AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE
TUESDAY, MAY 16, 2017

CALL TO ORDER 7:00 a.m., IRWD's Operations Center, First Floor Committee Room, 3512 Michelson, Irvine Ranch Water District

ATTENDANCE
Committee Chair: Steve LaMar _____
Committee Member: John Withers _____

ALSO PRESENT

Paul Cook	_____	Patrick Sheilds	_____	Harry Cho	_____
Kevin Burton	_____	Eric Akiyoshi	_____	Paul Weghorst	_____
Rich Mori	_____	Scott Toland	_____	Tom Roberts	_____
Kellie Lew	_____	Ken Drake	_____	Ken Pfister	_____
Lars Oldewage	_____	Arseny Kalinsky	_____	Steve Malloy	_____
Malcolm Cortez	_____	Bruce Newell	_____	_____	_____

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. UPCOMING PROJECTS STATUS REPORT – CORTEZ/AKIYOSHI/ LEW/MALLOY/BURTON

   Recommendation: Receive and file.

6. RESEARCH BUSINESS PLAN UPDATE – SPANGENBERG/ OLDEWAGE/BURTON

   Recommendation: Receive and file.

7. MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES CONSTRUCTION STATUS QUARTERLY UPDATE – MALLOY/BURTON

   Recommendation: Receive and file.

ACTION

8. IRVINE INDUSTRIAL COMPLEX EAST ZONE A TO B BOOSTER PUMP STATION UPGRADES CONSULTANT SELECTION – LYNCH/MCGEHEE/MORI/BURTON

Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $213,757 with Lee & Ro for engineering services for the IIC East Zone A to B Booster Pump Station Upgrades, Project 06198.

9. FOURTH AMENDMENT TO THE SETTLEMENT AGREEMENT MCAS EL TORO GROUNDWATER REMEDIATION PROJECT – SPANGENBERG/CORTEZ/BURTON

Recommendation: That the Board authorize the Board President and Secretary to execute the Fourth Amendment to the Settlement Agreement for the MCAS El Toro Groundwater Remediation Project.

10. NEWPORT COAST LIFT STATION REHABILITATION CONSTRUCTION PHASE SERVICES CONSULTANT SELECTION – CHO/CORTEZ/BURTON

Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with GHD Inc. for construction phase services in the amount of $199,642 for the Newport Coast Lift Station Rehabilitation, Projects 05470 and 06400.

11. RESERVOIR LADDER FALL PROTECTION BUDGET ADDITION – CHO/CORTEZ/BURTON

Recommendation: That the Board authorize the addition of Project 10119 in the amount of $100,000 and Project 10120 in the amount of $40,000 to the FY 2016-17 Capital Budget for the Reservoir Ladder Fall Protection project.

12. MICHELSON WATER RECYCLING PLANT BIOSOLIDS ODOR MONITORING SYSTEM – MALLOY/BURTON

Recommendation: That the Board authorize the General Manager to execute a contract with Odotech for the purchase of an OdoWatch odor monitoring system in the amount of $137,000 for the MWRP Biosolids and Energy Recovery Facilities, project 04286.

ACTION - Continued

13. FISCAL YEAR 2017-18 CAPITAL BUDGET – AKIYOSHI/ROBINSON/ BURTON

Recommendation: That the Committee provide comments on the Fiscal Year 2017-18 Capital Budget in advance of Board adoption in June 2017.

14. OPERATIONS CENTER AIR HANDLING DUCT REPLACEMENT PROJECT – DAYER/SHEILDS

Recommendation: That the Board authorize the General Manager to execute a construction contract with Triton Air in the amount of $107,718.25 for the Operations Center Air Handling Duct Replacement Project.

OTHER BUSINESS

15. A. Directors Comments

B. Adjourn

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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 at the entrance of the meeting room at the District's Operation's Committee Room at 3512 Michelson, Irvine, California. The Irvine Ranch Water District's Committee Room is wheelchair accessible. If you require any special disability-related accommodations (e.g., access to an amplified sound system, etc.), please contact the District Secretary at (949) 453-5312 during business hours at least seventy-two (72) hours prior to the scheduled meeting.

