# AGENDA IRVINE RANCH WATER DISTRICT ENGINEERING AND OPERATIONS COMMITTEE MEETING IRWD Operation Multi-Purpose Room, 3512 Michelson Dr., Irvine, CA 92612 TUESDAY, MAY 17, 2022

# CALL TO ORDER 1:30 p.m.

<u>ATTENDANCE</u>	Committee Chair: Committee Member:	Doug Reinhart Karen McLaughlin	
<u>ALSO PRESENT</u>	Paul Cook Jose Zepeda Steve Choi Rich Mori Jacob Moeder	Kevin Burton      Paul Weghorst      Jim Colston      Eric Akiyoshi      Malcolm Cortez	Wendy Chambers   Cheryl Clary   Fiona Sanchez   Joseph McGehee   Ken Pfister

# 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, May 17, 2022.

# 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.
- 4. Determine which items may be approved without discussion.

# **INFORMATION**

# 5. <u>UPCOMING PROJECTS STATUS REPORT – CORTEZ / MOEDER / MORI /</u> <u>AKIYOSHI / BURTON</u>

Recommendation: Receive and file.

# 6. <u>UPDATE ON BIOSOLIDS AND ENERGY RECOVERY OPERATIONS –</u> <u>ZEPEDA / CHAMBERS</u>

Recommendation: Receive and file.

# ACTION

# 7. <u>REIMBURSEMENT AGREEMENT BETWEEN IRWD AND CITY OF</u> <u>IRVINE FOR THE FISCAL YEAR 2021-22 ANNUAL STREET</u> <u>REHABILITATION AND SLURRY SEAL PROJECT – RIOS / AKIYOSHI /</u> <u>BURTON</u>

Recommendation: That the Board authorize the General Manager to execute the Reimbursement Agreement between IRWD and the City of Irvine for Installation and Adjustment of Street Utilities to Grade for the FY 2021-22 Annual Street Rehabilitation and Slurry Seal Project, subject to non-substantive changes.

# 8. <u>LAKE FOREST WOODS SEWER IMPROVEMENTS BUDGET INCREASE</u> <u>AND CONSULTANT SELECTION – MURPHY / CORTEZ / BURTON</u>

Recommendation: That the Board authorize a budget increase for Project 11123 in the amount of \$4,960,000, from \$353,000 to \$5,313,000, and authorize the General Manager to execute a Professional Services Agreement with Woodard & Curran in the amount of \$428,075 for engineering design services for the Lake Forest Woods Sewer Improvements, Project 11123.

# 9. <u>15 MG ZONE 1 RESERVOIR INTERIOR COATING AND IMPROVEMENTS</u> <u>BUDGET INCREASE AND CONTRACT CHANGE ORDER – MCGHEE /</u> <u>MORI / BURTON</u>

Recommendation: That the Board authorize a budget increase for Project 05761 in the amount of \$1,131,825, from \$4,020,000 to \$5,151,825, and approve Contract Change Order No. 4 in the amount of \$791,975 and the addition of 42 calendar days to the contract with Pacific Hydrotech Corporation for the 15 MG Zone 1 Reservoir Interior Coating and Improvements, Project 05761.

# **OTHER BUSINESS**

- 10. Directors' Comments
- 11. Adjourn

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.

May 17, 2022 Prepared by: M. Cortez / J. Moeder / R. Mori / E. Akiyoshi 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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# EXHIBIT "A" IRWD UPCOMING PROJECTS STATUS REPORT

Drojoct Namo	Start	Start	Construction	Construction
rioject Name	Planning	Design	Award	Final Acceptance
IBC Sidewalk Relocations			Spring 2022	Winter 2023
SR 133 - 36" Trunk Sewer Relocation			Fall 2022	
Riparian View Paving			Summer 2022	
HATS Diversion Structure Relining				Summer 2022
MWRP Compressed Natural Gas and Diesel/Gasoline Fueling Station			Summer 2022	Fall 2023
MWRP Tertiary Filter Rehabilitation			Summer 2022	
Operations Center Purchasing Warehouse			Fall 2022	Fall 2023
MWRP Biosolids Misc. Improvements		Summer 2022		
DW Reservoir Air Vent Retrofits				Summer 2022
Coastal Z2 and Z4 Pump Stations Rehabilitation		Spring 2022		
Rattlesnake Outlet Pipe Flow Meter Replacement				Spring 2022
Silverado Bridge 174 DW Improvements			Summer 2023	Spring 2024
Silverado Bridge 175 DW Improvements			Spring 2023	Winter 2024
Woodbridge RW Replacement				Fall 2023
Sewer Siphon Improvements Phase II		Spring 2022		
Main/Cartwright Manhole Rehabilitation		Spring 2022		
El Toro Road Manhole Raise to Grade		Spring 2022		
Lake Forest Woods Sewer Improvements		Spring 2022		
Santiago Canyon Pump Station Improvements			Winter 2022	Summer 2023
Turtle Rock Chloramine Booster Station			Summer 2022	Summer 2023
Lake Forest Well No. 2 Treatment and Improvements		Spring 2022		
Wells 10 and 12 Rehabilitation		Spring 2022	Summer 2022	
PDF Sodium Hypochlorite Storage and Feed System				Fall 2022
Santiago Creek Dam Outlet Tower and Spillway Improvements			Summer 2024	
Rattlesnake Dam Risk Reduction Investigation	Summer 2022			
Santiago Canyon Fleming Zone 8 Tank and Zone 8-9 BPS			Summer 2022	Summer 2024
Generator Fuel Storage Upgrades			Fall 2022	
Orange Heights Zone 6 Reservoir		Spring 2022	Spring 2023	Spring 2025
San Joaquin Reservoir Filtration			Summer 2022	Winter 2024
Well OPA-1 PFAS Treatment				Summer 2023
Well ET-1 PFAS Treatment			Summer 2022	
SGU PFAS Treatment			Fall 2022	Fall 2023
Baker WTP Diesel Fuel Storage			Summer 2022	Summer 2023
LAWRP Jeronimo Sewer Bypass		Fall 2022		
Orange Heights SAC/Baker Pipeline Relocation			Summer 2022	Winter 2023
15 MG Zone 1 Reservoir Coating Replacement and Improvements				Summer 2022
Zone A to Rattlesnake Reservoir BPS				Fall 2023
SAC/Baker Pipeline Relocation in Santiago Creek at Irvine Regional Park				Spring 2022
LAWRP Modernization		Fall 2022		
Orange Heights Zn 5 to 6 and C+ to E Pump Stations		Summer 2022		

Draject Name	Start	Start	Construction	Construction
Project Name	Planning	Design	Award	Final Acceptance
Syphon Reservoir Improvements			Spring 2024	Spring 2028
Syphon Reservoir Intersection Improvements and Access Road			Winter 2023	Fall 2023
Lake Forest Zone B-C BPS				Fall 2022
LAWRP Whatney Force Main		Fall 2022		
Crystal Cove RW PRV			Spring 2022	Fall 2022
PA 1, Jeffrey Road Extension RW (RA w/CDC)			Summer 2022	Fall 2022
PA 51, District 5, F and N St DW, RW			Summer 2022	Fall 2022
PA 51, District 5, Astor DW, RW (RA w/Heritage Fields)			Summer 2022	Fall 2022
PA 51, Marine Way from Alton Pkwy to Bake Pkwy DW, RW (RA w/Heritage Fields)			Summer 2022	Fall 2022
PA 51, Marine Way at Bake Parkway DW (RA w/Heritage Fields)			Summer 2022	Fall 2022
PA 51, Serrano Creek Sewer Relocation			Summer 2022	Fall 2022
PA 51, District 5 South Harrier DW, SS, RW (RA with Heritage Fields)			Summer 2022	Fall 2022
PA 51, District 5 South Chinon DW, RW (RA with Heritage Fields)			Summer 2022	Fall 2022
PA 51, Marine Way from Skyhawk to Treble DW, RW (RA with Heritage Fields)			Summer 2023	Fall 2023
PA 51, Treble from GP5 to Marine Way DW, RW (RA with Heritage Fields)			Summer 2023	Fall 2023
PA 1, Orchard Hills Neighborhood 4 RW (RA with TIC)			Fall 2022	Summer 2023
East Orange, Orange Heights Tract 16199 SS, RW			Fall 2022	Spring 2025
East Orange, Orange Heights Tract 17995 DW,SS, RW			Fall 2022	Spring 2025
East Orange, Orange Heights Tract 17995 DW, RW			Fall 2022	Spring 2025
East Orange, Orange Heights Jamboree and Chapman DW SS, RW			Fall 2022	Spring 2025
The Meadows, SS (RA w/Toll Brothers)			Fall 2021	Fall 2022
CIP Project Packaging for IRWD Production Wells	Spring 2022			
Steel Tank Assessment	Spring 2022			
OC San / IRWD IBC 5-Year CORF/Equity Flow Monitoring	Spring 2022			
Pump Station and Lift Station Assessment	Spring 2022			
IRIS Replacement Planning Model Treatment Plant Cost Update	In-Process			
Mid-Cycle Capital Budget Update	In-Process			
GIS Master Plan	In-Process			
			Category	Months
			vvinter	Jan. Feb. & Mar.
			Spring	Apr. May & June
			Summer	Jul. Aug. & Sep.
			Fall	UCI. NOV. & DEC.

# IRWD UPCOMING PROJECTS STATUS REPORT

May 17, 2022 Prepared by: J. Zepeda Submitted by: W. Chambers Approved by: Paul A. Cook

### ENGINEERING AND OPERATIONS COMMITTEE

#### UPDATE ON BIOSOLIDS AND ENERGY RECOVERY OPERATIONS

#### SUMMARY:

Staff will provide the Committee with an update on operations of the Biosolids and Energy Recovery Facility.

#### **BACKGROUND:**

The Biosolids and Energy Recovery Facility converts sewage solids generated at the Michelson Water Recycling Plant (MWRP) into biosolids for beneficial reuse. The biogas produced during the treatment process is used as fuel to generate electricity to power the facility.

Commissioning of the facility began in June 2020. By October 2021, sludge pumping to the Orange County Sanitation District (OC San) was discontinued, and the facility began producing Class A and Class B biosolids.

At this Committee meeting, staff will describe current operations and the challenges encountered during the commissioning process. A draft of the PowerPoint for this presentation is provided as Exhibit "A". In future Committee meetings, staff will provide updates of the fats, oils, and grease (FOG) and food waste programs, pellet distribution and marketing planning.

#### FISCAL IMPACTS:

Not applicable.

#### ENVIRONMENTAL COMPLIANCE:

Not applicable.

#### **RECOMMENDATION:**

Receive and file.

#### LIST OF EXHIBITS:

Exhibit "A" - Draft PowerPoint Presentation

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MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES

# Operations Update DRAFT

Engineering and Operations Committee May 17, 2022

Irvine Ranch Water District



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# **SEQUENCE OF E&O COMMITTEE MEETING TOPICS**

May 17, 2022

- Timeline of Start-up to Operations
- · Process Updates
- Ongoing Challenges

June 21, 2022

- · Biosolids Pellets Production and Distribution Marketing
- Future Program Development
  - FOG
  - Food-Waste













- Began Feeding Solids Jun 2020
- Digestion Process Established
  Oct 2020





# **BIOGAS FINAL TREATMENT & MICROTURBINES**

- Demonstrated Operation to SCE for SGIP Incentive Program – Dec 2020, Commercial Operational Date (COD) Issued
- Began Fulltime Operation in Jan 2021
- Energy Produced from Biogas 1,498,687 kWh
- Stopped Operation in Aug 2021 Due to Gas Treatment Issues
- Gas Treatment Improvements and Microturbine Restart – Aug 2022



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# **HEAT DRYER**

- Began Operation in Apr 2021
- Dryer Runtimes Limited to 4 6 Hours due to Pellet Cooling Side Stream
- Approx. 700 Tons of Pellets Produced
- Several Process / Equipment Issues Resulting In Dryer Downtime:
  - Minor Smoldering Event
  - Drum Alignment and Roller Wear
  - RTO Refractory and Instrumentation Failures
  - Lead-times for getting Manufacturer Tech Support Onsite

N	Irvine Ranch Water District
R	Water District

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# **OPERATIONAL CHALLENGES**

- Sludge Thickening Centrifuges
  - Automatic Control of the Centrifuges Variponds
  - Online Monitoring of Sludge Density
- Sludge Dewatering Centrifuges
  - · Centrifuge Bowl wear due to grit
  - Equipment Venting and Clogging
- Heat Dryer
  - · Complexity of System
  - Delays in Obtaining Manufacturer Technical Support
  - RTO System Failures
- Biogas Final Treatment System
  - Gas Quality Output





May 17, 2022 Prepared by: B. Rios / E. Akiyoshi Submitted by: K. Burton Approved by: Paul A. Cook

# ENGINEERING AND OPERATIONS COMMITTEE

# REIMBURSEMENT AGREEMENT BETWEEN IRWD AND THE CITY OF IRVINE FOR THE FISCAL YEAR 2021-22 ANNUAL STREET REHABILITATION AND <u>SLURRY SEAL PROJECT</u>

# SUMMARY:

The City of Irvine (City) is proceeding with its pavement rehabilitation and slurry seal for the Fiscal Year (FY) 2021-22 Annual Street Rehabilitation and Slurry Seal Project. This project requires an individual Reimbursement Agreement (RA) since the estimated construction cost is over \$100,000. Staff recommends the Board authorize the General Manager to execute an RA with the City for the FY 2021-22 Annual Street Rehabilitation and Slurry Seal Project, subject to non-substantive changes.

# **BACKGROUND:**

IRWD has had an RA in place with the City since 1995 for managing various street rehabilitation projects. Typically included in the City's Capital Improvement projects are alternate bid items for raising existing IRWD sewer manhole covers, sewer cleanouts, and water valve frames and lids to the new pavement grade. Any project up to \$100,000 in reimbursable costs can be authorized by the General Manager as an addendum to this "umbrella" RA.

IRWD and the City have also agreed that any City street improvement project that involves the construction, modification, or relocation of IRWD facilities with an estimated construction cost over \$100,000 will be administered through a separate RA. The City's FY 2021-22 Annual Street Rehabilitation and Slurry Seal Project has an estimated construction cost of \$408,408. Therefore, this project requires a project-specific RA. The terms of the current RA, including design, bidding requirements, reimbursement requirements, inspection and administrative fee remain unchanged from previous annual street rehabilitation reimbursement agreements with the City.

This project includes replacement and adjustment to grade of approximately 118 domestic water valve cans and lids, 65 recycled water valve cans and lids, four sanitary sewer cleanout cans and lids and adjustment to grade of approximately 99 sewer manholes with sewer manhole plywood protection covers. The estimated construction cost is \$408,408 plus a City administrative fee equal to four percent of the actual construction cost per the terms of the RA. The Engineer's Estimate is provided as Exhibit "A", the Location Map as Exhibit "B", and the RA as Exhibit "C". The RA has been reviewed by IRWD's legal counsel.

# FISCAL IMPACTS:

Projects 11772, 11778, and 11775 are included in the FY 2021-22 Capital Budget and have adequate budgets to fund the project.

Engineering and Operations Committee: Reimbursement Agreement between IRWD and the City of Irvine for the Fiscal Year 2021-22 Annual Street Rehabilitation and Slurry Seal Project May 17, 2022 Page 2

# ENVIRONMENTAL COMPLIANCE:

This project is exempt from the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15061 (b) (3). The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

# **RECOMMENDATION:**

That the Board authorize the General Manager to execute the Reimbursement Agreement between IRWD and the City of Irvine for Installation and Adjustment of Street Utilities to Grade for the FY 2021-22 Annual Street Rehabilitation and Slurry Seal Project, subject to nonsubstantive changes.

