$ 5,400.00	$ 575.00	$ 5,175.00	$ 750.00	$ 6,750.00	$ 500.00	$ 4,500.00
033	132-15	Cap pavement adjust valve can to grade per IRWD specifications, complete	9	EA	$ 600.00	$ 5,400.00	$ 575.00	$ 5,175.00	$ 750.00	$ 6,750.00	$ 500.00	$ 4,500.00
034	132-02	Furnish and Install 16" DI Adapter (FE x PO) per IRWD specifications, complete	13	EA	$ 2,000.00	$ 26,000.00	$ 1,390.00	$ 18,070.00	$ 2,000.00	$ 26,000.00	$ 1,500.00	$ 19,500.00
035	132-02	Furnish and Install 2" air-vac assemble per IRWD standard drawing W-11 and specifications, complete	1	EA	$ 11,000.00	$ 11,000.00	$ 16,845.00	$ 16,845.00	$ 10,500.00	$ 10,500.00	$ 10,000.00	$ 10,000.00
036	132-20	Furnish and Install Blow off assembly (case 3) per IRWD standard drawing W-14 and specifications, with 6" valve at tee, complete	2	EA	$ 12,000.00	$ 24,000.00	$ 17,000.00	$ 34,000.00	$ 9,800.00	$ 19,600.00	$ 12,000.00	$ 24,000.00
037	132-05	Remove and dispose temporary flush-out and Join existing 12" PVC per IRWD Specifications, complete	1	EA	$ 5,000.00	$ 5,000.00	$ 7,500.00	$ 7,500.00	$ 4,500.00	$ 4,500.00	$ 500.00	$ 500.00
038	132-05	Furnish and Install 16"x16"x6" DI Tee (FE x FE) and thrust block per IRWD standard drawing W-16 and specifications, complete	5	EA	$ 3,500.00	$ 17,500.00	$ 7,500.00	$ 37,500.00	$ 3,200.00	$ 16,000.00	$ 3,500.00	$ 17,500.00
039	132-05	Furnish and Install 16"x16"x6"x6" DI Cross (FE x FE) and thrust block per IRWD standard drawing W-16 and specifications, complete	1	EA	$ 3,500.00	$ 3,500.00	$ 6,130.00	$ 6,130.00	$ 3,600.00	$ 3,600.00	$ 3,500.00	$ 3,500.00
040	132-05	Furnish and Install 6" x 4" DI Reducer (FE x PO) per IRWD specifications, complete	2	EA	$ 1,500.00	$ 3,000.00	$ 1,030.00	$ 2,060.00	$ 650.00	$ 1,300.00	$ 500.00	$ 1,000.00
041	132-30	Furnish and Install Recycled water wharf head hydrant per IRWD standard drawing W-16 and specifications, complete	1	EA	$ 12,500.00	$ 12,500.00	$ 11,000.00	$ 11,000.00	$ 10,500.00	$ 10,500.00	$ 15,000.00	$ 15,000.00
C.4		**SUB-TOTAL, SUBSECTION C.4 - Recycled Water - Capital**				**$ 1,040,100.00**		**$ 813,439.00**		**$ 1,039,300.00**		**$ 1,040,800.00**

NO.	CODE	Additional Capital Construction Items on Plans not Identified in the Bid CPS (List Items)										
042						$ -		$ -		$ -		$ -
043						$ -		$ -		$ -		$ -
044						$ -		$ -		$ -		$ -
045						$ -		$ -		$ -		$ -
046						$ -		$ -		$ -		$ -
047						$ -		$ -		$ -		$ -
C.5		**SUB-TOTAL, SUBSECTION C.5 - Additional Capital Construction Items on Plans not Identified in the Bid CPS (List Items)**				**$ -**		**$ -**		**$ -**		**$ -**

C	**TOTAL - MARINE WAY STAGE 2 IRWD CODE 7902 - CAPITAL**					**$ 2,036,650.00**		**$ 1,667,287.00**			**$ 2,007,371.00**				**$ 2,074,695.00**	