May 16, 2017
Prepared by: M. Cortez/E. Akiyoshi/
K. Lew/S. Malloy/R. Mori
Submitted by: K. Burton KLB
Approved by: Paul 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 attached 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

EXHIBIT "A"

IRWD UPCOMING PROJECTS STATUS REPORT

Project Name	Start Planning	Start Design	Construction Award	Construction Final Acceptance
Michelson Force Main Rehabilitation			Spring 2017	
Rockfield Flow Control Facility		Spring 2017		
Vactor Access to SMH on Berm at MWRP			Summer 2017	
UCI Cooling Tower RW Conversion Offsite Pipeline Phase 2			Spring 2017	
DRWF Surge Tanks			Spring 2017	
Re-establish SMH on Main Street, e/o MacArthur		Spring 2017		
Sewer Line Repairs and Rehabilitation			Fall 2017	
SJM Modifications				Spring 2017
Turtle Ridge DW, RW Pipeline Rehabilitation			Winter 2018	
Seawatch RW Pipeline Replacement			Fall 2017	
University Drive Widening Appurtenance Relocations (RA w/ Irvine)			Summer 2017	
Main Street Diversion Structure Rehabilitation				Spring 2017
Santiago Dam Seismic Analysis	In-Process	Fall 2017		
Operations Center Permanent Backup Generator				Spring 2017
DRWF Well 17 Rehabilitation		Spring 2017		
DRWF 7 and IDP 107 Well Rehabilitation			Winter 2017	Spring 2017
MWRP Repairs: Act Sludge, Secondary Tanks, RAS/WAS			Summer 2017	
FPS 2 Pipeline Manifold Replacement			Summer 2017	
PA 1, Orchard Hills Neighborhood 1 RW (RA w/ICDC)				Fall 2017
PA 1, Orchard Hills Neighborhood 3 RW (RA w/ICDC)				Fall 2017
PA 1, Orchard Hills Neighborhood 3 DW and RW (RA w/ICDC)				Fall 2017
PA 1, Orchard Hills Neighborhood 3 "F" Street RW (RA w/ICDC)				Spring 2018
PA 6, Neighborhood 3, Phase 1 RW (RA w/ICDC)				Fall 2017
PA 6, Neighborhood 4B RW (RA w/ICDC)				Fall 2017
PA 6, Neighborhood 5A RW (RA w/ICDC)				Fall 2017
Technology Drive Extension Zone B RW (RA w/ICDC)				Fall 2017
Tustin Legacy, Park Ave and Moffett DW, S, RW (RA w/Tustin)				Fall 2017
Tustin Legacy, Moffett at Peters Canyon Channel DW, RW (RA w/Tustin)				Fall 2017
Tustin Legacy, Bell from Red Hill to Armstrong Sewer and RW (RA w/Tustin)				Fall 2017
Tustin Legacy, Flight Drive RW (RA w/Tustin)				Spring 2018
PA 18 South, Hidden Canyon DW RW (RA w/Toll Brothers)				Fall 2017
PA 51, Marine Way DW, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Ridge Valley, Marine to Trabuco, DW, S (RA w/Heritage Fields)				Fall 2017
PA 51, Ridge Valley, Trabuco to Irvine Blvd, DW, S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, C St from Trabuco Rd to LQ St, S (RA w/Heritage Fields)				Fall 2017
PA 51, LQ St from Ridge Valley to LY St, S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, LN St from C St to LY St, DW, RW (RA w/Heritage Fields)				Fall 2017
PA 51, South C St and LY St, S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, LY St from LQ St to Irvine Blvd, DW S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Alton Pkwy from Technology to Muirlands, DW S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Marine Way from Barranca Pkwy to Alton Pkwy, DW S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Cadence from Bosque to Z Street, S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Alton Interceptor Sewer (RA w/Heritage Fields)				Fall 2017
PA 51, Marine Way from Alton to Barranca Sewer (RA w/Heritage Fields)				Fall 2017
PA 51, Sociable from Z St to B St, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Irvine Blvd from Lambert Rd to Z St, DW, S, RW (RA w/Heritage Fields)				Fall 2017