# LIST OF EXHIBITS:

Exhibit "A" – FY 2021-22 Annual Street Rehabilitation and Slurry Seal Engineer's Estimate Exhibit "B" – FY 2021-22 Annual Street Rehabilitation and Slurry Seal Vicinity Map Exhibit "C" – FY 2021-22 Annual Street Rehabilitation and Slurry Seal Reimbursement Agreement

# EXHIBIT "A"

# REIMBURSEMENT AGREEMENT BETWEEN IRVINE RANCH WATER DISTRICT (IRWD) AND THE CITY OF IRVINE FOR

# FY 21-22 ANNUAL STREET REHABILITATION AND SLURRY SEAL PROJECT, BID NO. 22-3163

# ENGINEER'S ESTIMATE

ITEM NO.	DESCRIPTION	QUANTITY	UNITS		UNIT COST	E	EXTENDED AMOUNT
A-1	INSTALL NEW IRWD WATER VALVE FRAME AND COVER TO GRADE	118	EA	\$	1,200.00	\$	141,600.00
A-2	INSTALL NEW IRWD RECLAIM WATER VALVE FRAME AND COVER TO GRADE	65	EA	\$	1,200.00	\$	78,000.00
A-3	INSTALL NEW IRWD SEWER CLEANOUT FRAME AND COVER TO GRADE	4	EA	\$	1,200.00	\$	4,800.00
A-4	ADJUST EXISTING IRWD SEWER MANHOLE FRAME AND COVER TO GRADE	99	EA	\$	1,200.00	\$	118,800.00
A-5	INSTALL PLYWOOD COVERS IN IRWD MANHOLES PER IRWD STD DRAWING S-1.	99	EA	\$	500.00	\$	49,500.00
TOTAL CONSTRUCTION ESTIMATE						\$	392,700.00
4% ADMINSTRATION FEE PER SECTION 5 OF AGREEMENT				\$	15,708.00		
TOTAL COSTS					\$	408,408.00	

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# EXHIBIT C

File No. 11772

#### **REIMBURSEMENT AGREEMENT BETWEEN**

# IRVINE RANCH WATER DISTRICT AND THE CITY OF IRVINE FOR INSTALLATION AND ADJUSTMENT OF STREET UTILITIES TO GRADE FOR FY 2021-22 ANNUAL STREET REHABILITATION AND SLURRY SEAL BID NO. 22-3163

This Agreement is made and entered into as of this \_\_\_\_\_ day of \_\_\_\_\_\_, 2022, by and between IRVINE RANCH WATER DISTRICT, a California water district formed and existing pursuant to the California Water District Law, hereinafter referred to as "DISTRICT," and the CITY OF IRVINE, a municipal corporation, hereinafter referred to as "CITY."

# $\underline{W} \underline{I} \underline{T} \underline{N} \underline{E} \underline{S} \underline{S} \underline{E} \underline{T} \underline{H}$ :

WHEREAS, CITY proposes to construct street and utility improvements within the area of the FY 2021-22 Annual Street Rehabilitation and Slurry Seal Project, Bid No. 22-3163 (the "Project"), within the jurisdictional boundaries of DISTRICT and the City of Irvine; and

WHEREAS, such construction will necessitate the following construction work on DISTRICT facilities: replacement and adjustment to grade of approximately 118 Domestic Water Valve cans and lids, replacement and adjustment to grade of approximately 65 Recycled Water Valve cans and lids, replacement and adjustment to grade of approximately 4 Sanitary Sewer Cleanout cans and lids and adjustment to grade of approximately 99 Sanitary Sewer Manholes with included Sewer manhole plywood protection covers, all as described on Exhibit "A" attached hereto and incorporated by reference (the infrastructure above collectively referred to as the "IRWD FACILITIES" and the construction work related to them is the "Work"); and

WHEREAS, the parties have determined that it would be more expedient for CITY to perform the IRWD FACILITIES Work rather than for DISTRICT to do so; and

WHEREAS, DISTRICT is amenable to the CITY performing the IRWD FACILITIES Work with the CITY agreeing to advance the costs; and

WHEREAS, DISTRICT intends to fully reimburse the CITY through payments billed by the CITY and approved by DISTRICT for the entire cost of the IRWD FACILITIES Work; and

WHEREAS, except as otherwise provided herein, upon the completion of the IRWD FACILITIES Work, the parties intend that any newly-installed IRWD FACILITIES shall become the property of DISTRICT in accordance with the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the mutual promises and covenants hereinafter set forth, the parties agree as follows:

<u>SECTION 1.</u> <u>IRWD FACILITIES</u>. In conjunction with the Project, CITY agrees to initiate and pursue to completion the design and construction of the IRWD FACILITIES Work pursuant to this Agreement.

SECTION 2. PLANS. CITY agrees that the IRWD FACILITIES Work shall be completed pursuant to project plans and specifications (the "Plans and Specifications") approved by DISTRICT. Prior to commencement of preparation of the Plans and Specifications, CITY shall submit its design engineer's proposed improvement plans for the IRWD FACILITIES to DISTRICT. DISTRICT will have a period of five (5) calendar days from its receipt of such design proposal to review and either indicate its approval or request changes. CITY shall cause its design engineer to review and respond to any requested changes. The Plans and Specifications must incorporate (directly or by reference) the applicable portions of DISTRICT's latest edition of *Construction Manual for the Construction of Water, Sewer, and Recycled Water Facilities* (the "Construction Manual"). CITY shall let the contract for the performance of the IRWD FACILITIES Work (together with non-reimbursable work to be completed by CITY within the Project) pursuant to the approved plans prepared by CITY's design engineer.

#### SECTION 3. BIDDING AND AWARD.

The parties agree that the performance of the IRWD FACILITIES Work 3.1 shall be included in CITY's contract(s) awarded for the Project and that the IRWD FACILITIES Work shall be bid as a separate item or items that can be deleted. During the bidding process, CITY shall deliver to IRWD one (1) complete set of the bid documents that include the IRWD FACILITIES Work, including all related addenda concurrently with the distribution thereof to prospective bidders. Upon opening of bids by CITY, CITY will submit the bids or a spread sheet summary of the bids to DISTRICT. DISTRICT will have a period of ten (10) calendar days from its receipt of the bid results for review and approval of the IRWD FACILITIES Work bid item(s) submitted by the bidder identified to DISTRICT by CITY as CITY's proposed successful bidder. CITY agrees that bids received for the construction of the IRWD FACILITIES bid item(s) shall be subject to the approval of DISTRICT prior to award of the Project construction contract(s) that include the IRWD FACILITIES. If DISTRICT does not approve such bids, then either party may terminate this Agreement upon 24 hours' prior written notice, in which event CITY shall have no further obligation to perform the IRWD FACILITIES Work, and DISTRICT may elect to perform the IRWD FACILITIES Work with its own contractor. If DISTRICT approves of the IRWD FACILITIES bid item(s) of CITY's successful bidder, then CITY shall cause the IRWD FACILITIES Work to be performed as part of the contract awarded to such bidder.

3.2 <u>Estimated Costs</u>. The total estimated construction cost for the IRWD FACILITIES Work is \$408,408, but the amount to be reimbursed by DISTRICT will be based on the actual costs of construction plus an administration fee as set forth in further detail in Section 5.

3.3 <u>Contract Documents</u>. Upon award of the construction contract, CITY shall provide DISTRICT with one original copy of the fully-executed contract documents and one copy of the bid package relating to the IRWD FACILITIES received from the successful bidder.

# SECTION 4. DESIGN REVISIONS AND CHANGE ORDERS.

4.1 DISTRICT agrees to reimburse CITY for any change order(s) for revision(s) requested by DISTRICT or otherwise required to perform the IRWD FACILITIES Work. CITY shall promptly furnish DISTRICT with copies of any proposed change order(s) to such contract within five (5) working days of the initiation of the changed conditions to such contract, which change orders will be subject to DISTRICT approval if and to the extent the IRWD FACILITIES are affected.

4.2 DISTRICT shall promptly review proposed change order(s) and provide CITY with a response within five (5) working days or sooner of receiving proposed change order(s) information from CITY. DISTRICT agrees not to unreasonably cause delay(s) to the construction schedule of the Project in reviewing proposed change order(s) for the IRWD FACILITIES Work. Notwithstanding any other provision herein, any approval required to be given by the DISTRICT under this Section 4 will be deemed given if no response to the CITY's request for such approval is received by the CITY within eight (8) working days following the written request for such approval, unless the parties agree otherwise in a writing executed by both parties.

# SECTION 5. REIMBURSEMENT.

5.1 <u>Costs</u>. CITY shall keep a separate accounting of all costs incurred by CITY in relation to the IRWD FACILITIES Work. DISTRICT shall reimburse CITY for the following costs (collectively, the "**Costs**"):

(1) <u>Actual Costs</u>: the actual costs of design, construction, permits, bonds, and legal fees (excluding the costs of preparation of this Agreement) incurred by CITY in connection with the design and construction of the IRWD FACILITIES;

# <u>plus</u>

(2) <u>Administration Fee</u>: an administration fee which shall be equal to four percent (4%) of the actual cost of construction (costs paid directly to CITY's contractor for construction only, excluding any cost for design, surveying, geotechnical or other work) of the IRWD FACILITIES Work. This amount is deemed to cover all costs of project administration, including, but not limited to, accounting, inspection, surveying, compaction testing, geotechnical services and engineering.

5.2 <u>Invoicing & Payment</u>. Within sixty (60) days of DISTRICT's acceptance of the installed, relocated, or adjusted IRWD FACILITIES as provided in Section 8, a final accounting of the Costs shall be made by CITY and submitted to DISTRICT along with an invoice for the Costs and any supporting documentation necessary to show the amounts which represent Costs of performing the IRWD FACILITIES Work. Amounts paid pursuant to progress payment invoices shall be subject to adjustment in the final accounting. Within 30 days after the DISTRICT's receipt of the final accounting, DISTRICT agrees to pay to CITY the total amount of the Costs.

<u>SECTION 6. LAWS, ORDINANCES, RULES AND REGULATIONS</u>. CITY shall require in its contract for the construction of the IRWD FACILITIES that its contractor be fully informed of and comply with all laws, ordinances, rules and regulations, including, but not limited to, all applicable requirements of the California Labor Code, prevailing wage laws, the Construction Manual, and the Rules and Regulations of DISTRICT, in connection with performing the IRWD FACILITIES Work.

SECTION 7. INSPECTION. DISTRICT shall have sole and absolute discretion as to all aspects of design and construction of the IRWD FACILITIES, and DISTRICT shall be entitled to inspect the construction of IRWD FACILITIES Work as it deems necessary to assure compliance with the Plans and Specifications, including shop drawing review and material inspection thereof. DISTRICT shall have access to all phases of the Project work to be performed by CITY for the purpose of such inspection; provided, however, all questions regarding the work being performed will be directed to CITY's resident engineer. DISTRICT will promptly notify CITY of any portion of the Work on the IRWD FACILITIES which appears not to conform to the Plans and Specifications. The determination of DISTRICT as to conformity of the IRWD FACILITIES Work with the Plans and Specifications shall be made in DISTRICT's sole and absolute discretion. DISTRICT shall not unreasonably withhold its approval as to such conformity of the IRWD FACILITIES Work with the Plans and Specifications. CITY shall require its contractor to construct the IRWD FACILITIES so that the IRWD FACILITIES conform to the Plans and Specifications. CITY shall assume full responsibility for certifying or obtaining certification of the compaction of backfill material over the IRWD FACILITIES.

# SECTION 8. ACCEPTANCE.

8.1 <u>Acceptance.</u> DISTRICT shall accept the IRWD FACILITIES, as installed, relocated, or adjusted when the IRWD FACILITIES Work has been completed by CITY in accordance with all requirements of the Plans and Specifications, including any change orders approved by DISTRICT as provided in Section 4.

8.2 <u>As-Builts</u>. At the time of completion and acceptance of the IRWD FACILITIES, CITY shall furnish DISTRICT with one copy of the contractor's redlined set of blueline "record" drawings (showing all revisions, manufacturer and type of valves, pipe and fittings as required by DISTRICT) and one copy of the compaction reports and certificate, survey notes, and cut sheets.

<u>SECTION 9.</u> <u>OWNERSHIP</u>. Notwithstanding the fact that CITY shall accomplish the construction of the IRWD FACILITIES subject to reimbursement, the IRWD FACILITIES to be completed hereunder, together with the necessary franchises, licenses, easements, rights-of-way, and other privileges, shall at all times be subject to the applicable rates, rules and regulations of DISTRICT, as modified or amended from time to time. CITY hereby disclaims any interest in the IRWD FACILITIES and hereby transfers and assigns to DISTRICT any and all right, title, and interest it may have in the IRWD FACILITIES upon their completion and acceptance. DISTRICT shall own, operate and maintain the IRWD FACILITIES following acceptance thereof.

SECTION 10. GUARANTEES. CITY will, pursuant to the requirement(s) of the Plans and Specifications, cause its contractor(s) for the IRWD FACILITIES to guarantee the IRWD FACILITIES against defects in workmanship and materials for a period of one (1) year from the date of acceptance by CITY, which acceptance shall be given only after acceptance by DISTRICT as provided in Section 8. It is further agreed that CITY shall cause the IRWD FACILITIES to be brought or restored to full compliance with the requirements of the Plans and Specifications, including any test requirements, for any portions of the IRWD FACILITIES which during said one (1) year period are found not to be in conformance with the provisions of the Plans and Specifications. This guarantee is in addition to any and all other warranties, express or implied, from CITY's contractors or material manufacturers, with respect to the IRWD FACILITIES. The guarantee and obligations under this section shall in no way be relieved by DISTRICT's inspection and/or acceptance of the IRWD FACILITIES. This section sets forth the entire guarantee and warranty of CITY with respect to the IRWD FACILITIES Work. The express or implied warranties of other persons with respect to IRWD FACILITIES shall in no way be limited by the guarantee and warranty of CITY contained in this section. If requested by DISTRICT, CITY agrees to assign to DISTRICT the contractor's guarantee and/or any other guarantees or warranties relating to the IRWD FACILITIES Work.

# SECTION 11. INDEMNIFICATION.

11.1 CITY shall indemnify, defend and hold DISTRICT, its officers, agents, employees, and engineers harmless from any expense, liability or claim for death, injury, loss, damage or expense to persons or property which may arise or is claimed to have arisen during construction of the IRWD FACILITIES as a result of any work or action performed by CITY or on behalf of CITY, save and except to the extent such expense, liability or claim is proximately caused in whole or in part by any act, omission, or negligence of DISTRICT, its officers, agents, employees or engineers or by any act or omission for which DISTRICT, its officers, agents, employees or engineers are liable without fault.

11.2 DISTRICT shall indemnify, defend and hold CITY, its officers, agents, and employees, harmless from any expense, liability or claim for death, injury, loss, damage or expense to persons or property which may arise or is claimed to have arisen either (i) as a result of any acts performed by DISTRICT, its officers, agents, or employees, with respect to the IRWD FACILITIES construction; or (ii) following DISTRICT acceptance of the IRWD FACILITIES, with respect to maintenance and operation of the IRWD FACILITIES, save and except to the extent such expense, liability or claim is proximately caused in whole or in part by

any negligence of CITY, its officers, agents, employees or engineers, or by any act or omission for which CITY, its officers, agents, employees or engineers are liable without fault.

SECTION 12. INSURANCE AND BONDING. CITY shall cause its contractor(s) to provide performance and payment bonds for the construction of the Project including the IRWD FACILITIES and to obtain insurance coverage sufficiently broad to insure the matters set forth in this Agreement and to include DISTRICT, its officers, agents, employees and engineers, as additional insureds on all insurance policies that CITY requires its contractor(s) to provide. As evidence of such insurance coverage, CITY shall, prior to commencement of performance of the IRWD FACILITIES Work, provide DISTRICT with certificates of insurance and insurance endorsements from CITY's contractor(s) in a form acceptable to DISTRICT.

# SECTION 13. TERMINATION.

13.1 DISTRICT shall have the right to terminate this Agreement at any time, subject to the provisions of this section, by providing five (5) business days' prior written notice to CITY, except as provided in Section 3 with respect to unapproved bids. If at the request or direction of a party other than CITY, the performance of the IRWD FACILITIES Work is not accomplished or completed, DISTRICT shall remain obligated for the actual amount of the Costs incurred by CITY to the date of termination.

13.2 If CITY's Project is canceled or modified so as to eliminate the necessity of the construction of the IRWD Facilities, CITY shall have the right to terminate this Agreement and thereby terminate its obligation to perform the IRWD FACILITIES Work, by providing five (5) business days' prior written notice to DISTRICT. In such case, DISTRICT will not be obligated for any design or any other Costs incurred by CITY. If IRWD elects to perform the IRWD FACILITIES Work, DISTRICT may, but shall not be obligated to, acquire the design or other work from CITY by separate agreement.

<u>SECTION 14. NOTICE</u>. Any notice or other written instrument required or permitted by this Agreement to be given to either party shall be deemed received when personally served or twenty-four (24) hours after being deposited in the U.S. Mail, postage prepaid, registered or certified and addressed as follows:

DISTRICT:	Irvine Ranch Water District 15600 Sand Canyon Avenue P.O. Box 57000 Irvine, CA 92619-7000 Attn: General Manager
CITY:	City of Irvine 6427 Oak Canyon, Bldg. 1 Irvine, CA 92618

SECTION 15. SUCCESSORS AND ASSIGNS; INTEGRATION; AMENDMENT. This Agreement shall be binding upon and inure to the benefit of the successor and assigns of CITY and DISTRICT. This Agreement constitutes the entire Agreement between CITY and DISTRICT and supersedes all prior understandings and agreements between the parties with respect to the subjects hereof. This Agreement may be modified only in writing signed by both parties hereto.

<u>SECTION 16. LEGAL FEES</u>. In the event of any declaratory or other legal or equitable action instituted between CITY and DISTRICT in connection with this Agreement, the prevailing party shall be entitled to recover from the losing party all of its costs and expenses, including court costs and reasonable attorneys' fees.

<u>SECTION 17. DEEMED APPROVAL</u>. Any approval required to be given by either party pursuant to this Agreement shall be deemed given if no response to the party's request for such approval is received by the requesting party within fifteen (15) days following the written request for such approval.