PROJECT: DISTRICT 6 NORTH BASIN
CAPITAL WET IMPROVEMENTS

OWNER: Heritage Fields El Toro, LLC

BID SPREAD IRWD CODE# 7931

	ENGINEER'S ESTIMATE	FYDAQ - LOW	L&S	LEATHERWOOD
DISTRICT 6 NORTH BASIN - CAPITAL WET IMPROVEMENTS				
TO HARRIER] 12" DOMESTIC WATER ZONE 3 (470 HGL), 4" RECYCLED WATER ZONE C (640 HGL), AND 15" SANITARY SEWER CAPITAL PROJECT NOS. 12432 & 12433 NON-CAPITAL PROJECT NO. 12323 & 12325 IRWD CODE 7931				
A LYNX - DOMESTIC WATER - CAPITAL				
A.1 SUB-TOTAL, SUBSECTION A.1 - 131-01 DW DOMESTIC WATER-GENERAL	$ 12,993.51	$ 11,342.25	$ 13,100.00	$ 27,000.00
A.2 SUB-TOTAL, SUBSECTION A.2 - 131-02 DW SITE PREPARATION	$ 5,659.00	$ 8,850.00	$ 5,800.00	$ 10,000.00
A.3 SUB-TOTAL, SUBSECTION A.3 - 131-05 DW MAINLINE PIPE	$ 81,788.00	$ 75,509.00	$ 103,040.00	$ 135,240.00
A.4 SUB-TOTAL, SUBSECTION A.4 - 131-20 DW BLOW OFF ASSEMBLIES	$ 2,631.00	$ 2,729.00	$ 3,200.00	$ 4,300.00
A.5 SUB-TOTAL, SUBSECTION A.5 - ADDITIONAL CONSTRUCTION ITEMS ON PLANS NOT IDENTIFIED IN THE BID CPS (LIST ITEMS)	$ -	$ -	$ -	$ -
LYNX - DOMESTIC WATER - CAPITAL - TOTAL	$ 103,071.51	$ 98,430.25	$ 125,140.00	$ 176,540.00
TO HARRIER] 12" DOMESTIC WATER ZONE 3 (470 HGL), 4" RECYCLED WATER ZONE C (640 HGL), AND 15" SANITARY SEWER CAPITAL PROJECT NOS. 12432 & 12433 NON-CAPITAL PROJECT NO. 12323 & 12325 IRWD CODE 7931				
B LYNX - SANITARY SEWER - CAPITAL				
B.1 SUB-TOTAL, SUBSECTION B.1 - 130-01 SW SEWER-GENERAL	$ 15,839.04	$ 8,479.05	$ 16,100.00	$ 38,300.00
B.2 SUB-TOTAL, SUBSECTION B.2 - 130-02 SW SITE PREPARATION	$ 2,503.00	$ 2,845.00	$ 7,000.00	$ 20,000.00
B.3 SUB-TOTAL, SUBSECTION B.3 - 130-05 SW MAINLINE	$ 104,710.00	$ 95,229.50	$ 124,520.00	$ 149,990.00
B.4 SUB-TOTAL, SUBSECTION B.4 - 130-10 SW MANHOLES	$ 22,946.00	$ 24,801.00	$ 42,500.00	$ 26,750.00
B.5 SUB-TOTAL, SUBSECTION B.5 - 130-20 SW CLEANOUTS	$ 1,053.00	$ 1,380.00	$ 1,300.00	$ 3,600.00
B.6 SUB-TOTAL, SUBSECTION B.6 - 130-25 SW MANHOLE RAISE	$ 1,700.00	$ 1,150.00	$ 2,500.00	$ 3,000.00
B.7 SUB-TOTAL, SUBSECTION B.7 - ADDITIONAL CONSTRUCTION ITEMS ON PLANS NOT IDENTIFIED IN THE BID CPS (LIST ITEMS)	$ -	$ -	$ -	$ -
LYNX - SANITARY SEWER - CAPITAL - TOTAL	$ 148,751.04	$ 133,884.55	$ 193,920.00	$ 241,640.00
GRAND TOTAL CAPITAL WET IMPROVEMENTS DISTRICT 6 NORTH BASIN - CONTRACT PRICE SCHEDULE	$ 251,822.55	$ 232,314.80	$ 319,060.00	$ 418,180.00

TELEPHONE: 714-447-9760 FAX:

BY: G Huntley

STATE CONTRACTOR LICENSE NO: 665409 EXPIRATION: 3/31/25

DATE: 9/7/23

PROJECT: DISTRICT 6 NORTH BASIN
CAPITAL WET IMPROVEMENTS

OWNER: Heritage Fields El Toro, LLC

BID SPREAD IRWD CODE# 7931

LYNX - DOMESTIC WATER - CAPITAL

CONSTRUCTION PLANS FOR PLANNING AREA 51, GREAT PARK NEIGHBORHOODS DISTRICT 6 - CAPITAL IMPROVEMENTS LYNX [FROM MARINE WAY TO HARRIER] 12" DOMESTIC WATER ZONE 3 (470 HGL), 4" RECYCLED WATER ZONE C (640 HGL), AND 15" SANITARY SEWER CAPITAL PROJECT NOS. 12432 & 12433 NON-CAPITAL PROJECT NO. 12323 & 12325 IRWD CODE 7931

ITEM	CODE	DESCRIPTION	QTY	UNIT	ENGINEER'S ESTIMATE UNIT PRICE	ENGINEER'S ESTIMATE AMOUNT	FYDAQ - LOW UNIT PRICE	FYDAQ - LOW AMOUNT	L&S AMOUNT	LEATHERWOOD AMOUNT
		131-01 DW DOMESTIC WATER-GENERAL								
001	131-01	Mobilization (Maximum of 2% of Section A Amount)	1	LS	$ 1,801.56	$ 1,801.56	$ 3,750.00	$ 3,750.00	$ 2,600.00	$ 3,500.00
002	131-01	Performance, Labor & Payment Bond	1	LS	$ 900.78	$ 900.78	$ 1,397.25	$ 1,397.25	$ 2,500.00	$ 5,000.00
003	131-01	Erosion Control - SWPPP & BMP's	1	LS	$ 675.59	$ 675.59	$ 500.00	$ 500.00	$ 1,500.00	$ 2,500.00
004	131-01	Development and Application of Construction Water	1	LS	$ 675.59	$ 675.59	$ 500.00	$ 500.00	$ 1,500.00	$ 5,000.00
005	131-01	Traffic Control	1	LS	$ 2,500.00	$ 2,500.00	$ 250.00	$ 250.00	$ 1,000.00	$ 1,000.00
006	131-01	Chlorinate & Pressure Test Pipeline, including Disposal of Chlorinated Water, per IRWD Standards and Specifications, Complete	1	LS	$ 6,440.00	$ 6,440.00	$ 4,945.00	$ 4,945.00	$ 4,000.00	$ 10,000.00
A.1		**SUB-TOTAL, SUBSECTION A.1 - 131-01 DW DOMESTIC WATER-GENERAL**				**$ 12,993.51**		**$ 11,342.25**	**$ 13,100.00**	**$ 27,000.00**
		131-02 DW SITE PREPARATION								
007	131-02	Clearing and Grubbing (All Vegetation Within the Project Site)	1	LS	$ 924.00	$ 924.00	$ 500.00	$ 500.00	$ 2,000.00	$ 5,000.00
008	131-02	Remove Existing Temporary Flush-out and Join Existing, Complete	1	EA	$ 4,735.00	$ 4,735.00	$ 8,350.00	$ 8,350.00	$ 3,800.00	$ 5,000.00
A.2		**SUB-TOTAL, SUBSECTION A.2 - 131-02 DW SITE PREPARATION**				**$ 5,659.00**		**$ 8,850.00**	**$ 5,800.00**	**$ 10,000.00**
		131-05 DW MAINLINE PIPE								
009	131-05	Furnish and Install 12" PVC Waterline Pipe, C-900, DR 14, w/ Trenching, Bedding & Backfill per IRWD Std. W-17 including all Fittings, Appurtenances and Thrust Blocks per IRWD Std. W-16 and W-19 and as Shown on the Plans, Complete	644	LF	$ 127.00	$ 81,788.00	$ 117.25	$ 75,509.00	$ 160.00	$ 103,040.00	$ 210.00	$ 135,240.00
A.3		**SUB-TOTAL, SUBSECTION A.3 - 131-05 DW MAINLINE PIPE**				**$ 81,788.00**		**$ 75,509.00**	**$ 103,040.00**	**$ 135,240.00**
		131-20 DW BLOW OFF ASSEMBLIES								
010	131-20	Furnish and Install Temporary Flush-Out Assembly per IRWD Std. W-12, including 1 Raise, Complete	1	EA	$ 2,631.00	$ 2,631.00	$ 2,729.00	$ 2,729.00	$ 3,200.00	$ 4,300.00
A.4		**SUB-TOTAL, SUBSECTION A.4 - 131-20 DW BLOW OFF ASSEMBLIES**				**$ 2,631.00**		**$ 2,729.00**	**$ 3,200.00**	**$ 4,300.00**
		ADDITIONAL CONSTRUCTION ITEMS ON PLANS NOT IDENTIFIED IN THE BID CPS (LIST ITEMS)	**QTY**	**UNIT**	**UNIT PRICE**	**AMOUNT**	**UNIT PRICE**	**AMOUNT**	**AMOUNT**	**AMOUNT**
					$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -
A.5		**SUB-TOTAL, SUBSECTION A.5 - ADDITIONAL CONSTRUCTION ITEMS ON PLANS NOT IDENTIFIED IN THE BID CPS (LIST ITEMS)**				**$ -**		**$ -**	**$ -**	**$ -**
A		**TOTAL LYNX - DOMESTIC WATER - CAPITAL - SECTION A - CONTRACT PRICE SCHEDULE .....**				**$ 103,071.51**		**$ 98,430.25**	**$ 125,140.00**	**$ 176,540.00**