IRWD UPCOMING PROJECTS STATUS REPORT

Project Name	Start Planning	Start Design	Construction Award	Construction Final Acceptance
PA 51, Terrapin from Trabuco Rd to Cadence RW (RA w/Heritage Fields)				Fall 2017
PA 51, Benchmark and Prospective, DW, S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, GP1 St DW, S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, GP2 St, DW, S, RW (RA w/Heritage Fields)				Fall 2017
PA 51, GP2 from GP-3 to Bosque (RA w/Heritage Fields)				Fall 2017
PA 51, Benchmark DW, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Cultivate Sewer (RA w/Heritage Fields)				Fall 2017
PA 51, Marine Way from SR133 to Ridge Valley, DW, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Benchmark and Modjeska DW, RW (RA w/Heritage Fields)				Fall 2017
PA 51, Magnet from Ridge Valley to Bosque RW (RA w/Heritage Fields)				Fall 2017
PA 51, Irvine Boulevard at Merit RW (RA w/Heritage Fields)				Fall 2017
PA 51, Episode from Frame to Pusan RW (RA w/Heritage Fields)				Fall 2017
PA 51, District 7, Z St and A St RW (RA w/Heritage Fields)				Fall 2017
PA 51, District 5, Irvine Blvd DW, RW Conn (RA w/Heritage Fields)				Fall 2017
PA 51, Cadence Sewer (RA w/Heritage Fields)			Summer 2017	Summer 2018
PA 51, District 5, Chinon DW, S, RW (RA w/Heritage Fields)			Summer 2017	Summer 2018
Spectrum Center Drive 36" Sewer Relocation (RA w/ICDC)				Fall 2017
Serrano Summit Phase 2 Sewer			Summer 2017	Summer 2018
Serrano Summit Phase 2 DW, RW			Summer 2017	Summer 2018
MWRP Biosolids and Energy Recovery Facilities				Fall 2018
IIC East Zone A-B BPS Upgrades		Spring 2017	Winter 2018	
Stockdale West Integrated Water Banking Project				Summer 2017
Zone 1 Reservoir No. 2			Winter 2018	
Multi-Zone Regional Pump Station: Zone A-B BPS and Zone A-C BPS			Winter 2018	
ILP North Conversion - Pipelines			Summer 2017	
A-B and A-C BPS Offsite Pipelines and ILP Bottom Drains		Spring 2017	Winter 2018	
ILP North Conversion - Reservoir				Fall 2018
Water Recycling Plant Master Plan Update	Summer 2017			
IDF Sodium Hypochlorite Storage and Feed System				Fall 2017
Energy Storage Systems				Spring 2018
Baker Water Treatment Plant				Spring 2017
Newport Coast SLS and SFM Improvements			Spring 2017	Summer 2018
Non-Potable Water Strategic Analysis	In-Process			
Potable Reuse Alternatives Analysis	Summer 2017			
Update to Replacement Planning Model / Criticality Analysis	Fall 2017			
WRMP Update	In-Process			
Santiago Area Distribution Study	In-Process			
	Category	**Months**		
	Winter	Jan. Feb. & Mar.		
	Spring	Apr. May & June		
	Summer	Jul. Aug. & Sep.		
	Fall	Oct. Nov. & Dec.		

May 16, 2017
Prepared by: C. Spangenberg/L. Oldewage
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

RESEARCH BUSINESS PLAN UPDATE

SUMMARY:

Staff will provide an update on the research projects in which IRWD is currently involved.

BACKGROUND:

Periodically IRWD receives requests to participate in various research projects pertaining to emerging technologies through either direct funding or dedication of in-kind staff resources. Guidelines were developed to assist staff with its evaluation and response to those requests. These guidelines were incorporated into the IRWD Research Business Plan, which also provides a tracking mechanism for the various requests and ongoing research projects and programs in which IRWD participates. The underlying purpose of the Research Business Plan is to ensure that IRWD's research resources are being prioritized and utilized effectively.