<u>SECTION 18.</u> <u>SEVERABILITY</u>. If any term, provision, covenant or condition of this Agreement is held to be invalid, void or other unenforceable, to any extent, by any court of competent jurisdiction, the remainder of this Agreement shall not be affected thereby, and each term provision, covenant or condition of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

<u>SECTION 19.</u> <u>APPLICABLE LAW</u>. This Agreement shall be construed and enforced in accordance with the laws of the State of California.

<u>SECTION 20. WAIVER</u>. The waiver of any provision of this Agreement by either party shall not be deemed to be a waiver of any other provision or of any preceding or subsequent breach hereunder.

IN WITNESS WHEREOF, the parties to the Agreement have executed this Agreement on the date herein above written.

# **IRVINE RANCH WATER DISTRICT**

By\_\_\_\_\_ Paul Cook, General Manager

ATTEST:

By\_\_\_\_\_\_Secretary/Assistant Secretary

APPROVED AS TO FORM:

By\_\_\_\_

Legal Counsel, IRWD

**CITY OF IRVINE** 

A Municipal Corporation

By\_\_\_\_\_ Oliver C. Chi City Manager of the City of Irvine

By\_\_\_\_\_ Jaimee Bourgeois Interim Director of Public Works and Transportation

# ATTEST:

By\_\_\_\_

Carl Petersen City Clerk of the City of Irvine

**APPROVED AS TO FORM:** 

By

Robert Owen, RUTAN & TUCKER, LLP City Attorney of the City of Irvine

City of Irvine 2021-22 RA

- 8 -C - 8

Dated \_\_\_\_\_

Dated \_\_\_\_\_

Dated \_\_\_\_\_

Dated \_\_\_\_\_

Dated \_\_\_\_\_

Dated

Dated

May 17, 2022 Prepared by: A. Murphy / M. Cortez Submitted by: K. Burton Approved by: Paul A. Cook

# ENGINEERING AND OPERATIONS COMMITTEE

# LAKE FOREST WOODS SEWER IMPROVEMENTS BUDGET INCREASE AND CONSULTANT SELECTION

#### **SUMMARY:**

The Lake Forest Woods Sewer Improvements project will replace and relocate segments of the sewer system within the Lake Forest Woods community that are at risk of damage from significant erosion of pipe cover due to rainstorm events. Staff recommends the Board:

- Authorize a budget increase for Project 11123 in the amount of \$4,960,000, from \$353,000 to \$5,313,000, and
- Authorize the General Manager to execute a Professional Services Agreement with Woodard & Curran in the amount of \$428,075 for engineering design services for the Lake Forest Woods Sewer Improvements, Project 11123.

#### **BACKGROUND:**

This project is located within the Lake Forest neighborhood known as "The Woods," which is bounded by Lake Forest Drive, Toledo Way, Ridge Route and Jeronimo Road as shown in Exhibit "A". This project will replace and relocate portions of the Lake Forest Woods sewer system located within the San Diego Creek and Glenwood Creek channels to reduce the risk of pipe failure from erosion. The existing sewer system in the Lake Forest Woods neighborhood was constructed in 1971 for the Los Alisos Water District when it was common practice to construct gravity sewers parallel to creeks. Since the initial construction, significant erosion has taken place in the creek bed reducing the amount of cover over the existing sewer pipes in the creek to less than one foot in some locations.

IRWD hired Woodard & Curran in 2020 to do a preliminary study to estimate the potential for future scour in the creek and to identify and evaluate improvement alternatives to reduce the risk to IRWD's sewer system. The recommended alternatives from the study included replacing the existing pipe segments with the highest risk of failure and least remaining cover with new sewer segments located outside of the scour envelope of the creek and eliminating creek crossings along with installation of grade control structures along the Glenwood Creek channel. The preliminary estimate of construction cost for the Lake Forest Woods sewer improvements as described in the preliminary study is \$4 million.

# **Consultant Selection:**

Staff issued a request for proposal for the design of the recommended sewer improvements to four consultants and three responded with proposals: Ardurra, Cannon, and Woodard & Curran. Both Ardurra and Woodard & Curran showed a good understanding of the project and presented a thorough project approach and scope of work. Woodard & Curran has a superior project team

Action Calendar: Lake Forest Woods Sewer Improvements Budget Increase and Consultant Selection May 17, 2022 Page 2

with extensive experience in similar sewer replacement projects. The fees proposed by all three firms are within 10% of one another: Ardurra (\$401,425) and Cannon (\$394,019) and Woodard & Curran (\$428,075). Based on Woodard & Curran's project team and its previous experience on this project, staff recommends the selection of Woodard & Curran. The consultant evaluation matrix is provided as Exhibit "B", and Woodard & Curran's proposal is provided as Exhibit "C".

# FISCAL IMPACTS:

Project 11123 is included in the FY 2021-22 Capital Budget. The budget increase shown below is required to fund the design and construction for the project.

Project	Current	Budget	Total
No.	Budget	Addition	Budget
11123	\$353,000	\$4,960,000	\$5,313,000

# 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.

# **RECOMMENDATION:**

That the Board authorize a budget increase for Project 11123 in the amount of \$4,960,000, from \$353,000 to \$5,313,000, and authorize the General Manager to execute a Professional Services Agreement with Woodard & Curran in the amount of \$428,075 for engineering design services for the Lake Forest Woods Sewer Improvements, Project 11123.

# LIST OF EXHIBITS:

- Exhibit "A" Location Map
- Exhibit "B" Consultant Selection Evaluation Matrix
- Exhibit "C" Woodard & Curran Proposal
### EXHIBIT "A" LAKE FOREST WOODS LOCATION MAP



Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**  Note: This page is intentionally left blank.

### EXHIBIT "B" Lake Forest Woods Consultant Selection Matrix

	Weights	Ardurra	Cannon	Woodard & Curran
TECHNICAL APPROACH	50%			
*Drojaat Approach	E00/	1		2
*Soona of Work	50%	1	3	2
	50%	2	3	I
Weighted Score (Technical Approach)		1.50	3.00	1.50
EXPERIENCE	50%			
	4000/			
*Firm/leam	100%	2	3	1
Weighted Score (Experience)		2.00	3.00	1.00
Principal-in-Charge/Technical Advisor Project		Ryan Huston/ Amy Czajkowski	George Jurica	Kathleen Higgins/Glen Hermanson
Manager		Rob Weber Dustin Payne	Mike Kielborn Larry Kraemer	Kraig Erickson Justin Kraetsch
Project Engineer		Scott Adamson	Gary Roepke	Jen Glynn
QA/QC				
Subconsultants:		Guida Surveying		
Surveying		Bess Testlab, Inc Ninvo & Moore		KDM Meridian
Potholing		Bennet Trenchless Engineers (Trenchless)	CBelow	T2 Utility Engineers
Geotechnical		Rivertech Inc. (Hydrology)	Ninyo & Moore	Ninyo & Moore
COMBINED WEIGHTED SCORE		1.75	3.00	1.25
		Hours	Hours	Hours
Task 1 Project Management		195	95	126
Task 3 Final Design		860	1 656	1 173
Task J Pro hid Phage Services			1,030	1,173
		32	1 961	40
TOTAL HOURS		1,087	1,801	1,347
Number of Construction Drawings		20	20	19
		20	20	10
Task 1 Project Management		\$37 980	\$20,535	\$34 545
Task 2 Preliminary Design		=	\$208,268	φοτ,οτο
Task 3 Pre-bid Phase Services		\$6.010	\$18 158	\$9 990
Subtotal tasks 1-3		\$401 425	\$394.019	\$428.075
Additional Tasks Included in Total Fee:		ψ101,120	\$001,010	Q120,010
Optional Scour Line Staking		\$16 181	-	
Optional Prop Line Staking		\$16,181	-	-
Subtotal Additional Tasks		\$32,362	-	-
TOTAL FEE		\$433,787	\$394,019	\$428,075
Average \$/bour			Ф <u>о</u> ло	Ф <u>о</u> 10
				\$310
Professional & General Liability Insurance		YES	YES	YES
		^		
		۷	<u> </u>	
1 - First				
2 - Second				
3 - Third				

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EXHIBIT "C"

# Proposal for

# Engineering Design Services for the Lake Forest Woods Sewer Improvements

May 4, 2022 revision

24422 Avenida de la Carlota Suite 180 Laguna Hills, CA 92653 www.woodardcurran.com T 800.426.4262 T 949.420.5300

Via Electronic Mail

April 22, 2022



Mr. Alex Murphy Irvine Ranch Water District Michelson Water Recycling Plant 3512 Michelson Drive Irvine, CA 92612

#### Re: Proposal for Engineering Design Services for the Lake Forest Woods Sewer Improvements

Dear Mr. Murphy:

Irvine Ranch Water District (IRWD) is seeking Engineering Design Services for the Lake Forest Woods Sewer Improvements. Woodard & Curran has a full understanding of IRWD's project and unmatched qualifications for sewer design and trenchless installations. Based on our review of the request for proposal and discussions and meetings with IRWD staff, we have developed a comprehensive proposal to meet IRWD's needs and goals.

Woodard & Curran offers a team of highly qualified engineers with the technical expertise and local site knowledge to address IRWD's needs for the project. We propose **Kraig Erickson** to serve as project manager with **Mirko Maher** to serve as technical manager and **Justin Kraetsch** as project engineer, each are experts in sewer design. Mirko and Kraig each have over 20 years of project management and sewer design experience, and Justin has recently completed the Sewer Siphon Project for IRWD and a similar project for the City of Malibu. They will be supported by **Glenn Hermanson** and **Jen Glynn**, Technical Advisors, experts in sewer design and trenchless technologies who have recently worked with Justin and IRWD on the Sewer Siphon Project. In addition, we have partnered with three specialty subconsultants: Ninyo & Moore for geotechnical services, KDM Meridian for surveying, and T2 for potholing.

Woodard & Curran's team members have extensive experience in sewer design and trenchless projects throughout California. We **understand the local site conditions** having **recently completed the Access and Facilities Improvements for Sewer Systems in the Woods Facilities Plan**. Our team members' thorough understanding of the unique challenges associated with this project will make this project a success for IRWD.

We are committed to working with IRWD to make this important project a success. If you have any questions about our proposal, please contact me at khiggins@woodardcurran.com or (949) 420-5313 or Kraig Erickson at Kerickson@woodardcurran.com or (949) 420-5306.

Sincerely,

K-18-5

Kraig Erickson, P.E. Project Manager

Kathleen Higgins

Kathleen Higgins, P.E. Principal-in-Charge

C - 2

# A. Scope

Engineering Design Services for the Lake Forest Woods Sewer Improvements

# A | SCOPE

# PROJECT UNDERSTANDING

Koodard & Curran

The Lake Forest Woods Sewer Improvement project is not your standard sewer improvement project. IRWD is requesting engineering design of improvements to sewers that traverse a dense forest of eucalyptus trees in and alongside tributaries to San Diego Creek, a water of the U.S. The sewer easements are across private property of two residential homeowner associations. IRWD acquired these sewers after consolidation with Los Alisos Water District in 2001. The sewers were built in the 1970s when it was common practice to construct gravity sewers parallel to creeks to take advantage of the natural topography. The sewers travel alongside and cross beneath creek channels that have been scoured by storm events over their 50-year lifespan, resulting in loss of cover and compromising stability of sewer mains and manholes. Also, erosion of access roads and bank instability is limiting access by maintenance vehicles.

In 2020, IRWD retained Woodard & Curran (W&C) to perform an alternatives study including hydrologic assessment of the channel scour in the Upper San Diego Creek and Glenwood tributary. The assessment indicated a potential for significant additional vertical and horizontal scour and therefore significant risk to IRWD's sewer infrastructure. W&C developed several short-term improvements to protect IRWD's assets by eliminating creek crossings, relocating sewer pipelines to locations outside of the creek scour envelope, and armoring the pipelines and manholes located in the creek. Road improvements were also addressed to allow Vactor access for maintenance.

With the RFP, IRWD is requesting creative solutions for improving this challenging stretch of sewer. This is a unique project with several challenges, from environmental concerns to the feasibility of construction. Constructability concerns from steep terrain, extensive tree removals, underground tree roots, and difficult access for construction vehicles from narrow residential streets such as Glenwood Drive. The cover over some sections of sewer is critically reduced. Time is of the essence to protect these sections of sewer before the next big storm compromises the sewer and potentially causes a sewage spill into a Water of the US.

This project requires resolving many challenges, and our approach focuses on these three critical elements:

- → A specialized and experienced local team that is ready to hit the ground running: Our team of environmental professionals have successfully worked together with IRWD, are thoroughly knowledgeable about project history, and understand the needs of all stakeholders. Key team members even live within the watershed! The team's institutional knowledge will shorten the "learning curve" to facilitate buildable designs and address the needs of stakeholders, from residents to the Regional Board.
- → Design that fits within environmental constraints: Environmental impacts including the potential for disturbance to nesting birds, temporary construction encroachment onto neighboring residential properties, safety concerns from pedestrian users of the HOA trails alongside the sewers, and timing tree removals outside the City of Lake Forest's Eucalyptus Tree Moratorium, will be addressed in construction documents and permitting support.

→ Focus on constructability: Woodard & Curran's team includes experts in the field of sewer design and trenchless technologies. Survey and engineering team will confirm existing conditions, set sewer alignments in a timely manner for a fast-paced design, while our trenchless experts will evaluate replacement technologies such as auger boring, HDD, and micro tunneling to select the most effective method for sewer constructability while minimizing environmental impacts.

# APPROACH

The project challenges have sparked the ingenuity of Woodard & Curran's team of engineers, project managers, surveyors, and geologists to craft an approach that will result in a design with minimal watershed improvements that reduces IRWD's risk from scour, improves access for IRWD's maintenance vehicles, and compresses the construction schedule for timely sewer protection.

### A SPECIALIZED AND EXPERIENCED LOCAL TEAM THAT IS READY TO HIT THE GROUND RUNNING

We have selected our team based on experience of similar projects. They have developed solutions for similar challenges such as access restrictions, creek channel erosion, and issues related to the compromise of existing pipe and its trenches with a deep understanding of the local watershed and HOA operations. Several key team members even live in the watershed.

This project will be managed from our Laguna Hills Office located 10 minutes from the project site. Kraig Erickson, PE, will be project manager alongside technical manager, Mirko Maher, PE. The project engineer will be Justin Kraetsch, PE, with permitting support from Janet Fordunski, PE.

Kraig managed the planning study for the IRWD Woods Sewer and the OC San Taft Trunk Sewer design project. Kraig has worked on several trenchless technology projects in tight construction conditions. Mirko has over 20 years' experience in sewer design, trenchless design, and site civil. Mirko will lead the trenchless method aspects of design and roadway improvements and grading plans for channel and access roads.

Justin brings his strong technical background with design and has recently completed IRWD's Sewer Siphon Improvement Project, and the Malibu sewer design project which utilized HDD trenchless methods where facilities were closely located next to residential properties.

Janet has lived in the City of Lake Forest since 1992, is a resident in the Lake Forest II Homeowners Association, and has prior work experience with the Lake Forest Community Association on stormwater flooding issues. She walks her dog along the IRWD Woods sewer alignment every day and brings uber-local knowledge and community insight to the team.

Woodard & Curran's project team includes renowned sewer design and trenchless technical experts, Jennifer Glynn and Glenn Hermanson, to provide Quality Control and Quality Assurance reviews, as well as input for solutions to minimize risks and service disruptions. They bring a nearly combined 60 years of project design experience and will support the team from planning to final document preparation to ensure high quality peer reviewed project documents are delivered while being mindful of constructability and reducing and eliminating project risks.

The Woodard & Curran team also includes subconsultants Ninyo & Moore for geotechnical support and KDM Meridian for survey support. Both firms are local and were represented at the Site Walk in April by Michael Putt and Rich Maher, who also lives in the watershed. Ninyo & Moore believes that track-mounted limited access drill rigs will be the best equipment for collecting subsurface geotechnical data. KDM Meridian will survey with terrestrial LiDAR scanning methods and use scan point colorization to assist in visualization of the complex topography. We have also included T2 Utility Engineers to provide potholing services.

Our specialized experienced team will hit the ground running and provide cost effective implementable solutions.

### DESIGN THAT FITS WITHIN ENVIRONMENTAL CONSTRAINTS

It is understood that IRWD will utilize a separate contract for environmental consultation for performing the necessary biological studies for CEQA compliance. The results of the biological studies may limit construction activities to between September to January to mitigate impacts to nesting birds. The construction schedule may further be limited by the City of Lake Forest Eucalyptus Tree Moratorium on cutting, pruning, and removing Eucalyptus trees between April 1st and October 31st to protect trees from infestation of the Eucalyptus Longhorn Borer Beetle. During the restricted period, the beetle produces a large larvae population that thrives on exposed vegetation. These beetles lay their eggs on eucalyptus trees and their larvae bore holes within the trees. Compliance with CEQA requirements and coordination with both HOAs to obtain architectural committee approval for eucalyptus tree removals will be accounted for to streamline the construction schedule so there are no surprises during construction that may cause delays.