PROJECT: DISTRICT 6 NORTH BASIN
CAPITAL WET IMPROVEMENTS

OWNER: Heritage Fields El Toro, LLC

BID SPREAD IRWD CODE# 7931

LYNX - SANITARY SEWER - CAPITAL

CONSTRUCTION PLANS FOR PLANNING AREA 51, GREAT PARK NEIGHBORHOODS DISTRICT 6 - CAPITAL IMPROVEMENTS LYNX [FROM MARINE WAY TO HARRIER] 12" DOMESTIC WATER ZONE 3 (470 HGL), 4" RECYCLED WATER ZONE C (640 HGL), AND 15" SANITARY SEWER CAPITAL PROJECT NOS. 12432 & 12433 NON-CAPITAL PROJECT NO. 12323 & 12325 IRWD CODE 7931

ITEM	CODE	DESCRIPTION	QTY	UNIT	ENGINEER'S ESTIMATE UNIT PRICE	ENGINEER'S ESTIMATE AMOUNT	FYDAQ - LOW UNIT PRICE	FYDAQ - LOW AMOUNT	L&S UNIT PRICE	L&S AMOUNT	LEATHERWOOD UNIT PRICE	LEATHERWOOD AMOUNT
		130-01 SW SEWER-GENERAL										
011	130-01	Mobilization (Maximum of 2% of Section B Amount)	1	LS	$ 2,658.24	$ 2,658.24	$ 3,750.00	$ 3,750.00	$ 3,900.00	$ 3,900.00	$ 4,800.00	$ 4,800.00
012	130-01	Performance, Labor & Payment Bond	1	LS	$ 1,329.12	$ 1,329.12	$ 1,890.05	$ 1,890.05	$ 3,700.00	$ 3,700.00	$ 5,000.00	$ 5,000.00
013	130-01	Erosion Control - SWPPP & BMP's	1	LS	$ 996.84	$ 996.84	$ 500.00	$ 500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
014	130-01	Development and Application of Construction Water	1	LS	$ 996.84	$ 996.84	$ 500.00	$ 500.00	$ 1,500.00	$ 1,500.00	$ 5,000.00	$ 5,000.00
015	130-01	Traffic Control	1	LS	$ 2,500.00	$ 2,500.00	$ 250.00	$ 250.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
016	130-01	Air Test and Video Pipeline Per IRWD Standards & Specifications, Complete	1	LS	$ 7,358.00	$ 7,358.00	$ 1,589.00	$ 1,589.00	$ 3,500.00	$ 3,500.00	$ 20,000.00	$ 20,000.00
B.1		**SUB-TOTAL, SUBSECTION B.1 - 130-01 SW SEWER-GENERAL**				**$ 15,839.04**		**$ 8,479.05**		**$ 16,100.00**		**$ 38,300.00**
		130-02 SW SITE PREPARATION										
017	130-02	Clearing and Grubbing (All Vegetation Within the Project Site)	1	LS	$ 924.00	$ 924.00	$ 500.00	$ 500.00	$ 2,000.00	$ 2,000.00	$ 5,000.00	$ 5,000.00
018	130-02	Remove Existing Temporary Terminal Cleanout and Join Existing 15" Sewer Line, Complete	1	EA	$ 1,579.00	$ 1,579.00	$ 2,345.00	$ 2,345.00	$ 5,000.00	$ 5,000.00	$ 15,000.00	$ 15,000.00
B.2		**SUB-TOTAL, SUBSECTION B.2 - 130-02 SW SITE PREPARATION**				**$ 2,503.00**		**$ 2,845.00**		**$ 7,000.00**		**$ 20,000.00**
		130-05 SW MAINLINE										