One of the components of the Research Business Plan is for staff to provide a status update on the research projects to the Engineering and Operations Committee on a quarterly basis. A status update on the current research projects is attached as Exhibit "A".

FISCAL IMPACTS:

The FY 2016-17 Operating Budget includes $20,000 for staff time associated with the research projects. In addition, approximately $75,500 is included in the FY 2016-17 Operating Budget for IRWD's annual memberships in research organizations such as National Water Research Institute, the Water Research Foundation, and the Water Environment & Reuse Foundation.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Research Projects Summary Table

Exhibit "A"

Research Projects Summary Table

No.	Project Title	Project Description	IRWD Contact	Organizations Involved	Type of Research	IRWD Participation Resource	Start Date	Projected Completion Date	Comments/Next Steps
1	Predicting RO Removal of Toxicologically Relevant Unique Organics (WRRF-14-19)	Predict removal efficiency of compounds identified by state or federal regulatory agencies of potential public health concern by reverse osmosis (RO), and predict removal of compounds that may be precursors of disinfection byproducts (DBPs) of potential health concern using quantitative models and recommendations for future research.	Spangenberg	University of New Mexico, Dr. Kerry Howe/WateReuse Research Foundation (WRRF)	Literature review, model development and prediction	In kind service @ $5K (staff time and travel expenses reimbursed)	Jan-16	Sep-18	A fifth progress report was received at the end of April and staff has completed review and submitted comments to the project leader. The researchers completed laboratory experiments to measure the rejection of 70 different neutral organic compounds through 6 different membrane products. The researchers are in the process of evaluating trends and relationships in the data, as well as working with the modeling team to integrate the experimental and modeling components of the project.
2	Ensuring Stable Microbial Water Quality in Direct Potable Reuse Distribution Systems (WRRF-14-18)	Determine if DPR presents unique risks to the stability of the DWDS microbiome due to differences in the seed organisms, the type and amount of organic carbon and nutrients and the effect of blending different water types (e.g., blending with raw waters and blending with finished waters).	Oldewage	WateReuse Research Foundation (WRRF)	Workshop, literature review, and bench- or pilot-scale testing	In kind service @ $5K (staff time and travel expenses reimbursed)	Nov-15	Jun-17	Staff attended the expert workshop held November 10 - 11, 2015 at West Basin MWD. This project is currently idle.
3	Brine/Concentrate Recovery Technologies Assessment	Preliminary assessment of membrane brine/concentrate recovery technologies for potential application at IRWD membrane facilities.	Spangenberg	IRWD	Literature review, field inspections, meetings with vendors and public agencies, unit treatment cost gathering, and performance data.	Staff Time	May-16	Aug-17	Staff completed literature review of 20 technologies from Water Research Foundation, Water Environment Research Foundation, WateReuse Research Foundation, Bureau of Reclamation, Sandia National Laboratories, European SOL Coalition, USEPA documents and databases, met with various vendors, and reviewed performance data from LACSD, EMWD, Padre Dam Municipal Water District and Inland Empire Utilities District. A second revision is near completion and will be distributed for final review and comments, prior to finalization.
4	Ceramic Membrane Pilot Test	The pilot test is designed to assess the ability of a newly patented ceramic membrane to treat conventional activated sludge process secondary effluent for solids and other constituents removal.	Zepeda	Water Planet/IRWD	Pilot Test	In kind service and staff time	Nov-16	Jun-17	The pilot test is in progress.

Updated: 5/8/2017

May 16, 2017
Prepared by: S. Malloy
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

MICHELSON WATER RECYCLING PLANT
BIOSOLIDS AND ENERGY RECOVERY FACILITIES
CONSTRUCTION STATUS QUARTERLY REPORT

SUMMARY:

Staff will present the Construction Status Quarterly Report for the Michelson Water Recycling Plant (MWRP) Biosolids and Energy Recovery Facilities project from February 2017 through April 2017.