The construction activities may also require encroachment onto private residential property. We will give IRWD advance notice to coordinate with the two HOAs for accessing their property for surveying activities. Note that additional survey refinement and access will likely be needed for confirmation during the later design stages.

Woodard & Curran's motto is "Safety by Choice, not by Chance." Safety accommodations will be part of the design specifications to protect pedestrian users of the HOA trails alongside the sewers. With IRWD being the prime point of contact with the two HOAs, safety plans, including redirecting pedestrian traffic from construction activities, will be an integral part of the design.

It is understood that many eucalyptus trees will have to be removed, creating a need to haul away a significant number of tree trunks, branches, and woodchips. There is sustainability in using local building materials and wood chips can be used for flat access roads instead of gravel. OC San has successfully used woodchips for roads in Big Canyon, Newport Beach after the Brazilian Pepper tree forest was removed *(see adjacent photo)*. Using on-site building materials for roads would minimize noise, traffic, and air quality impacts to neighbors by reducing truck trips that would be caused by hauling woodchips offsite and hauling gravel onsite. The private residential streets in the Lake Forest II Homeowners Association recently completed street replacement in the Woods in 2021. Minimizing truck trips will also protect the new private HOA streets from wear.



### FOCUS ON CONSTRUCTABILITY

This project possesses some unique challenges that include the following:

- → Constrained project site: The project sewer alignments are located in a dense wooded area, within a stream corridor. Providing both access to and from the site where the sewer will be re-aligned from the main stream corridor will require site preparation and restoration.
- → **Project access:** The project has limited access to specific areas and access manways that have experienced exposure and scour within the watershed area.
- → Proximity to Residential properties: The project is in a public use riparian corridor next to trails and is within close proximity to residential properties and features which include yards, fences, and access to both streets and properties. One of the project goals will be to reduce and limit impact to the neighborhood by evaluating construction methods and technologies to limit excavation, noise and dust.

Based on these challenges we propose the following:

### PROVIDE PHASED SURVEY APPROACH AND FIELD INVESTIGATIONS EARLY

Our team and subconsultants will conduct site visits, field investigations and reconnaissance early to establish the optimal location of sewer re-alignment. As part of our early efforts, we will survey the project site and obtain geotechnical investigational borings to assess the soil conditions and select the appropriate trenchless technology for portions of sewer replacement adjacent to the Upper San Diego Creek watershed.

The approach to surveying includes a phased approach of easement research, initial survey, and refinement of survey. For this project, our surveyor, KDM Meridian, will execute Memorandums of Agreement with the two HOAs for accessing their property for surveying activities. MOAs are a more flexible instrument than Temporary Construction Easements, particularly when additional survey refinement will be needed for confirmation during the final design stage.



**Sewer Easement** research is critical for this project. It is understood that the sewer easements over HOA property have been passed from Los Alisos Water District to their successor, IRWD. The easement documentation will be reviewed for completeness, and missing easements identified.

Further, there are **Orange County Floodplain Easements** over HOA property. Floodplain easements will be researched so that sewer improvements can be designed outside of these existing easements.

An **initial survey** will be conducted of existing easements, access roads/trails, as well as property lines based on tract monuments. Sewer manholes within the proposed areas of work will be opened and surveyed. The initial survey will produce topographic maps for use as a base plan for the proposed improvements.

After 25% design, a **survey refinement** will be conducted to identify specifics of the new sewer alignments, access considerations, homeowner sewer laterals, and other features, as needed, for advancement to final design. The survey refinement will also identify easements to be removed after



abandonment of sewer mains and manholes, as well as quantifying the tree removals needed for access and constructability. Permitting Lead, Janet Fordunski, knows from living in the area that the tree species, Eucalyptus cladocalyx, grow to a height up to 100 feet with trunks averaging 2 to 4 feet diameter, and cost an average of \$2,000 to \$3,000 each to remove. Knowing the exact location and number of trees is key for planning laydown areas, estimating tree removal cost, and allocating adequate time for tree removals into the construction schedule.

Portions of the sewers that will require re-alignment and considered for "trenchless" construction *(Shown in figure below)* will be evaluated closely in the field to assess requirements for laydown areas for contractor equipment and excavation. Selection of trenchless technologies will be based on constraints of the site, and soil conditions (discussed in more detail in the next section).

An OCFCD encroachment permit is not required and no modifications to Orange County flood plain are anticipated.





After all information is gathered from survey, site investigations and geotechnical studies, our team will conduct a workshop to discuss in detail the plan for the project which will be caried into further detailed design. This workshop will discuss construction method, constructability, and approaches, and recommendations to minimize disruption and service to the nearby residences. After the workshop, 25% concept plans will be submitted which will reflect evaluation and provide recommendations of construction methods on the concept plan views. It is anticipated after 25% design submittal, a review period will be required and IRWD will communicate with the various HOA in the area to obtain any feedback on the plan, and if necessary, the plan will be revised for detailed final design documents. The following figure illustrates the preliminary design sequence and key milestones.



**Preliminary Design Sequence** 

# SELECT APPROPRIATE CONSTRUCTION TECHNIQUES TO MAXIMIZE CONSTRUCTABILITY AND MINIMIZE IMPACTS

# Utilizing Woodard & Currans renowned trenchless staff, we will evaluate and select technologies such as, Auger Boring, Pilot Tube Auger Boring, and HDD, along with traditional open cut to improve constructability and reduce impacts.

The proximity to local residential properties and the dense wooded area imposes certain construction challenges for this project, mainly due to access, and the constraints of the project site. As such, certain portions of the sewer have been identified to be replaced using trenchless methods of construction. The overall goal in utilizing trenchless technologies is to improve constructability while balancing economics and risks. Our team will leverage Woodard & Currans extensive design experience in the trenchless design field to evaluate and recommend the most optimal technology. Selection of construction methods to use for this project will need to consider work area requirements and constraints, groundwater and soil conditions, while keeping in mind and being sensitive to impacts to private property and the public use areas caused by noise, disruption, and schedule requirements. Once hydraulic modeling and pipe sizing has been confirmed with IRWD, installation methods including open cut will be evaluated and confirmed and where appropriate, trenchless installation will be considered. The adjacent photo shows the approximate alignment of the sewer (between manhole 35 and manhole 37) where the sewer is recommended to be adjusted to higher ground and located away from the creek. A new manhole will be constructed from where an installation pit will be excavated, and the new pipe will be either directly installed or jacked in a casing. The length of the reach is approximately 400 linear feet in the direction of MH 35 and fits within the limits of many trenchless methods of construction.

#### Approximate Trenchless Alignment – Toward Manhole 35



The methods we will consider are included in the following table, which highlights some of the pros and cons of each method and will be evaluated further with close collaboration with IRWD staff.

Technology	Pros	Cons	Example W&C project	
Horizontal Directional Drilling (HDD)	<ul> <li>» Widely used</li> <li>» Compact</li> <li>» Reduced site restoration</li> </ul>	<ul> <li>» Not good with roots</li> <li>» Not good with cobbles</li> <li>» Needs 2% slope if gravity pipe</li> <li>» Better suited for pressure pipe</li> <li>» Requires larger areas to setup equipment</li> <li>» Risk of hydrofracture to adjacent creek</li> </ul>	» OMWD 8"	
Pit-launched HDD	<ul> <li>» Compact</li> <li>» Reduced site restoration</li> <li>» Great for short lengths and small diameter pipe</li> <li>» Accurate</li> </ul>	<ul> <li>» Not good for long lengths or large diameter</li> <li>» Few contractors have the equipment</li> <li>» Presence of cobbles and boulders would be problematic</li> <li>» Risk of hydrofracture to adjacent creek</li> </ul>	» Central San 4" and 8-12" sewers	

#### A|Scope

Technology	Pros	Cons	Example W&C project		
Pilot Tube Guided Auger Boring (PTGAB)	<ul> <li>» Accurate</li> <li>» Reduced site restoration and reduced excavation</li> <li>» Relatively low risk</li> <li>» Requires less staging and setup area than HDD</li> <li>» Large pool of experienced contractors</li> <li>» Inexpensive</li> </ul>	<ul> <li>» Mixed soil conditions can be problematic</li> <li>» Presence of cobbles and boulders are problematic</li> <li>» Problematic in loose sandy soils with groundwater above the drill path</li> <li>» Generally, More expensive than open-cut</li> </ul>	<ul> <li>Malibu, Phase 1</li> <li>Malibu Phase 2</li> <li>Knollwood Cir.</li> </ul>		
Pilot-Tube Guided Auger Pipe Ramming	<ul> <li>Compact (smallest footprint of all options)</li> <li>Inexpensive (typically cheaper than PTGAB)</li> <li>Suitable for wide range of soil condi- tions and shallow groundwater</li> <li>Relatively low risk</li> <li>Requires less staging area and setup area than HDD, PTGAB, etc.</li> <li>Same excavation requirements as PTGAB</li> <li>Capable of handling cobbles/boulders up to the size of the casing</li> </ul>	» Vibrations	» Malibu Phase 1		
Traditional Open Cut	<ul> <li>» Accurate</li> <li>» Well understood installation</li> <li>» Greater pool of capable contractors</li> </ul>	<ul> <li>» Extensive surface disruption</li> <li>» Requires access for hauling and staging</li> <li>» Time consuming</li> <li>» Extensive tree impact and removal</li> </ul>	<ul> <li>Numerous projects</li> </ul>		

With our specialized and experienced local team that is ready to hit the ground running, our design that fits within the environmental constraints and our approach to constructability we have developed the following detailed scope of work.

# SCOPE OF WORK

### **TASK 1. PROJECT MANAGEMENT**

#### Task 1.1 Meetings:

Woodard & Curran will prepare for and attend up to four project meetings, including the kickoff meeting conceptual plan meeting and two design review meetings as outlined in the table below. Woodard & Curran will prepare an agenda and meeting notes for each meeting, which will be distributed to the IRWD Project Manager within 5 working days of meetings.

Meeting/Workshop	Description
Design Kickoff/Site Meeting	One (2) two-hour meeting
Preview Conceptual Plan Meeting (25%)	One (1) one-hour meeting
Presentation of the 60% design	One (1) one-hour meeting
Presentation of the 90% design, discuss IRWD's comments, and discuss how the comments were addressed	One (1) one-hour meeting

#### Task 1.2 Coordination:

Woodard & Curran will provide regular project coordination, communication, and updates to IRWD and communicate with the City of Lake Forest and IRWD's CEQA consultant as necessary. It is our understanding that IRWD will be responsible for communication with the two HOAs. Woodard & Curran will maintain and update a log of key action items and decisions, which will include key outstanding decisions as well as a record of key decisions made at meetings or in other forums with IRWD.

A Microsoft Project schedule will be prepared and updated monthly. The schedule will include detailed schedules for both design and construction activities. The schedule will include critical factors impacting the project schedule including permitting, design, bid and construction phases and shall reflect IRWD's Notice of Award and Notice to Proceed, contractor shop drawing submittals and Engineer review, manufacturing and delivery times for construction materials, construction activities and construction close out.

### Task 1.3 Project Invoicing

Woodard & Curran will track the project scope, budget, and schedule and document progress in monthly progress reports that will be submitted with each invoice.

### Task 1.4 Quality Control Plan

Woodard & Curran will implement its quality assurance program for the project, which will include an internal Senior Technical Approach Review (STAR) Workshop at the onset of the project, as well as a senior level technical review (quality control reviews) of project deliverables. Our quality assurance (QA) program includes tracking of all major deliverables, assigning reviewers and documenting reviews in the project files.

#### Task 1 Deliverables:

→ Data Request List (electronic copy, via email)

- → Meeting Agendas and Minutes (PDF or Microsoft Word files via email)
- → Monthly Progress Report and Updated Schedule (pdf with invoice via email)

#### Task 1 Assumptions:

Assumes a 7 months design project duration from NTP through 100% final design submittal.

### **TASK 2. FINAL DESIGN**

Woodard & Curran will prepare the final design Contract Documents in accordance with IRWD requirements outlined below for the project manual and construction plans. IRWD's construction manual will be referred to in the contract documents.

- → Project Manual: Woodard & Curran will prepare a Project Manual in standard IRWD format for the Contract Documents. IRWD's front end documents will be utilized, and Woodard & Curran 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 will describe the work, the allowable shutdown durations and sequencing associated with any connections and tie-ins to existing IRWD facilities. The Project Manual will also include the IRWD General Technical Specifications, modifications thereto, and any project specific technical specifications. Woodard & Curran will prepare the Project Manual in standard IRWD format using the Project Manual template provided by IRWD in Microsoft Word format. Woodard & Curran will provide a PDF file of the bidding documents in 8-1/2 x 11-inch format.
- → IRWD Construction Manual: IRWD has also developed and periodically updates its IRWD Construction Manual, which contains General Technical Specifications and Standard Drawings for use in the preparation of plan and project technical specifications. This manual will be referred to in the Contract Documents.
- → Construction Plans: Woodard & Curran will prepare detailed construction drawings in the latest version of AutoCAD using NCS V4.0 layering standards, on 24-inch x 36-inch sheets utilizing IRWD's standard border template. Plans will be prepared in AutoCAD. The improvement plans will include a site plan, sheet index/location map/legend, general notes, index map, plans and profiles of the pipeline improvements, abandonment of existing pipes, notes and details, bypass plan, access improvements and construction sequencing, and all details necessary for the construction of the improvements. The list of sheets anticipated for the project, and included for each submittal is indicated below:

Sheet No.	Title	25%	60%	90% and Final
1	Title Sheet	$\checkmark$	$\checkmark$	$\checkmark$
2	List of Drawings, Abbreviations, Location and Index Maps,	$\checkmark$	$\checkmark$	$\checkmark$
3	Legend, General Notes, Sanitary Sewer Notes, and Construction Notes	$\checkmark$	$\checkmark$	$\checkmark$
4	Sewer Replacement and Lateral Connections 1 – (20 scale) Upper San Diego Creek Plan & Profile.	✓ (plan view only)	$\checkmark$	$\checkmark$
5	Sewer Replacement and Lateral Connections 2 – (20 scale) Upper San Diego Creek Plan & Profile	✓ (plan view only)	$\checkmark$	$\checkmark$

Sheet No.	Title	25%	60%	90% and Final
6	Upper San Diego Creek Section, Sewer Details, and applicable Construction Notes		$\checkmark$	$\checkmark$
7	Upper San Diego Creek Access Improvements - Grading and Surfacing		$\checkmark$	$\checkmark$
8	Sewer and Manhole Abandonment Plan 1-Upper San Diego Creek	$\checkmark$	$\checkmark$	$\checkmark$
9	Sewer and Manhole Abandonment Plan 2-Upper San Diego Creek	$\checkmark$	$\checkmark$	$\checkmark$
10	Access Improvement Sections 1 - Upper San Diego Creek		$\checkmark$	$\checkmark$
11	Sewer Replacement and Lateral Connections 1 – (20 scale) Glenwood Tributary Plan & Profile.	✓ (plan view only)	$\checkmark$	$\checkmark$
12	Sewer Replacement and Lateral Connections 2 – (20 scale) Glenwood Tributary Plan & Profile	✓ (plan view only)	$\checkmark$	$\checkmark$
13	Upper San Diego Creek Section, Sewer Details, and applicable Construction Notes		$\checkmark$	$\checkmark$
14	Glenwood Tributary Access Improvement - Grading and Surfacing		$\checkmark$	$\checkmark$
15	Glenwood Tributary Access Improvements Sections		$\checkmark$	$\checkmark$
16	Sewer Manhole Abandonment Plan 1 - Glenwood Tributary	$\checkmark$	$\checkmark$	$\checkmark$
17	Glenwood Tributary Watershed Improvement Plan		$\checkmark$	$\checkmark$
18	Glenwood Tributary Watershed Improvement Details		$\checkmark$	$\checkmark$
19	Sewer Bypass Plan	$\checkmark$	$\checkmark$	$\checkmark$

### 2.1 Review of Background Material

Woodard & Curran will review background material for the trunk sewer relocation including the following:

- → As-built record drawings
- → Existing survey data and site photos

- $\rightarrow$  Sewer easements and title reports
- $\rightarrow$  Woodard & Curran Access and Facilities Improvements for Sewer Systems in the Woods

Based on review of this information we will proceed to contact the utility companies and develop preliminary design for the relocation of the sewer.

### 2.2 Optional Storm Water Pollution Prevention Plan (SWPPP)

Woodard & Curran will evaluate if a SWPPP is required based on the anticipated disturbed area of the proposed final design scope. If a SWPPP is required, Woodard & Curran will prepare the draft SWPPP and permit application and include it in the project manual for the Contractor to implement.

### 2.3 Topographic Field Survey

Woodard & Curran's subconsultant KDM Meridian will perform field surveying and produce topographic maps that will be used as a base plan for the proposed improvements. Considering the complexity in topography, KDM proposes the collection of existing conditions be performed with terrestrial LiDAR scanning methods. This collection will include the capture of color photography for scan point colorization to assist in visualization of the registered point clouds.