019	130-05	Furnish and Install 15" PVC, SDR 35, Sewer Pipe, including Trenching, Bedding, Backfill & Compaction per IRWD Std. DWG. S-6, Depth = 15'-20', Complete	566	LF	$ 185.00	$ 104,710.00	$ 168.25	$ 95,229.50	$ 220.00	$ 124,520.00	$ 265.00	$ 149,990.00
B.3		**SUB-TOTAL, SUBSECTION B.3 - 130-05 SW MAINLINE**				**$ 104,710.00**		**$ 95,229.50**		**$ 124,520.00**		**$ 149,990.00**
		130-10 SW MANHOLES										
020	130-10	Construct 60" DIA. Manhole per IRWD Std. DWG. S-1 including 1 Raise, Depth = 15'-20', Complete	2	EA	$ 11,048.00	$ 22,096.00	$ 12,113.00	$ 24,226.00	$ 19,500.00	$ 39,000.00	$ 13,000.00	$ 26,000.00
021	130-10	Adjust Precast Concrete Manhole Shaft to Final Grade, Complete	1	EA	$ 850.00	$ 850.00	$ 575.00	$ 575.00	$ 3,500.00	$ 3,500.00	$ 750.00	$ 750.00
B.4		**SUB-TOTAL, SUBSECTION B.4 - 130-10 SW MANHOLES**				**$ 22,946.00**		**$ 24,801.00**		**$ 42,500.00**		**$ 26,750.00**
		130-20 SW CLEANOUTS										
022	130-20	Furnish & Install Temporary 8" Terminal Cleanout Per IRWD Std. S-5, Including 1 Raise to Grade, Complete	1	EA	$ 1,053.00	$ 1,053.00	$ 1,380.00	$ 1,380.00	$ 1,300.00	$ 1,300.00	$ 3,600.00	$ 3,600.00
B.5		**SUB-TOTAL, SUBSECTION B.5 - 130-20 SW CLEANOUTS**				**$ 1,053.00**		**$ 1,380.00**		**$ 1,300.00**		**$ 3,600.00**
		130-25 SW MANHOLE RAISE										
023	130-25	Raise Manhole to Final Grade After Improvements are Complete or Requested by Developer including Extra Move, Complete	2	EA	$ 850.00	$ 1,700.00	$ 575.00	$ 1,150.00	$ 1,250.00	$ 2,500.00	$ 1,500.00	$ 3,000.00
B.6		**SUB-TOTAL, SUBSECTION B.6 - 130-25 SW MANHOLE RAISE**				**$ 1,700.00**		**$ 1,150.00**		**$ 2,500.00**		**$ 3,000.00**
		ADDITIONAL CONSTRUCTION ITEMS ON PLANS NOT IDENTIFIED IN THE BID CPS (LIST ITEMS)	**QTY**	**UNIT**	**UNIT PRICE**	**AMOUNT**	**UNIT PRICE**	**AMOUNT**	**UNIT PRICE**	**AMOUNT**	**UNIT PRICE**	**AMOUNT**
					$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
					$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
B.7		**SUB-TOTAL, SUBSECTION B.7 - ADDITIONAL CONSTRUCTION ITEMS ON PLANS NOT IDENTIFIED IN THE BID CPS (LIST ITEMS)**				**$ -**		**$ -**		**$ -**		**$ -**
B		**TOTAL LYNX - SANITARY SEWER - CAPITAL - SECTION B - CONTRACT PRICE SCHEDULE ……..…**				**$ 148,751.04**		**$ 133,884.55**		**$ 193,920.00**		**$ 241,640.00**
		GRAND TOTAL DISTRICT 6 NORTH BASIN - CAPITAL WET IMPROVEMENTS - CONTRACT PRICE SCHEDULE ……..…				**$ 251,822.55**		**$ 232,314.80**		**$ 319,060.00**		**$ 418,180.00**

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