BACKGROUND:

Construction of the Biosolids project was awarded to Filanc/Balfour-Beatty Joint Venture (FBB) in March 2013 in the amount of $163,465,940. The Biosolids project will provide biosolids digestion, dewatering, energy production, and on-site sludge drying. The project includes excavation for subsurface structures, installation of foundation piles, three egg-shaped methane digesters, a state-of-the-art odor control system, a biogas conditioning system and power generation using micro-turbines, a fats, oil and grease (FOG) receiving station, and new utility services. These facilities are being constructed on the land north of IRWD's existing Operations Center, maintenance shops, water quality laboratory, and warehouse.

General Project Information:

The project summary through April 30, 2017, and through Contract Change Order No. 50, is shown below:

Notice of Award	April 29, 2013
Contractual Project Completion Date	October 31, 2017
Estimated Project Completion Date	November 2018
Cumulative Time Extension through Change Order No. 50	368 Days
Percentage of Contractual Construction Time Elapsed	88%
Approximate Percentage of Total Contract Amount Invoiced	88%
Bid Amount	$163,465,940
Total Change Orders	$ 15,455,851 (9.5%)
Total Contract Amount	$178,921,791

Construction Status:

Solids Handling Building: Concrete has been placed for the Solids Handling Building basement, ground floor slabs, mezzanine deck slabs, interior and exterior walls and columns, and the first floor deck. Roof joints have been installed and FBB has begun installing the steel roofing.

Structural steel frames and Kal-wall steel tubing are being erected for the upper floors. The masonry work continues around the perimeter of the building, including the decorative external veneer. Masonry has been placed on the second floor for the control room and other rooms. Internal piping systems for sludge processing, polymer, utility water, roof drainage, odor control, and fire protection are being installed. Additionally, the heating, ventilation and air conditioning (HVAC) system and electrical equipment are being installed at various locations throughout the building. Heat dryer equipment tower and boilers were delivered to the site.

Major pieces of equipment installed in the Solids Handling building include:

- Bulk polymer tanks;
- Sludge screens;
- Polymer aging tanks;
- Thickening centrifuges feed pumps;
- Thickening centrifuges;
- Digester feed pumps;
- Dewatering centrifuges;
- Centrate aeration blowers;
- Sludge dryer furnace and drum;
- 5-Ton and 10-Ton Bridge Cranes;
- Wet cake Storage Hopper;
- Odor control fans;
- Acid Scrubber; and
- Centrifuge Variable Frequency Drives.

West of the Solids Handling Building: Electrical work progresses on the stormwater pump station. Chemical pumps, stairs, and walkways for the bulk polymer storage facility have been installed at the four bulk polymer storage tanks.

North of the Solids Handling Building: The Centrate Treatment facility structure has been completed as well as the interior piping and guardrail. Electrical wiring is being completed. The microturbine slab has been completed and several large pieces of electrical equipment have been installed including switchgear, transformers, secondary breakers, and the stand-by generator. The microturbines, heat recovery units, and heat exchanger were delivered to the site. The concrete slab for the flare was placed and the flare has been delivered to the site.

East of the Solids Handling Building: The liquid chemical storage facility is being completed. The three odor scrubber towers have been installed and the large diameter fiberglass piping is being installed for the odor scrubber piping system. FBB has installed the regenerative thermal oxidizer, chemical pumps, and light poles.

Egg-Shaped Methane Digester Area: On the east side of the biosolids site, CB&I, the subcontractor for the egg-shaped digesters, completed the digester work in January 2016. CSI installed scaffolding and plastic sheeting around the last methane digester and sandblasting,

painting, and application of foam insulation is ongoing. Sludge pipes, HVAC ducts, fire sprinkler systems, and electrical conduits are being installed in the digester tunnels.

Acid Phase Digester Area: FBB has completed the major concrete work, and Parada Painting has completed the interior coating of the acid phase digesters. FBB installed the mixers, handrail, and the inter-connecting bridges between the three acid phase digesters. Electrical work on top of the acid digesters continues.