Project datums will be established in NAVD 88 and NAD 83, after confirmation with IRWD on specific benchmarks and epochs.

Field survey will capture all surface features along the proposed sewer improvements, plus 10-feet on both sides outside of the existing 20-foot-wide sewer easement, along the length of the proposed sewer alignment, plus another 50-feet before and after the sewer replacement and watershed improvements in both the Upper San Diego Creek and Glenwood Tributary areas. Survey will also include existing access roads and trails noted for improvements.

Existing manholes with the proposed area of work will be opened and top of pipe, pipe inverts, and pipe direction will be measured and noted.

Property lines of the parcels the improvements or access roads will be included from record data, along with easements of record (or provided by IRWD). Property lines of the parcels the improvements or access roads are within will be included from record data, along with easements of record (or provided by IRWD).

Specific Survey Scope includes:

#### 1. Primary Control

- a. Establish project datums as CCS83, Zone 6 and NAVD88 (OCS BM).
- b. Locate and survey primary centerline intersection monuments.
- c. Process and adjust primary control.

#### 2. Terrestrial LiDAR scanning

- a. Set scan control points and perform terrestrial LiDAR scanning.
- b. Point clouds collected will include 360-degree color photography for site documentation and point cloud colorization.

#### 3. Secondary Control

a. Perform traverse to establish scan control points, collect manholes, and collect any additionally required survey control points.

#### 4. Scan Registration

a. Compile and register point clouds into project datum.

b. Provide access to point clouds through an online viewer and in Autodesk ReCap format.

### 5. Manhole Dipping

- a. Open each manhole and make measurements for top of pipe, pipe inverts, and pipe direction.
- b. Prepare a field sketch of the pipe arrangements.
- c. Take photographs of the inside and immediate environment of each manhole.

#### 6. Extraction

- a. Perform topographic extraction to prepare traditional topographic CAD base mapping of surface features along the proposed sewer improvements, plus 10-feet on both sides outside of the existing 20-foot-wide sewer easement, along the length of the proposed sewer alignment, plus another 50-feet before and after the sewer replacement and the existing access roads and trails noted for improvements.
- b. Delivery will be in AutoCAD drawing format at 1" = 20' scale with 1-foot interval contours.

### 2.4 Utility Review

Woodard & Curran will research to confirm utilities in the area that will be crossed or potentially impacted by the project. Utility review will be based only on mapping provided by No-dig agencies and records provided by IRWD. Utilities if determined present (e.g., storm drain, electrical, gas, and telephone/communication duct banks) will be avoided if possible.

#### 2.5 Right-of-Way

Woodard & Curran will identify any permanent easements and temporary construction easements required for construction. KDM will prepare any legal descriptions required. For budgeting purposes 2 legal descriptions are assumed. Woodard & Curran will incorporate the Right-of-Way information into the conceptual and design drawings.

### 2.6 Optional Geotechnical Investigation

Ninyo and Moore will perform up to four (4) borings to determine groundwater level, assess existing soil conditions and make recommendations for excavations and type of construction methods, pipe encasement and backfill and provide soils analysis for use in the design. This task will be included in the scope of work in the professional services agreement and will be authorized if needed.

Specific scope items include:

- → Review of readily available background materials, including published geologic maps, fault and seismic hazards maps, groundwater data, topographic maps, stereoscopic aerial photographs, and project related reports and/or plans provided by the client.
- → Obtain a boring permit from the Orange County Health Care Agency for performing borings that will penetrate groundwater.
- → Perform a site reconnaissance to locate proposed borings and coordinate with Underground Services Alert for underground utility location.
- → Perform a subsurface exploration consisting of drilling, logging, and sampling of four small-diameter borings to evaluate subsurface conditions along the sewer alignments. The borings are anticipated to range in depth from approximately 15 to 30 feet and will extend to a depth of up to 10 feet below the planned invert elevation, or refusal, whichever is shallower. The borings will be logged and sampled at selected depths by our representative. In accordance with County requirements, the borings will be backfilled with grout if groundwater is encountered. Excess auger cuttings will be spread on-site.

- → Perform laboratory testing on selected, representative soil samples. Laboratory tests will include evaluation of in-situ moisture and density, gradation, shear strength, and soil corrosivity.
- → Compile data and analyze the information obtained from our background review, subsurface evaluation, and laboratory testing. The geotechnical analyses and recommendations will include:
  - Suitability of the site for the proposed construction from a geotechnical perspective.
  - Description of the geology and soils anticipated during construction.
  - Evaluation of the depth to groundwater based upon exploratory data and readily available groundwater data from nearby monitoring wells, and dewatering considerations.
  - Excavation characteristics of the on-site materials, including anticipated difficult excavation and caving potential.
  - Suitability of the onsite soils for trench backfill, including material types, moisture conditions and oversized materials.
  - Fill material and compaction requirements, including bedding, pipe zone material and
  - suitability of on-site soils for trench backfill.
  - Temporary stability of trench excavations and shoring design criteria, including lateral earth pressures.
  - Pipe design criteria including modulus of soil reaction.
  - Lateral earth pressures for trenchless construction methods and tunneling considerations, including material types, behavior characteristics and groundwater conditions.
  - Evaluation of corrosion potential of on-site soils.
- → Prepare a draft and final geotechnical report presenting our findings, conclusions, and recommendations for design and construction of the project.

### 2.7 Potholing

Woodard & Curran will pothole up to fifteen (15) locations on the existing sewer system to confirm the points of connection to the existing system and the pothole information will be incorporated into the design.

### 2.8 Permits

Woodard & Curran will identify required permits and their controlling agencies including the City of Lake Forest. Woodard & Curran will apply for and secure approval of the required permits except for the environmental permits which IRWD has retained another consultant to obtain (see below). Copies of permit conditions will be inserted in the Project Manual's Appendix. IRWD will pay all permit fees directly to the agency.

IRWD has retained a consultant to identify and obtain the required environmental permits or approvals needed to perform the work, e.g. Section 401 Water Quality Certification, Section 404 Clean Water Act, and Lake or Streambed Alteration Agreement. Woodard & Curran will provide necessary exhibits/documentation to assist IRWD's environmental permitting consultant in completing applications for the permits.

### 2.9 CEQA Documentation Support

Woodard & Curran will provide necessary project information, maps or exhibits to assist IRWD's environmental consultant in preparing the CEQA documentation for the project including project description details and construction and operational specifics such as estimates of area affected by construction, equipment used for construction, or estimates of construction vehicle trips.

### 2.10 Final Design Plans

The final design covers the 25%, 60%, 90%, and final design submittals. Throughout final design,

Woodard & Curran will continue to regularly meet with IRWD to discuss the project and integrate any responses into the next project milestone. The 90% submittal will be a substantially complete and biddable construction set, pending any unresolved questions or items for IRWD staff discussion. The final design submittal will be a biddable, buildable design submittal for final IRWD approval.

Woodard & Curran will preview each plan submittal with IRWD staff in a virtual preview meeting. Improvement plans will be submitted and transmitted via email (PDF file) to IRWD for review at the 25%, 60%, 90%, and final design completion levels according to the following guidelines:

- → 25% Draft: Woodard & Curran will provide a searchable 25% design concept plan PDF file of the proposed sewer, access, and watershed improvements and meet with IRWD to discuss the conceptual plan for the proposed sewer access and watershed improvements. The Conceptual Plan will show the extent of replacement and proposed new sewer alignment and proposed piping materials, existing facilities that will be abandoned, points of connection to existing, access road improvement areas and details for encasement or armoring of new or existing facilities, and other pertinent proposed design concepts for IRWD concurrence prior to progressing toward the 60% design. We will emphasize and explain any differences in the concept from the improvements proposed in the W&C preliminary improvements plan. All deliverables will be QA/QC'd by our internal QA/QC Team.
- → 60% Draft: Woodard & Curran will provide a searchable PDF file of the entire plan set and will show conflicting utilities/structures, right-of-way, easements, construction notes and major details. The design set will include all sheets, plan and profile, and sections/details for major items. Key maps, location maps, station numbers, and general notes will be included in the plans. The project manual will include all sections including any project specific specifications sections or modifications to the IRWD General Technical Specifications Sections and relevant City standards or specifications. Woodard & Curran will provide a single searchable PDF file of the 60-percent Project Manual. An opinion of probable construction cost will be provided. All deliverables will be QA/QC'd by our internal QA/QC Team.
- → 90%: Woodard & Curran will provide a searchable PDF file of the entire plan set. The plan set will show all design elements, be QA/QC'd by our internal QA/QC Team, and include revisions per IRWD, City of Lake Forest and other agencies' comments. Woodard & Curran will provide a single searchable PDF file of the 90-percent Project Manual. An updated opinion of probable construction cost will be provided. All deliverables will be QA/QC'd by our internal QA/QC Team.
- → Final Design Deliverable: Woodard & Curran will provide one full size, final set of plans in a single PDF with the Engineer's electronic stamp and signature, including IRWD's signatures on the design sheets. Woodard & Curran will provide a single searchable PDF file of the Project Manual including the Engineer's electronic stamp and signature on the signature page. This submittal will be backchecked for inclusion of all previous comments prior to adding the Executive Director's electronic signature on the cover sheets of the plans and Project Manual. Once the submittal is reviewed and signed by IRWD, Woodard & Curran will provide AutoCAD files for the entire plan set and Microsoft Word files used in the preparation of the Project Manual. An updated opinion of probable construction cost will be provided. All deliverables will be QA/QC'd by our internal QA/QC Team.

#### 2.11 Project Manual

Woodard & Curran will prepare the project manual in accordance with IRWD requirements previously outlined. Woodard & Curran will assist in calculating liquidated damages value for the project should the contract time be exceeded. IRWD's standard liquidated damage calculation form will be provided.

### 2.12 Opinion of Probable Construction Cost

Woodard & Curran will prepare a detailed and itemized opinion of probable construction cost for the proposed facilities for submission with each of the design deliverables. The Opinion of Probable Construction cost will be in the form of the Schedule of Work as included in the Bid Documents section of the Project Manual.

### 2.13 Bid Period Assistance

During the bidding period, Woodard & Curran will assist with providing information and clarification of bid documents to prospective bidders. This will include the preparation of one addendum for bidding, including revisions to the design plans and specifications and assistance with addressing bidder questions. This includes the following budgeted hours:

- **1.** Plan Revisions: Woodard & Curran has budgeted twenty-four (24) hours for plan revisions to the construction drawings.
- **2.** Specification Revisions: Woodard & Curran has budgeted sixteen (16) hours for revisions or additions to the project specifications.
- **3.** Bidder Questions: Woodard & Curran has budgeted eight (8) hours to address and respond to bidder questions.

#### Task 2 Deliverables:

- → 25% Design Drawings (pdf electronic copies)
- → 60% Design Drawings, Project Manual, Engineer's Estimate and Schedule (pdf electronic copies)
- → 90% Design Drawings, Project Manual, Engineer's Estimate and Schedule (pdf electronic copies)
- → Final Bid Design Drawings, Project Manual, Engineer's Estimate and Schedule (electronic copies in PDF, AutoCAD and Microsoft Word files)

### **Task 2 Assumptions**

- → IRWD will be responsible for producing and distributing Bid Documents and maintaining a plan holders list.
- → Construction phase support is not included; however, we can provide these services at a negotiated scope and fee.
- $\rightarrow$  A single bid package will be provided.
- → Final design duration is estimated to be approximately 7 months. Delays beyond the reasonable control of Woodard & Curran may result in additional project management costs.
- → Project Design Plans for sewer and access improvements are assumed to be provided at 20-scale.
- → Woodard & Curran will not attend the pre-bid meeting.
- → Woodard & Curran will not evaluate the bids.
- → CEQA & Permitting support is limited only to providing engineering and planning exhibits. Includes attendance at one 2-hour workshop with IRWD, CEQA consultant and regulators.
- → No public outreach is provided as part of this fee estimate. W&C assumes that IRWD will communicate and contact HOA and communicate any requirements from discussions to W&C staff. This project assumes a SWPPP will be necessary due to the amount of disturbed surfaces and is included in scope and fee.
- → Geotechnical investigations is included in scope and fee for up to 4 borings and a geotechnical report.
- → Up to 400 linear feet of sewer relocation will be considered to be installed with trenchless methods and will be evaluated as part of 25% design and 60% design. Methods to be considered will be Pilot Tube Auger Boring, Traditional Jack and Bore, HDD, or Pipe Ramming. A recommendation will be made based on the geotechnical study and evaluations as part of this scope.

# B. Team

Engineering Design Services for the Lake Forest Woods Sewer Improvements



Our staff are specialists in their fields, offering in-depth understanding of cutting-edge technology, astute problem solving, multidisciplinary engineering, and expert regulatory guidance. Woodard & Curran has over 1160 highly-qualified professionals from 27 office locations across the United States, including seven offices in California. We have successfully assisted many southern California cities and agencies in implementing sewer design projects. The team members shown in the

adjacent organizational chart have provided design of sewer improvements for IRWD and other agencies, including Orange County Sanitation District, City of Anaheim, City of Malibu, Padre Dam Municipal Water District, City of Santa Clara, City of San Jose and many more. Our team members' thorough understanding of the unique challenges associated with the Lake Forest Woods Sewer area will make this project a longterm success for IRWD.



**Potholing** T2 Utility Engineers



### Kraig Erickson, PE | Project Manager (Laguna Hills)

Kraig has 20 years of experience and participates in all aspects of project implementation, from planning through design and construction services. He has provided design and construction management services for pipeline, pump station, treatment and reservoir projects for wastewater systems, recycled water, potable water, and storm drainage. His areas of specialty include sewer system design, recycled water conversions for irrigation and industrial customers, pipeline design, construction cost estimating, condition assessment

inspections, and construction management for infrastructure projects. He is experienced with

trenchless technologies for pipelines as well as being a certified inspector for cured-in-place pipeline relining. Kraig has managed several sewer design projects, including the OC San District 6 Trunk Sewer Upgrades and is intimately familiar with the challenges of this project as the Project Manager of the IRWD Woods Sewer Access Improvements Study.



### Mirko Maher, PE | Technical Manager (Laguna Hills)

Mirko has 24 years of experience in planning, design, and construction management of water and wastewater pipelines and pump stations. He has designed more than 20 miles of pipelines. For a project similar to this IRWD project, Mirko provided project engineering and design support for the City of Malibu's Sewer Improvements Project, which included both HDD and installation within areas with close proximity to residential properties, which included both 8-inch sewer and water mains. This project included design of approximately 1,200 linear

feet of installation by horizontally directionally drilled methods. Mirko was also QA/QC reviewer for the IRWD Woods sewer Access Improvements Study.



### Kathleen Higgins, PE | Principal-in-Charge (Laguna Hills)

Kathleen has over 30 years of experience leading a variety of water projects including sewer and water design and management, BMP analysis and design, and preparation of final design plans for water and sewer systems. She has served as principal-in-charge and project manager on a variety of projects throughout Southern California including IRWD's San Diego Creek Dry Weather Flow Diversion and San Joaquin Marsh Site 62 Wetlands projects. Kathleen will be responsible to ensure that the right staff are committed to the project and

that IRWD's needs are met. She will also assist in resolving any issues on the project, should they arise.



### **Glenn Hermanson, PE** | Technical Advisor (Sacramento)

Glenn's 32 years of experience with infrastructure engineering have provided him with significant expertise in trenchless technologies and genuine enthusiasm working on sewer projects, pipeline condition assessment, rehabilitation, and design. His experience includes projects that minimize disturbance to residents and businesses, reduce risk, and save costs. Glenn's experience has focused on sewer facilities evaluation, hydraulic analysis, pipeline rehabilitation, condition assessment, and design and construction of sewer improvements. He

has completed more than 13 sewer condition assessment projects, including over 43 miles of pipeline and evaluation of over 30 sewer siphons. Glenn's work includes analysis and design of the IRWD Sewer Siphon Improvements project and the OCSAN District 6 Trunk Sewer Upgrade Project.



### Justin Kraetsch, PE | Project Engineer (Laguna Hills)

Justin's 7 years of experience in sewer infrastructure design and construction management includes predesign, final design, and trenchless feasibility studies of pipeline projects. Justin has served as the Project Engineer on several pipeline design projects and is experienced in construction plan preparation using AutoCAD, development of technical specifications, and construction cost estimates. He was the project engineer responsible for the preparation

Lake Forest Woods Sewer Improvements

of final design construction plans, specifications, and cost estimates for the IRWD Sewer Siphon Improvements Project and recently completed the design of 42,000 feet of 8 to 14-inch sewer design for the City of Malibu. This project included open cut, pilot tube augur boring and pipe ramming and horizontal directional drilling. These are similar technologies to be evaluated for this project.