Digester Control Building: Concrete for the building has been placed, and electrical equipment and cable trays have been installed in the electrical room. Masonry veneer has been installed on the outside of the building, and masonry block for the elevator tower to the top of the egg-shaped digesters is completed. The heat exchangers, acid phase sludge transfer pumps, acid phase sludge recirculation pumps, and the methane phase sludge recycle pumps have been installed in the basement. Air handling units were installed on the mezzanine level of the boiler room. FBB has completed installation of the fire sprinkler piping in the basement of the Digester Control Building and the blower room. The two large heating water boilers have been installed on the first floor of the Digester Control Building.

South of the Digester Control Building: The sludge holding tanks, mixers, interior protective coatings, and the interior and exterior piping in both tanks have been completed. Various pumps, valves, and piping have been installed in the basement of the Dewatering Feed Pump Station. FBB installed the railing and grating in the Dewatering Feed Pump Station stair tower. The electrical subcontractor is installing electrical conduit and equipment. At the FOG receiving station concrete has been placed, the FOG tanks have been installed, and platforms around the FOG tanks in the containment area were installed. FOG pumps, pipes, and valves are being installed.

Schedule Status:

Milestone No. 1 facilities (Waste Activated Sludge and Primary Sludge Pumping and Sludge Screening Facilities) were completed in October 2016. Bench testing for Milestone No. 2 is scheduled to start in late spring 2017. The start-up of facilities associated with Milestone No. 2 are scheduled to begin in late fall 2017.

The new system integrator, KDC, is working on SCADA programs for the next important milestones: odor control and chemical feed systems for the odor control system.

While the construction management team has actively encouraged FBB's construction manager to update the construction schedule in a timely manner, FBB has repeatedly submitted schedules late. As a result, the construction management teams are unable to use these schedules to manage future activities effectively and must rely on their professional experience to gauge the construction schedule. FBB's most recent schedule for January 2017 indicates that the project completion date is November 2018.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – MWRP Biosolids and Energy Recovery Facilities Quarterly Report

Michelson Water Recycling Plant
Biosolids and Energy Recovery Facilities

Construction Status Quarterly Report – May 2017
(Activities from February 2017 through April 2017)

Engineering & Operations Committee
May 16, 2017

May 2017 Quarterly Report

Key Information / Dates

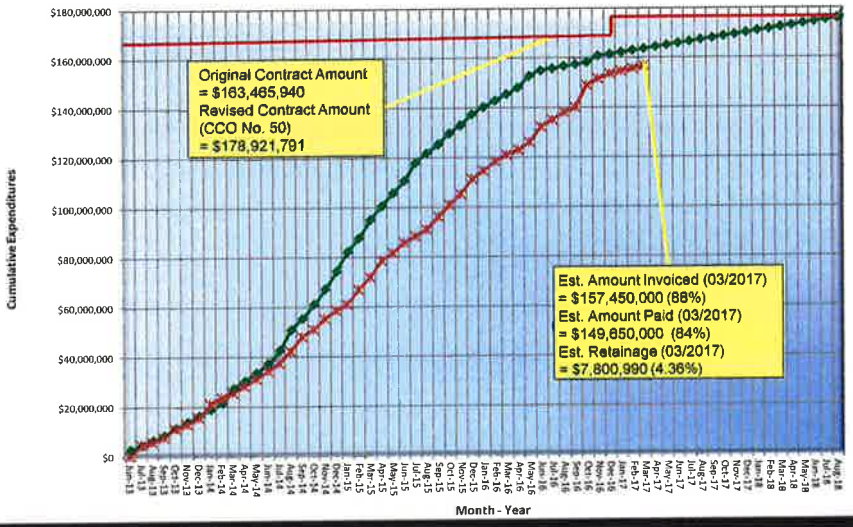
Contractor:	Filanc/Balfour-Beatty
Contract Amount:	$163,465,940
Change Orders to Date (Thru CCO 50)	$ 15,455,851 (9.5%)
Revised Contract Amount to Date:	$178,921,791
Contractual Calendar Days:	1,646
Additional Days thru Change Orders:	368
Notice of Award:	April 29, 2013
Time Elapsed thru April 2017:	88%
Contractual Completion Date:	October 31, 2017

Irvine Ranch Water District

Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

Financial - FBB Cumulative Expenditures



May 2017 Quarterly Report

Financial – Consultant Construction Phase Services

Consultant	Scope	Purchase Order No.	Purchase Order Amount	Variance Total No.	Variance Amount	Total Authorization	Total Invoice to Date	Percent of Total
Arcadis-US	Construction Inspection & Management	521366	$ 2,931,368.00	1	$ 1,345,755.00	$ 4,277,123.00	$ 3,310,939.05 (4/2017)	77%
Black & Veatch	Engineer of Record	514248 600700	$ 12,509,031.00	5	$ 5,611,050.00	$ 18,120,081.00	$ 12,981,139.54 (4/2017)	72%
Borchard Surveying	Surveying	514249	$ 206,680.00	0	$ -	$ 206,680.00	$ 154,542.12 (2/2017)	75%
Dudek	Odor Control	514217	$ 94,616.00	0	$ -	$ 94,616.00	$ 8,791.36 (12/2014)	9%
EI&C	SCADA Testing	518742 600246	$ 1,239,007.00	1	$ 734,600.00	$ 1,973,607.00	$ 1,326,903.94 (04/2017)	67%
HDR	Construction Inspection	521288	$ 2,834,476.00	2	$ (393,997.50)	$ 2,440,478.50	$ 1,911,712.60 (12/2016)	78%
Ninyo & Moore	Geotechnical-Concrete Testing	518585 600690	$ 222,730.00	3	$ 124,245.00	$ 346,975.00	$ 339,129.66 (03/2017)	98%
NMG	Geotechnical-Piles and Material Testing	514251 526284	$ 650,273.00	1	$ 129,490.00	$ 779,763.00	$ 774,189.80 (12/2016)	99%
Element	Materials Testing	521515	$ 10,000.00	0	$ -	$ 10,000.00	$ 6,130.00 (4/2017)	61%
TOTAL:			$ 20,698,181.00	13	$ 7,551,142.50	$ 28,249,323.50	$ 20,813,478.07	74%

Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

MILESTONE	ACTIVITY	ORIGINAL	Revised per CCO #45 6/27/2016	Revised per January 2017 Update/Other Data
	Notice to Proceed	June 3, 2013		
1	WAS & Primary Sludge Processing	July 6, 2015	October 31, 2016	October 31, 2016
2	Sludge Thickening Facilities	August 20, 2015	February 10, 2017	January 3, 2018
3	FOG / Food Waste Receiving	September 19, 2015	April 17, 2017	October 13, 2017
	Construction Complete	New with CCO No. 45	April 28, 2017	January 31, 2018
4a	Anaerobic Digestion Equipment Installed	January 17, 2016	March 21, 2017	March 16, 2018
4b	Anaerobic Digestion Facilities Operational	January 17, 2016	August 1, 2017	May 20, 2018
5	Produce Class B Biosolids Cake	March 2, 2016	June 20, 2017	June 5, 2018
6	Microturbine Power Generation Online	June 30, 2016	August 28, 2017	August 7, 2018
7	Produce Class A Biosolids (Pellets)	August 29, 2016	September 29, 2017	September 18, 2018
Final Completion	Project Completion (including 35 weather-related allowance)	October 28, 2016	October 31, 2017	November 30, 2018