3% of time on Project

### Jenn Glynn, PE | QA/QC (Sacramento)

Jennifer has 27 years of experience specializing in pipeline condition assessment, alternatives analysis, and rehabilitation design in both congested urban areas; and highly sensitive environmentally impacted locations involving various lining methods, as well as pipe bursting and conventional open-cut replacement techniques. She has assessed and designed more than 100 miles of pipeline ranging in size from 2-inches to 96-inches in diameter. Jennifer successfully manages projects from conception to completion, many of which required

special attention to sensitive issues, including endangered species habitat preservation. Jennifer is a recognized expert in the field of trenchless technology and focuses on using the most advanced technologies in the field. Jen provided QA/QC of the IRWD Sewer Siphon Improvements Project.



### Martha De Maria y Campos, PE | Design Engineer

### (Laguna Hills)

Martha is a civil engineer with five years of experience in wastewater, potable water, and recycled water projects. Her experience ranges from facilities planning to preliminary design and final design support. She is proficient in AutoCAD, GIS and cost estimating software. She provided design support to the IRWD Woods Sewer Access Improvements Study.



### Tom Scalese, PE | Structural Engineer (Montana)

Tom is a Professional Engineer with over 12 years of experience in structural engineering. His experience includes municipal wastewater design, industrial steel and concrete design, cast in place concrete tankage and temporary shoring. Tom is experienced with both new construction, structural evaluation, and reinforcing existing structures. His design proficiencies consist of classical approximations, computer aided analysis, and 3D modeling. His project experience includes both small and large projects for municipal, state, and

private clients throughout the country. He was the structural engineer for the IRWD Sewer Siphon Improvements Project.



5% of time on Project

### Millicent Cowley-Crawford, PE, CFM | Stream

### Hydraulics (San Francisco)

Millie is a senior expert in flood management and planning at Woodard & Curran with over 20 years of experience. She supports clients in preparing detailed hydrologic and hydraulic modeling, adapting to sea level rise and climate change, master planning, performing levee, canal, and channel inspections and risk assessments, identifying and prioritizing mitigation, and complying with the National Flood Insurance Program. As a certified floodplain manager, she helps communities understand and manage flood control risk and prepare capital planning and design of critical infrastructure to meet a wide variety of project needs and was the hydraulics engineer on the IRWD Woods Sewer Access Improvements Study.



5% of time on Project

### Janet Fordunski, PE | Permit Coordination (Laguna Hills)

Janet has 15 years of experience in water resource project management, planning, design, permitting, and construction administration. Her experience includes wastewater, recycled water, and potable water facilities for clients throughout the southwestern United States in the municipal, tribal, and private sector. Janet's wide-ranging knowledge of the regulatory landscape, recycled water systems, wastewater treatment, pipelines, pump stations, and operations makes her an asset for permitting infrastructure projects. She was the

project engineer on the IRWD Woods Sewer Access Improvements Study.

# **Subconsultants**



### Ninyo & Moore | Geotechnical Engineering

Ninyo & Moore, a California Corporation, is a minority-owned, multidisciplinary consulting firm that provides high-quality geotechnical and environmental consulting services. The firm was incorporated in 1986 to provide consulting services in geotechnical engineering, construction inspection and testing, engineering geology, hydrogeology, hazardous waste remediation and environmental assessment. Ninyo & Moore serves its clients through 16 offices in California,

Arizona, Colorado, Nevada, Texas, and Utah.

The quality of Ninyo & Moore's personnel base of 500 employees is widely recognized. Their staff of professionals includes experienced and registered geotechnical engineers, civil engineers, environmental engineers, engineering geologists, hydrogeologists, environmental scientists, certified technicians and field inspectors, and hazardous waste and regulatory compliance specialists. The experience of Ninyo & Moore's geotechnical staff encompasses projects throughout the southwestern United States, including sewers, treatment plants, reservoirs, pipelines, pump stations, power plants, dams, waste-to-energy facilities, tanks, transmission towers, harbors and offshore structures, airports, commercial and municipal structures, educational, medical and recreational facilities, railroads, bridges, roads, highways, tunnels, low- and high-rise structures, landfills, and other public and private works. In addition, Ninyo & Moore has five fully-equipped, certified geotechnical laboratory facilities in California supervised by registered engineers. Their laboratories are certified by AASHTO, Caltrans, the Division of the State Architect, the City of Los Angeles, and the City of San Diego.



### **KDM Meridian (KDM)** | Land Surveying Services

KDM Meridian (KDM) is a professional land survey consulting firm competent in all major land survey and mapping disciplines. Established in 2000, KDM has over 20 years of experience providing

superior service to clients, both public and private. They have a staff of 20, including six California Licensed Surveyors and one certified Land Surveyor-In-Training, allowing KDM personnel to provide

in-house boundary, right-of-way, and topographic surveying in addition to mapping, construction staking, legal descriptions, and related land development functions. Their current workforce and equipment allow them to field up to four two-person crews when needed. KDM's proven expertise in surveying for public works design improvement projects is demonstrated by the fact that at least three-quarters of the projects currently performed by KDM are related to public works improvement projects. By operating as the survey department, or an extension of the survey department, for a number of prominent local public works design firms and municipal agencies, the staff at KDM have developed a formidable understanding of the unique land survey needs demanded by our public works clientele.

### T2 Utility Engineers | Potholing

T2 UES, Inc. d/b/a T2 Utility Engineers (T2ue) provides a full range of Utility Engineering services, including Subsurface Utility Engineering (SUE), advanced geophysics, test holes/potholing, surveying, and utility

coordination to support infrastructure projects in the United States (US) and Canada. Recognized as a leader in managing the risks associated with above-ground and sub-surface utilities, T2ue staff have the experience and expertise with managing projects of all sizes, from small development jobs to large-scale billion dollar infrastructure projects for public and private clients. T2ue has 30+ offices and about 400 employees across the US and Canada and can quickly mobilize resources for your project. They retain a vast array of geophysical and designating equipment and one of the largest fleets of SUE vehicles within the West. T2ue's SUE crews and field technicians are available to respond quickly to your project needs.

# C. References

Engineering Design Services for the Lake Forest Woods Sewer Improvements



Woodard & Curran's engineers are experts in the analysis and design of sewer infrastructure projects and are nationally recognized in the water/wastewater industry. We prepare high-quality and cost-effective designs that result in facilities that are easy-to-operate and maintain. Our design engineers identify key issues early on and work with our client's engineers and operations staff to identify their preferences and design standards. Woodard & Curran has worked with IRWD in the past on projects including the Sewer Siphon Rehabilitation project and The Woods Sewer Project.

The following table lists representative projects completed by our firm highlighting key requirements similar to this project, followed by detailed descriptions and references.

Client/Project	Pipeline Preliminary/Final Design	Sewer System Bypass	Agency Permits	Stream Stabilization
IRWD, Irvine Ranch Sewer Siphon Improvements	~	~	~	
IRWD, The Woods Sewer Access Improvements	~			~
City of Malibu, Sewer Collection System Design	~	~	~	
City of Anaheim, Knollwood Circle Sewer Improvement Project	~	~	~	
Olivenhain Municipal Water District, Recycled Water Pipeline Extension 153A	~		~	
OCSD, Taft Avenue Trunk Sewer Improvements	~	~		
OCSD, District 6 Trunk Sewer Relief and Sewer Upgrades	~	~	~	
City of Leominster, MA, Alternative Designs for Brook Stabilization			~	~



### Irvine Ranch Sewer Siphon Improvements |

### Irvine Ranch Water District

**Reference:** Malcolm Cortez, Principal Engineer, IRWD; 949.453.5854, cortez@irwd.com

**Design Completion Date:** 2019

**Construction Completion Date:** 2022

**Team Members/Roles:** Kathleen Higgins (PIC) Glenn Hermanson (Lead Designer), Justin Kraetsch (Project Engineer), Kraig Erickson (Technical Support)

#### **Description**:

IRWD completed a preliminary assessment of 19 inverted sewer siphons. Woodard & Curran was retained to design improvements to four of the siphons. The purpose of the Project is to design and construct improvements to increase the reliability and operability. The siphons are located near high traffic residential and commercial properties which require a high level of consideration during design to minimize interruption to the property occupants during construction. The Project also required easement and permitting coordination with the City of Irvine, County of Orange, Southern California Regional Rail Authority, the City of Tustin and various utility agencies. Traffic control plans were developed for work in accordance with local jurisdictional requirements as part of the permit approval process.

### **Project Highlights:**

- $\rightarrow$  Four critical sewer siphons, aging and blocked with debris
- → IRWD Design and Specifications
- → Agency permits and coordination



### Lake Forest Woods Sewer Access Improvements | Irvine Ranch Water District

**Reference:** Malcolm Cortez, Principal Engineer, IRWD; 949.453.5854, cortez@irwd.com

**Design Completion Date:** 2021

**Construction Completion Date:** Estmated 2024

**Team Members/Roles:** Kathleen Higgins (PIC), Kraig Erickson (Project Manager), Mirko Maher (Quality Control), Janet Fordunski (Project Engineer), Martha De Maria y Campos (Design Support), Millicent Cowley-Crawford (hydrology)

#### **Description**:

Woodard & Curran evaluated four alternatives to improve both access to IRWD facilities within the project reach and reduce risk of failure to those facilities. The key objectives were to develop and evaluate alternatives that are feasible for implementation by IRWD. To complete this evaluation, a hydrologic assessment was completed for the estimated 100-year flow event along both the Upper San Diego Creek and the Glenwood tributary. Based on the developed scour-envelope, improvement

alternatives were developed to reduce the risk to IRWD sewer infrastructure and to improve maintenance access. The study focused on solutions in the short-term (such as armoring or realigning assets) that would protect IRWD assets with a clear project avenue (e.g., no project partners, limited permitting, project cost) and was IRWD controlled. The recommended project based on a constructability review, is to relocate sewer piping to the South Slope of the Upper San Diego Creek and to relocate portions of the sewer within the Glenwood Tributary. The project will abandon or remove 5,000 LF of existing 10-inch and 8-inch sewer and 8 existing manholes and will construct 1,600 LF of new 8-inch and 12-inch piping and 10 new manholes.

#### **Project Highlights:**

- → Evaluated sewer relocation and alignment alternatives
- → Evaluated challenging construction conditions
- → Coordinated with IRWD staff



### Sewer Collection System Design | City of Malibu

**Reference:** Rob Dubuox, Public Works Director, City of Malibu; 310.456.2489, ext. 339, rdubox@malibucity.org

**besign Completion Date:** Phase 1-2015, Phase 2-2022

**Construction Completion Date:** Phase 1-2018, Phase 2 – Estimated 2024

**Team Members/Roles:** Glenn Hermanson (Technical Advisor), Justin Kraetsch (Project Engineer), Jennifer Glynn (QA/QC)

#### **Description:**

Woodard & Curran performed the planning and design for this high visibility, multi-benefit phased project that improves water quality in Malibu Creek, Malibu Lagoon, and Surfrider Beach. The Phase 1 and Phase 2 projects consisted of constructing a new centralized sewer collection system. The Phase 1 included approximately 9,000 feet of gravity sewer, 4,500 feet parallel force mains, and two lift stations. The Phase 2 Project includes approximately 26,000 feet of gravity sewer, 3,000 feet of parallel force mains, and five lift stations. The pipelines are underground in public rights-of-way (streets) and in easements through private residential homeowners' association (HOA) property. The pipelines, including both gravity and pressure lines, pass under Highway One (PCH) at various locations requiring Woodard & Curran to obtain Caltrans construction and permanent easements under PCH. Trenchless installations consisting of pilot-tube guided auger boring and pilot-tube guided pipe ramming were designed for the PCH crossings and in many other areas of the project to minimize traffic impacts within Malibu. A 1,700 foot horizontal directional drill was designed for the installation along Malibu Canyon Road to minimize traffic impacts along a heavily trafficked roadway. Key project challenges included shallow brackish groundwater, access issues due to its location within private communities with narrow roadways and minimal utility documentation and coordinating with stakeholders and permitting agencies.

#### **Project Highlights:**

- $\rightarrow$  42,500 feet collection piping up to 14" in diameter
- → Open cut excavation, pilot-tube guided auger boring and pipe ramming, and horizontal directional drill, including multiple trenchless crossings of Caltrans PCH
- → Construction through dense residential and high traffic traffic commercial areas



### Knollwood Circle Sewer Improvement Project |

### City of Anaheim

Reference: Kevin Miako, Associate Engineer, City of Anaheim; 714.765.5100, kmiako@anaheim.net

🗰 Design Completion Date: Estimated date 2022

🔁 Construction Completion Date: N/A

Leam Members and their Roles: Kathleen Higgins (PIC), Mirko Maher (Project Manager), Glenn Hermanson (Design Lead), Justin Kraetsch (Project Engineer)

### **Description**:

Woodard & Curran was selected to provide design services for the installation of approximately 2,000 linear feet of new 12-inch diameter sewer. Woodard & Curran developed and evaluated alignment alternatives and developed a preliminary design for the recommended alignment. The collection system is in public right-of-way and within easements crossing industrial and commercial properties. Woodard & Curran developed and evaluated alignment alternatives based on easement/right-of-way acquisition requirements, constructability, hydraulics, and public/private disruptions. Trenchless construction methods, including pilot-tube guided auger boring, will be utilized for crossing of private properties and busy roadways. The critical components of the design include utility coordination, easement requirements, and trenchless installation. Woodard & Curran's goals are to provide a sewer design that improves collection system hydraulics, reduces project and future O&M costs, and minimizes disturbances to private properties and traffic.

### **Project Highlights:**

- → 2,000 linear feet of new 12-inch diameter sewer
- → Challenging clearances between pipes at utility crossings
- → Coordination of multiple right-of-entry permits



### **Recycled Water Pipeline Extension 153A |**

Olivenhain Municipal Water District

**Reference:** Kim Thorner, General Manager, Olivenhain Municipal Water District; 760-753-6466, kthorner@olivenhain.com

**Exampletion Date:** 2019

**Construction Completion Date:** 2020

**Leam Members/Roles:** Kraig Erickson (Project Manager), Glenn Hermanson (Lead Designer)

#### **Description:**

Woodard & Curran assisted Olivenhain Municipal Water District in the design of a recycled water extension to an existing potable water user (Surf Cup Sports Fields) for irrigation purposes. The recycled water pipeline alignment extends 1,400 feet from an existing meter

site southeast of the Morgan Run Country Club to the new meter site at the Surf Cup property. Woodard & Curran designed the 8-inch pipeline to be constructed using horizontal directional drilling (HDD) to cross 40-ft under the San Dieguito River channel. The HDD design, most notably the depth of the installation and associated permitting was challenging due to high groundwater and poor soil conditions. In addition to preparing the final design and bid package, Woodard & Curran also prepared the IS/MND. Primary issues of concern addressed in the MND included presence of sensitive biological resources in the adjacent riparian corridor, noise and dust from the HDD drill pit areas. Woodard & Curran also prepared notification to CDFW under the Lake and Streambed Alteration Program.

#### **Project Highlights:**

- → Horizontal Directional Drilling Design of 8-inch pipeline
- → Expedited environmental process to allow for construction prior to sensitive bird nesting season.



### Taft Avenue Trunk Sewer Improvements |

### **Orange County Sanitation District**

**Reference:** Rich Leon, Project Manager, OCSD; 714.460.3485, rleon@ocsd.com

**Exampletion Date:** 2022

**Construction Completion Date:** Estimated 2024

**Team Members/Roles:** Kraig Erickson (Project Manager), Glenn Hermanson (Lead Designer), Mirko Maher (Senior Project Engineer)

#### **Description**:

Woodard & Curran is currently providing alternatives evaluations, preliminary design, and then will prepare final bid documents for the Taft Ave Trunk Sewer. This project is necessary to address capacity issues during a wet-weather event along the pipeline and is 10,600 feet long with diameters ranging from 12- to 24-inches. As part of the analysis, we evaluated six alternative alignments, one of which included a trenchless crossing under Hwy 55. Woodard & Curran is coordinating permit requirements and utility information from multiple agencies. Project features include alternatives evaluation, diversion structure design, junction structure design, congested traffic areas, and permit acquisition.

### **Project Highlights:**

- $\rightarrow$  10,600 feet long with diameters ranging from 12- to 24-inches
- $\rightarrow$  Permit and utility coordination
- → Trenchless crossing under Hwy 55



### District 6 Trunk Sewer Relief and Sewer Upgrades | Orange County Sanitation District

**Reference:** Adam Nazaroff, Associate Engineer; 714.962.2411,

anazaroff@ocsd.com

**Design Completion Date:** 2015

**Construction Completion Date:** 2019

**Team Members/Roles:** Glenn Hermanson (Design Lead), Justin Kraetsch (Project Engineer), Jennifer Glynn (Technical Advisor), Kraig Erickson (Construction Manager)

### **Description**:

Woodard & Curran provided engineering evaluation, CEQA assistance, design and engineering services during construction for the OCSD District 6 Trunk Sewer Upgrade. Woodard & Curran's work included hydraulic modeling, preparation of an amendment to the Programmatic Environmental Impact Report, analysis of current conditions, preliminary design and final design of system upgrades for design flows projected for the next 30 years. The original system was constructed in the early 1950s. System upgrades include increased capacity through pipe bursting and realignment, repair of pipe deficiencies such as lateral cracking, cleaning and lining of corroded CIP segments, and improvements to manhole access. Design elements include pipeline design, bypass pumping, construction sequencing, odor control, dewatering, traffic control, cost estimation and surface restoration. The sewer alignment is in a busy Caltrans right-of-way in the City of Newport Beach that impacted neighboring commercial businesses and hospital. Woodard & Curran coordinated permit requirements and utility information from multiple agencies including Caltrans.

#### **Project Highlights:**

- → Undersized existing trunk sewer along heavy traffic Caltrans corridor of Newport Blvd
- → Cured-in-place pipe rehabilitation, pipe-bursting, and open-cut construction methods
- → Challenging construction conditions



### Alternative Designs for Brook Stabilization |

City of Leominster, MA

**Reference:** Wendy Wiiks, Office of Mayor Dean Mazzarella; 978.534.7500, wwiiks@leominster-ma.gov

**Design Completion Date:** Est. 6/2022

**Construction Completion Date:** N/A

**Team Members/Roles:** Millicent Cowley-Crawford (led an assessment of potential for scour and design of channel stabilization measures)

#### **Description**:

The City of Leominster evaluated stabilizing a section of embankment along the Monoosnoc Brook. A storm in the spring of 2017 resulted in the collapse of a segment of stone masonry
retaining wall along the southeast bank of the brook. Since the event, rip rap and jersey barriers have been temporarily stabilizing the embankment. Woodard & Curran is working with the City to identify a permanent solution to repair the embankment and reduce potential flood damage risk to adjacent infrastructure and buildings. The project team developed three design alternatives to reinvent the surrounding area while also stabilizing the brook with environmental and resiliency focused elements that would anchor this public space as a catalyst for further downtown revitalization efforts. Woodard & Curran's analysis and design includes an alternatives analysis, community engagement, engineering drawings, and initiating the regulatory permitting process.

#### **Project Highlights:**

- $\rightarrow$  Hydraulic and scour analysis of a natural stream
- → Stream stabilization using a variety of techniques
- → Regulatory permitting in an urban environment

# D. Schedule

Engineering Design Services for the Lake Forest Woods Sewer Improvements



### SCHEDULE

Woodard & Curran has reviewed the RFP scope of work and schedule. Based on our understanding of the project, there are complexities that will require more time for design and field investigations which would include geotechnical investigations necessary for trenchless construction methods, detailed survey necessary for new sewer improvements, grading and drainage of improved access. These design elements will require more duration and are accounted for and shown in our detailed schedule provided, which includes review time after submittals (assuming a typical 2 week review period for IRWD). Assuming an NTP of 5/12/2022, final plan signing is estimated to be approximately 3 weeks after the date highlighted in the original RFP.

ID	Task Name	Duration	Start	Finish
1	Lake Forest Woods Sewer Improvements	151 davs	Thu 5/12/22	Thu 12/8/22
2	Notice to Proceed	0 days	Thu 5/12/22	Thu 5/12/22
3	Task 1: Project Management	140 davs	Thu 5/12/22	Wed 11/23/22
4	Kickoff Meeting/Site Meeting	0 days	Mon 5/16/22	Mon 5/16/22
5	1.1 Meetings (Kickoff and Design Workshops)	, 60 days	Mon 5/16/22	Fri 8/5/22
6	1.2 Coordination	140 davs	Thu 5/12/22	Wed 11/23/22
7	1.3 Invoicing	140 davs	Thu 5/12/22	Wed 11/23/22
8	1.4 OA/OC Plan	110 days	Tue 5/17/22	Mon 10/17/22
9	Task 2: Final Design	121 days	Thu 5/12/22	Thu 10/27/22
10	2.1. Review of Background Material	5 days	Thu 5/12/22	Wed 5/18/22
11	2.2 Ontional SW/PPP	30 dave	Fri 8/5/22	Thu 9/15/22
12	2.2 Optional SWITT	10 days	Thu 5/12/22	Wed 5/25/22
12	2.2.1 Topographic Survey Pofinement	10 days	Eri 7/9/22	Thu 7/21/22
13	2.5.2 Topographic Survey Kennement	10 days	Thu E /12/22	111U //21/22
14	2.4 Utility Review	15 days	nu 5/12/22	wed 6/1/22
15	2.5 Kight-of-Way	30 days	IVION 8/8/22	Fri 9/16/22
16	2.6 Optional Geotechnical Evaluation	20 days	1 nu 5/19/22	wed 6/15/22
17	2./ Potholing	5 days	Fri //8/22	Thu 7/14/22
18	2.8 Permits (Excl. Environmental Permits)	20 days	Fri 7/8/22	Thu 8/4/22
19	2.9 CEQA Documentation Support	50 days	Fri 7/8/22	Thu 9/15/22
20	2.10.1 25% Design Concept	36 days	Thu 5/19/22	Thu 7/7/22
21	Prepare 25% Plans & Evaluate Construction Methods	20 days	Thu 5/19/22	Wed 6/15/22
22	25% Design Concept Preview Workshop	0 days	Thu 6/16/22	Thu 6/16/22
23	Submit 25% Design Concept Plans	5 days	Fri 6/17/22	Thu 6/23/22
24	IRWD Review and HOA Outreach	10 days	Fri 6/24/22	Thu 7/7/22
25	2.10.2 60% Design	31 days	Fri 7/8/22	Fri 8/19/22
26	Prepare and Submit 60% Design PS&E	20 days	Fri 7/8/22	Thu 8/4/22
27	60% Design Workshop	0 days	Fri 8/5/22	Fri 8/5/22
28	IRWD Review Period	10 days	Mon 8/8/22	Fri 8/19/22
29	2.10.3 90% Design	31 days	Mon 8/22/22	Mon 10/3/22
30	Prepare and Submit 90% Design PS&E	20 days	Mon 8/22/22	Fri 9/16/22
31	90% Design Workshop	0 days	Mon 9/19/22	Mon 9/19/22
32	IRWD Review Period	10 days	Tue 9/20/22	Mon 10/3/22
33	2.10.4 Final Design Deliverable	13 days	Tue 10/4/22	Thu 10/20/22
34	Prepare Final Stamped/Signed PS&E	10 days	Tue 10/4/22	Mon 10/17/22
35	Submit Final Deliverable	0 days	Mon 10/17/22	Mon 10/17/22
36	IRWD Backcheck	3 days	Tue 10/18/22	Thu 10/20/22
37	Plan Signing	0 days	Thu 10/27/22	Thu 10/27/22
28	Rid Period Assistance (Pending Permits /CEOA)	30 days	Fri 10/28/22	Thu 12/8/22
20	Bid Oppning (Donding Permits (CEOA)	0 days	Thu 12/0/22	Thu 12/0/22
22	bid Opening (Pending Pennils/CEQA)	U uays	1110 12/8/22	1110 12/8/22



## Sections F - J

Engineering Design Services for the Lake Forest Woods Sewer Improvements



### F | JOINT VENTURE

For this project, Woodard & Curran proposes to utilize Ninyo & Moore, KDM Meridian, and T2 Utility Engineers as subconsultants.

Established in 1986, **Ninyo & Moore** is one of the largest engineering firms specializing in Geotechnical Engineering, Environmental Engineering, and Materials Testing and Inspection Services. They are currently in 17 locations throughout the mid- to western United States, including California, Nevada, Arizona, Colorado, Texas, and Utah. They have fully equipped and certified in-house testing laborato-ries that offer full-service field and laboratory services for geotechnical design, and soil and materials testing projects.

**KDM Meridian (KDM)** is a professional land survey consulting firm competent in all major land survey and mapping disciplines. Established in 2000, KDM has over 20 years of experience providing superior service to clients, both public and private. They have a staff of 20, including six California Licensed Surveyors and one certified Land Surveyor-In-Training, allowing KDM personnel to provide in-house boundary, right-of-way, and topographic surveying in addition to mapping, construction staking, legal descriptions, and related land development functions.

T2 UES, Inc. d/b/a **T2 Utility Engineers** (T2ue) provides a full range of Utility Engineering services, including Subsurface Utility Engineering (SUE), advanced geophysics, test holes/potholing, surveying, and utility coordination to support infrastructure projects in the United States (US) and Canada. T2ue staff have the experience and expertise managing projects of all sizes, from small development jobs to large-scale billion dollar infrastructure projects for public and private clients.



Woodard & Curran does not have any actual, apparent or potential conflicts of interest that may result from the performance of any of the services under this contract.



Woodard and Curran does not have any exceptions to IRWD's Professional Services Agreement.



Woodard & Curran Insurance Coverage:

Insurance Required	Limit	Policy Number	Company			
Commercial General Liability	\$1 million per occurrence	6014561812	Continental Casualty Company			
Personal & Adv Injury	\$1 million per occurrence	6014561812	Continental Casualty Company			
General Aggregate	\$2 million per project/ location	6014561812	Continental Casualty Company			
Products – COMP/OP AGG	\$2 million per project/ location	6014561812	Continental Casualty Company			
Automotive Liability \$1 million per accident		6014561843	National Fire Insurance Company of Hartford			
Workers Compensation \$1 million per occurrence		6017075447	Transportation Insurance Company			
Professional Liability \$1 million per claim/\$2 million aggregate		114135520	Continental Casualty Company			

Note: Woodard & Curran's current insurance policy is effective 02/23/2022 to 02/23/2023. A submittal from our insurance carrier can be provided to IRWD upon request.



Woodard & Curran - California Department of Industrial Relations (DIR): 1000046744, expires 6/30/2022.

Ninyo & Moore - California Department of Industrial Relations (DIR): 1000004481, expires 6/30/2022.

KDM Meridian - California Department of Industrial Relations (DIR): 1000404965, expires 6/30/2022

T2 Utility Engineers (T2 UES Inc) - California Department of Industrial Relations (DIR): 1000549974, expires 6/30/2023

# Appendix

Engineering Design Services for the Lake Forest Woods Sewer Improvements

24422 Avenida de la Carlota Suite 180 Laguna Hills, CA 92653 www.woodardcurran.com T 800.426.4262 T 949.420.5300

May 4, 2022



Mr. Alex Murphy Irvine Ranch Water District Michelson Water Recycling Plant 3512 Michelson Drive Irvine, CA 92612

Re: Fee Proposal for the Engineering Design Services for the Lake Forest Woods Sewer Improvements

Dear Mr. Murphy:

Irvine Ranch Water District (IRWD) is seeking engineering services for the Engineering Design Services for the Lake Forest Woods Sewer Improvements. Woodard & Curran has a full understanding of IRWD's project and unmatched qualifications for sewer design. Based on our review of the request for proposal and discussions and meetings with IRWD staff, we have developed the attached fee proposal that corresponds to the scope of work in our proposal.

Included in the attached fee proposal are costs for labor, subconsultants, reproduction, and other direct costs for the Final Design. Also included is our standard rate table of hourly rates.

We are committed to working with IRWD to make this important project a success. If you have any questions about our fee proposal, please contact me at Khiggins@woodardcurran.com or (949) 420-5313 or Kraig Erickson at Kerickson@woodardcurran.com or (949) 420-5306.

Sincerely,

WOODARD & CURRAN, INC.

Kathleen Hippins

Kathleen Higgins, PE Principal-in-Charge



#### Irvine Ranch Water District

#### Lake Forest Woods Sewer Improvements

Tasks							Labor									Outside Sei	rvices			ODCs	Total
		Kraig Erickson	Mirko Maher	Justin Kraetsch	Glen Hermanson/J en Glynn	Janet Fordunski	Millie Cowley Crawford	Tom Scalese	Martha De Maria y Campos	Drafter	Admin.		Total Labor	Ninyo & Moore	T-2	KDM Meridian		Sub Consultant		Total ODCs	Total
	PIC	PM	Tech Manager	PE	Tech Advisor/ QA/QC	Permit Coord- ination	Watershed Imprs.	Structural	Design Engineer	CAD	Admin.	Total Hours	Costs (1)	Geotech	Potholing	Survey	Subtotal	Total Cost (2)	ODCs	(3)	Fee
	\$330	\$295	\$315	\$245	\$330	\$260	\$260	\$260	\$205	\$170	\$120										
Task 1: Project Management															1	Task 1: Pro	ject Manage	ement			
1.1 Meetings (3-1hr mtgs, 1-2hr mtg with prep)	2	12	8	12		2			12			48	\$12,640			1.1 Me	etings (3-1hr	r mtgs, 1-2hr mtg	with pre	o)	\$12,695
1.2 Coordination		24		8								32	\$9,040			1.2 Coc	ordination				\$9,040
1.3 Invoicing		8									8	16	\$3,320			1.3 Invo	oicing				\$3,320
1.4 QA/QC Plan		2		4	24							30	\$9,490			1.4 QA	/QC Plan				\$9,490
Subtotal Task 1:	2	46	8	24	24	2	0	0	12	0	8	126	\$34,490	\$0	\$0				S	ubtotal Task 1:	\$34,545
Task 2: Final Design															1	Task 2: Fina	al Design				
2.1 Review of Background Material		2	4	4					8			18	\$4,470			2.1 Rev	view of Backg	ground Material			\$4,470
2.2 Storm Watter Pollution and Prevention Plan		2		8					32			42	\$9,110		2.2 Storm Watter Pollution and Prevention Plan			\$9,110			
2.3 Topographic Field Survey		2		4					6			12	\$2,800			2.3 Тор	ographic Fie	ld Survey			\$72,100
2.4 Utility Review		2		4					24			30	\$6,490			2.4 Utili	ty Review				\$6,490
2.5 Right of Way		4		8					16			28	\$6,420			2.5 Rigł	nt of Way				\$14,120
2.6 Geotechnical Investigation		2		4					4			10	\$2,390	\$34,645		2.6 Geo	technical Inv	restigation			\$40,500
2.7 Potholing		2		2					4			8	\$1,900		\$16,400	2.7 Poth	noling				\$19,940
2.4 Permits		4		4		16	4		12			40	\$9,820			2.4 Per	mits				\$9,820
2.5 CEQA Documentation Support (includes 1 mtg)		4	2	6		6			16			34	\$8,120			2.5 CEC	QA Documen	tation Support (in	ncludes 1	mtg)	\$8,120
2.6.1 25% Final Design Plans (PS&E)	1	6	14	16	2		8	8	40	120		215	\$43,850			2.6.1 2	5% Final Des	ign Plans (PS&E)			\$44,070
2.6.2 60% Final Design Plans (PS&E)	1	10	28	40	4		12	12	64	212		383	\$78,620			2.6.2 60	0% Final Des	ign Plans (PS&E)			\$78,840
2.6.3 90% Final Design Plans (PS&E)	1	8	16	16			8	8	40	90		187	\$39,310			2.6.3 90	0% Final Des	ign Plans (PS&E)			\$39,420
2.6.4 Final Design Plans		4	2	8			4	4	12	24		58	\$12,390			2.6.4 Fi	nal Design P	lans			\$12,500
2.7 Project Manual		4	8	24					32		12	80	\$17,580			2.7 Pro	ject Manual				\$17,580
2.8 Opinion of Probable Construction Cost		2	2	8					16			28	\$6,460			2.8 Opi	inion of Prob	able Constructio	n Cost		\$6,460
2.9 Bid Period Assistance		2	4	8					8	24	2	48	\$9,770			2.9 Bid	Period Assis	tance			\$9,990
Subtotal Task 2:	3	60	80	164	6	22	36	32	334	470	14	1221	\$259,500	\$34,645	\$16,400	\$70,000	\$121,045	\$133,150	\$800	\$880	\$393,530
TOTAL	5	106	88	188	30	24	36	32	346	470	22	1347	\$293,990	\$34,645	\$16,400	\$70,000	\$121,045	\$133,150	\$850	\$935	\$428,075

1. The individual hourly rates include salary, overhead and profit.

2. Subconsultants will be billed at actual cost plus 10%.

3. Other direct costs (ODCs) such as reproduction, delivery, mileage (rates will be those allowed by current IRS guidelines), and travel expenses, will be billed at actual cost plus 10%.

4. W&C reserves the right to adjust its hourly rate structure and ODC markup at the beginning of the calendar year for all ongoing contracts.

5. Additional Woodard & Curran staff may perform work on the project, based on our standard billing rate schedule currently in effect.

# Fee Estimate 5/4/2022



### Municipal Standard 2022

STAFF TYPE	HOURLY RATE
Project Assistant	\$120
Billing Manager	\$140
Designer 1	\$140
Graphic Artist	\$140
Graphics Manager	\$140
Marketing Assistant	\$140
Marketing Manager	\$140
Senior Accountant	\$140
Senior Project Assistant	\$140
Software Engineer 1	\$165
Designer 2	\$170
Designer 3	\$175
Senior Software Developer	\$175
Engineer 1	\$180
Geologist 1	\$180
Planner 1	\$180
Scientist 1	\$180
Senior Designer	\$180
Technical Specialist 1	\$180
Software Engineer 2	\$185
Software Engineer 3	\$200
Engineer 2	\$205
Geologist 2	\$205
Planner 2	\$205
Scientist 2	\$205
Technical Specialist 2	\$205
Engineer 3	\$235
Geologist 3	\$235
Planner 3	\$235
Scientist 3	\$235
Technical Specialist 3	\$235
Project Engineer 1	\$245
Project Geologist 1	\$245
Project Planner 1	\$245
Project Scientist 1	\$245
Project Specialist 1	\$245
Project Technical Specialist 1	\$245
Project Engineer 2	\$260
Project Geologist 2	\$260
Project Planner 2	\$260
Project Scientist 2	\$260
Project Specialist 2	\$260
Project Technical Specialist 2	\$260
Project Manager 1	\$280
lechnical Manager 1	\$280
Project Manager 2	\$295
Lechnical Manager 2	\$295
	\$315
Senior Lechnical Manager	\$315
INATIONAL PRACTICE LEAGER	\$330
Senior recunical practice reader	\$33U

# EXPENSES Travel \$0.585 / mile Other Direct Costs At Cost Plus 10% Subconsultants/Subcontractors At Cost Plus 10%

#### NOTES

Mileage rate will change as the federal allowable rate is modified.

This rate schedule is confidential and for customer internal use only. Woodard & Curran reserves the right to adjust billing rates annually.

May 17, 2022 Prepared by: J. McGehee / R. Mori Submitted by: K. Burton Approved by: Paul A. Cook

#### ENGINEERING AND OPERATIONS COMMITTEE

#### 15 MG ZONE 1 RESERVOIR INTERIOR COATING AND IMPROVEMENTS BUDGET INCREASE AND CONTRACT CHANGE ORDER

#### SUMMARY:

IRWD's contractor has completed removal of the existing interior coating and the application of the prime coat for the 15-million-gallon (MG) Zone 1 Reservoir Interior Coating and Improvements project. With construction approximately 70% complete, staff has determined that the bid quantities included in the contract documents do not adequately account for the level of work that is required to coat the entire tank interior. Staff recommends the Board:

- Authorize a budget increase for Project 05761 in the amount of \$1,131,825, from \$4,020,000 to \$5,151,825, and
- Approve Contract Change Order No. 4 in the amount of \$791,975 and the addition of 42 calendar days to the contract time with Pacific Hydrotech Corporation for the 15 MG Zone 1 Reservoir Interior Coating and Improvements, Project 05761.

#### **BACKGROUND:**

The existing 15 MG steel reservoir, located on Sand Canyon Avenue as shown in Exhibit "A", was originally constructed in 1982 and continues to serve as the primary storage reservoir for IRWD's Zone 1 distribution system. The reservoir also serves as the forebay for the East Irvine Zone 1 to 3 Booster Pump Station (BPS) and the South County Zone 1 to 3 Emergency BPS. This rehabilitation project includes removal and replacement of the entire reservoir interior coating and portions of the exterior coating and replacement of the reservoir roof hatches, vent, in-reservoir cathodic protection system, and other miscellaneous accessories. The project also includes recoating the existing East Irvine Zone 1 to 3 BPS and associated surge tank, both of which are located on the reservoir site.

The construction notice of award was issued to Pacific Hydrotech Corporation (PHC) on July 13, 2021, and the tank was removed from service on October 5, 2021. Removals and coating work have been underway since then.

#### Contract Change Order No. 4:

The project included bid items with estimated quantities, provided in square feet, for interior coating of the walls and floor and a separate bid item for interior coating of the ceiling and rafters. As the work progressed, PHC notified staff that the amount of material required to sandblast the existing coating and the amount of primer estimated for the upcoming intermediate and final coats was in excess of the amounts that should be needed for the square footage that was listed in the bid quantities.

Engineering and Operations Committee: 15 MG Zone 1 Reservoir Interior Coating and Improvements Budget Increase and Contract Change Order May 17, 2022 Page 2

Subsequently, PHC calculated the surface area of the walls, rafters, and columns using actual measurements in the field and verified those field measurements with the dimensions shown on the original fabrication drawings for the reservoir. Based on that assessment, PHC determined that the estimated bid quantities in the contract documents were short by approximately 32%. Cannon Corporation, the engineer of record for the project, reviewed the assessment by PHC and confirmed that the revised quantities calculated by PHC were correct. Through this assessment, Cannon identified that its estimated bid item quantities accounted for the interior surface area of the tank shell but did not account for the surface area of the roof rafters and interior columns.

The original contract completion date was June 3, 2022. The contractor requested that 42 calendar days be added to the contract time to accommodate the extra work identified. With the additional contract time, the revised contract completion date will be July 15, 2022.

The change order includes the time, materials, and equipment necessary to perform additional unit price work in excess of the established bid quantities. The unit prices used for the additional work are the same unit prices that were provided by PHC in its original bid. Staff reviewed the change order and recommends approval of Contract Change Order No. 4 in the amount of \$791,975 and the addition of 42 calendar days to the contract time with Pacific Hydrotech Corporation.

#### FISCAL IMPACTS:

Project 05761 is included in the FY 2021-22 Capital Budget and will be funded by the potable replacement fund. A budget increase is required to fund the contract change order as shown in the table below.

Project		Addition	Total
No.	Current Budget	<reduction></reduction>	Budget
05761	\$4,020,000	\$1,131,825	\$5,151,825

#### ENVIRONMENTAL COMPLIANCE:

This project is exempt from the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15301 which provides exemption for minor alterations of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. A Notice of Exemption for the project was filed with the County of Orange on November 9, 2020.

#### **RECOMMENDATION:**

That the Board authorize a budget increase for Project 05761 in the amount of \$1,131,825, from \$4,020,000 to \$5,151,825, and approve Contract Change Order No. 4 in the amount of \$791,975 and the addition of 42 calendar days to the contract time with Pacific Hydrotech Corporation for the 15 MG Zone 1 Reservoir Interior Coating and Improvements, Project 05761.

Engineering and Operations Committee: 15 MG Zone 1 Reservoir Interior Coating and Improvements Budget Increase and Contract Change Order May 17, 2022 Page 3

#### LIST OF EXHIBITS:

- Exhibit "A" Location Map
- Exhibit "B" Contract Change Order No. 4 with Pacific Hydrotech Corporation Exhibit "C" Construction Change Order Summary

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### EXHIBIT "A"



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#### EXHIBIT "B" CONTRACT CHANGE ORDER

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$\langle \rangle$	

Irvine Ranch Water District

15600 Sand Canyon Avenue P.O. Box 57000 Irvine, CA 92619-7000 (949) 453-5300

С.С	D. No.	
	Final	

Project No.

4,417,943.73

05761

367

4

#### 15 MG Zone 1 Reservoir Interior Coating and Improvements

Project Title				Date: 5/	/5/2022
THE FOLLOWING CHANGE TO CONTRACT, DRAWINGS AN SPECIFICATIONS IS PROPOSED.	٧D	\$ A	ADDITIONS	\$ DELETIONS	DAYS <u>+</u>
1. Change Request No. 5 - Quantities Adjustment			791,975.00	0	42
Revised Contract Completion Date: July 15, 2022					
ТС	OTAL	\$	791,975.00	\$ -	42
					DAYS ±
1. NET AMOUNT THIS CHANGE ORDER	=	\$		791,975.00	42
2. ORIGINAL CONTRACT AMOUNT	=	\$		3,340,190.00	325
3. TOTAL PREVIOUS CHANGE ORDER(S)	=	\$		285,778.73	0
4. TOTAL BEFORE THIS CHANGE ORDER (2+3)	=	\$		3,625,968.73	325

We hereby agree to make the above change subject to the terms of this change order for the sum credit of:

5. PROPOSED REVISED CONTRACT AMOUNT TO DATE (1+4) = \$

Seven Hundred Ninety One Thousand Nine Hundred Seventy Five and 00/100 ----- Dollars

5/5/22	Pacific Hydro	otech Corporation	(2D)				
Date	Contractor	-	By:				
SI	IGNATURE	DATE	APPROVAL LEVEL REQUIRED				
C/-M	-	5/5/2022	Department Director Approval Required				
IRWD Engineer or Cor	sulting Engineer	Date 05/05/2022	Executive Director Approval Required General Manager Approval Required				
Engineering Manager	_	Date	Board Approval Required	Х			
Kevin L	Burton	5/5/2022					
Executive Director of T	echnical Services	Date					
			626078				
General Manager		Date	Purchase Order No.				

NOTE: The documents supporting this Change Order, including any drawings and estimates of cost, if required are attached hereto and made a part hereof. This Change Order shall not be considered as such until it has been signed by the Owner and the Contractor. Upon final approval, distribution of copies will be made as required. The parties mutually agree the pricing set forth in this Change Order are complete and fair compensation for the entirety of the work authorized under this Change Order and that no additional compensation is warranted nor shall it be allowed.

CHANGES: All workmanship and materials called for by this Change Order shall be fully in accord with the original Contract Documents insofar as the same may be applied without conflict to the conditions set forth by this Change Order. The time for completing the contract will not be extended unless expressly provided for in this Change Order.



May 4, 2022

Attention: Joseph McGehee

Reference: Additional Unit Price Quantities for Interior Coatings

Dear Joe,

As previousy discussed and quantity take offs supplied for your review, the actual quanties of work being performed exceeds the bid item amounts for bid items 17, 19 and 20. The following table summarizes the additional quantities and cost per the original bid schedule.

Bid		Additional			
Item	Item Description	Qty	UOM	Unit Price	Added Cost
17	Seal Interior Lap Seams	3,290	LF	\$ 7.00	\$ 23,030.00
19	Interior Coating Walls and Floor	4,160	SF	\$ 12.00	\$ 49,920.00
20	Interior Coating Ceiling and Rafters	47,935	SF	\$ 15.00	\$ 719,025.00

Total \$ 791,975.00

This work has already commensed with the blasting and priming of the ceilings and walls complete. This represents an approximate 35% increase in the interior coating scope from the original plan. We will make every effort to complete this scope expeditiously. Should you have any further questions regarding this issue please feel free to reach out. Thank you.

Sincerely,

Chris Harns Project Manager Pacific Hydrotech Corp CSLB # 518355

#### **Bid Results**

#### **Bidder Details**

Vendor Name	Pacific Hydrotech Corp
Address	314 E 3rd Street
	Perris, California 92507
	United States
Respondee	Jimmy Garibaldo
Respondee Title	Estimator
Phone	951-943-8803
Email	jimmy@pachydro.com
Vendor Type	CADIR
License #	518355
CADIR	1000002987

#### Bid Detail

Bid Format	Electronic
Submitted	06/30/2021 2:52 PM (PDT)
Delivery Method	
<b>Bid Responsive</b>	
Bid Status	Submitted
Confirmation #	259347

#### **Respondee** Comment

### Buyer Comment

#### Attachments

df Bid Form
)

#### Subcontractors

Showing 2 Subcontractors					
Name & Address	Desc	License Num	CADIR	Amount	Туре
Murhpy Industrial Coatings, Inc. 2704 Gundry Ave Signal Hill, California 90755	Coatings	310594	1000005885	\$2,124,345.00	CADIR
Premier Tank Inc. 14625 Domart Ave Norwalk, California 90650	Steel Tank Work	715448	1000435037	\$198,542.00	CADIR

#### Line Items

#### Discount Terms No Discount

tem # tem Code	Туре	tem Description	UOM	QTY	Unit Price	Line Total	Response	Comment
BASE BID ITEMS						\$3,340,190.00		
t		Mobilization and Demobilization (Not to Exceed 4% of Contract Price)	LS	t	\$120,000,00	\$120,000.00	Yes	
2	Payment and Performance Bonds, and Insurance	LS	ă.	\$55,000.00	\$55.000.00	Yes		
3		Door Sheet Removal and Replacement	LS	1	\$42,000.00	\$42,000.00	Yes	
4		Roof Hatches	EA	4	\$8,200.00	\$32,800.00	Yes	
5		Roof Vent	LS	1	\$10,300.00	\$10,300.00	Yes	
6		Replace Injection Conduits	LS	t	\$12,000.00	\$12,000.00	Yes	
7		Relocate and Repair Pax Mixer Cable	LS	1	\$50,000.00	\$50,000.00	Yes	
8		Davit Cranes	LS	t	\$8,300.00	\$8,300.00	Yes	
9		Fall Protection Anchors	EA	4	\$760.00	\$3,040.00	Yes	
10		Interior Ladder	LS	1	\$13,500.00	\$13,500.00	Yes	
11		Sampling Station	LS	1	\$3,100.00	\$3,100.00	Yes	
12		Erosion Control Measures	LS	1	\$7,500.00	\$7,500.00	Yes	
13		Remove Level Indicator	LS	1	\$3,100.00	\$3,100.00	Yes	
14		Cathodic Protection Handholes and Caps	EA	65	\$210.00	\$13,650.00	Yes	
15		Cathodic Protection Anodes and Hangers	EA	20	\$1,200.00	\$24,000.00	Yes	
16		Hand Railings	LF	550	\$241.00	\$132,550.00	Yes	
17		Seal Interior Lap Seams	LF	7500	\$7.00	\$52,500.00	Yes	
18		Exterior Coating Spot Repairs - Removal and Replacement	SF	15000	\$15.00	\$225,000.00	Yes	
19		Interior Coating Walls and Floor (Below knuckle) Removal and Replacement	SF	96500	\$12.00	\$1,158,000.00	Yes	
20		Interior Coating Ceiling and Rafters (Above shell) Removal and Replacement	SF	70500	\$15.00	\$1,057,500.00	Yes	
21		Dehumidification Equipment	WK	16	\$8,800.00	\$140,800.00	Yes	
22		East Zone 1-3 Pump Station and Surge Tank Recoat	LS	1	\$49,200.00	\$49,200.00	Yes	
23		North inlet/Outlet and Overflow - Spot Repair and Recoat	LS	1	\$5,100.00	\$5,100.00	Yes	
24		Chime Seal	LF	925	\$10.00	\$9,250.00	Yes	
25		Miscellaneous Steel Spot Repairs	LS	1	\$60,000,00	\$60,000.00	Yes	
26		Hydrostatic Testing and Disinfection	LS	1	\$50,000.00	\$50,000.00	Yes	
27		Record Drawings	LS	1	\$2,000.00	\$2,000.00	Yes	
ADDITIVE AND DED	UCTIVE	BIDITEM				\$0.00		
28		ADDITION (+) OR DEDUCTION (-)	LS	t.	\$0.00	\$0.00	Yes	

#### Line Item Subtotals

	Section Title		Line Total
BASE BID ITEMS			\$3,340,190.00
ADDITIVE AND DEDUCTIVE BID ITEM			\$0.00
		Grand Total	\$3,340,190.00



#### EXHIBIT "C"

#### 15 MG Zone 1 Reservoir Interior Coating and Improvements PR 05761 Construction Change Order Summary

		Contractor: Design Engineer: Award Date:	Pacific Hydrotech Corpor Cannon 7/13/2021	ation										
-						Contract Amount						Contract Days		
Char	nge Order	Descriptio	n	Category	Cl	nange Order Line Item Amount	Change Order Amount	Previous Change Orders	Cumulative Total of Change Orders	% of Original Contract Amount	Revised Contract Amount	Change Order Days	Previous Change Orders	Cum. Total C.O. days
1		Approved by Executive Director Approved on February 1, 2022 CR No. 1 - Sound Mitigation Measu	ires	А	\$	120,359.44	\$120,359.44	\$0.00	\$120,359.44	3.60%	\$3,460,549.44	0	0	Ő
2		Approved by Executive Director Approved on March 30, 2022 CR No. 2 - Roof Rafter Repairs		В	\$	78,273.38	\$78,273.38	\$120,359.44	\$198,632.82	5.95%	\$3,538,822.82	0	0	0
3		Approved by Executive Director Approved on May 9, 2022 CR No. 3 - Floor Coating Removals CR No. 4 - Sound Attenuation Rent	al Extension	B A	\$ \$	67,918.99 19,226.92	\$87,145.91	\$198,632.82	\$285,778.73	8.56%	\$3,625,968.73	0 0 0	0	0
4		Approved by Board of Directors Approved on CR No. 5 - Quantities Adjustment		D	\$	791,975.00	\$791,975.00	\$285,778.73	\$1,077,753.73	32.27%	\$4,417,943.73	42 42	0	42

Category	Т	otal Amount	% of Original Contract
A - Owner Directed Change	\$	139,586.36	4.18%
B - Differing/Unknown Condition	\$	146,192.37	4.38%
C - External Agency, Regulatory, and/or Permit Required Change	\$	-	0.00%
D - Design Oversight	\$	791,975.00	23.71%
Total Change Order Amount (A + B + C + D)	\$	1,077,753.73	32.27%

Original Completion

Date:

Revised

Completion

Date

6/3/2022

6/3/2022

6/3/2022

7/15/2022

325 Revised

Total

Contract

Days

325

325

325

367

6/3/2022

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