May 2017 Quarterly Report

Entire Biosolids Site

Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

Aerial View of Western Half of Biosolids Site – Solids Handling Area

Irvine Ranch Water District 7

May 2017 Quarterly Report

Roof Installation at Solids Handling Building

Irvine Ranch Water District 8

Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

Microturbines

May 2017 Quarterly Report

Heat Exchanger

Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

Flare Installation

May 2017 Quarterly Report

Aerial View of Eastern Half of Biosolids Site – Digestion Area

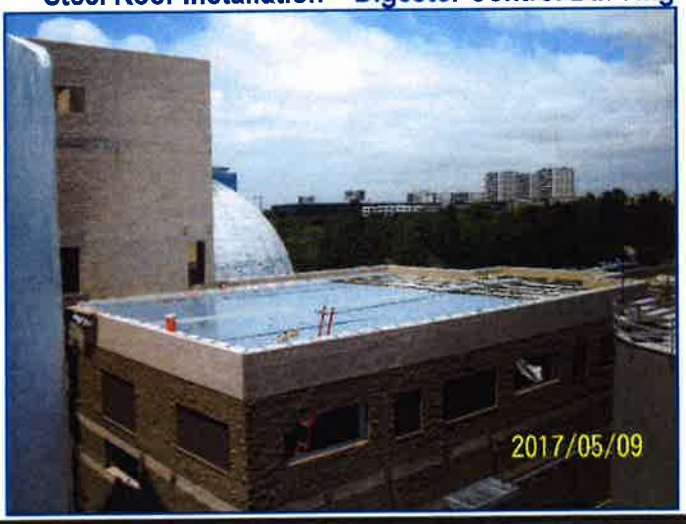
Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

Wrap for Sand Blasting Methane Digester No. 3

May 2017 Quarterly Report

Steel Roof Installation – Digester Control Building



Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

Boilers Installation – Digester Control Building

May 2017 Quarterly Report

8-Inch Gas Line on Top of Acid Phase Digester No. 3

Irvine Ranch WATER DISTRICT

May 2017 Quarterly Report

FOG Pump Installation

May 2017 Quarterly Report

Rock Traps on FOG Piping

Irvine Ranch WATER DISTRICT

Irvine Ranch WATER DISTRICT

May 16, 2017
Prepared by: T. Lynch/J. McGehee/R. Mori
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

IRVINE INDUSTRIAL COMPLEX EAST ZONE A TO B BOOSTER PUMP STATION UPGRADES CONSULTANT SELECTION

SUMMARY:

Upgrades to the Irvine Industrial Complex (IIC) East Zone A to B Booster Pump Station (BPS) are required to meet increased recycled water demands in Zone B. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $213,757 with Lee & Ro for engineering services for the IIC East Zone A to B BPS Upgrades.

BACKGROUND:

As described in the Recycled Water Distribution System Analysis prepared by Stantec in March 2016, IRWD's non-potable water distribution system has undergone significant changes in operations, demands, and facility planning over the past several years. The most significant changes to the demands and operation are anticipated within the recycled water system, specifically the Zone B and Zone C pressure zones north of the I-5 freeway.

The IIC East Zone A-B BPS, which is located near the intersection of Irvine Center Drive and Odyssey as shown on Exhibit "A", currently feeds the East Irvine and Quail Hill Zone B service areas. As neighborhood development construction progresses, the pump station will also supply the Planning Area 51 and Northwood Zone B service areas. To accommodate the additional system demands, the pump station capacity needs to be increased. This project will install an additional pump in the station along with needed electrical upgrades including the installation of a new control panel. The pump station currently contains a spare available pump can, pump suction and discharge piping, and electrical conduit, so no significant underground work is anticipated.

Engineering Services Consultant Selection:

In June 2016, the Board authorized the General Manager to execute a Professional Services Agreement with Lee & Ro for design of the Santiago Hills II (SHII) Zone 5-6 and Zone C+ to E Booster Pump Station Project. Shortly after Lee & Ro completed the preliminary design, the Irvine Company postponed the SHII development, which subsequently resulted in the cancellation of the SHII pump station design project.

With the cancellation of the SHII pump station project, staff determined that Lee & Ro was the best available candidate to complete the design of the IIC East BPS Upgrades project as the same project team that had been working on the SHII pump station project was immediately available to work on this pump station project. Additionally, Lee & Ro previously completed a similar pump station upgrades project for the Foothill Zone 6A BPS and recently completed the design

of the Hidden Canyon Booster Pump Station project. A copy of Lee & Ro's scope of work and fee proposal, in the amount of $213,757, is attached as Exhibit "B".

Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $213,757 with Lee & Ro since its design approach, schedule, and staff hours are consistent with the project goals. The Lee & Ro team also provides substantial recent IRWD pump station design experience and the proposed project manager is the same individual who successfully managed the Hidden Canyon Booster Pump Station, SHII Pump Station, and Foothill Zone 6A Pump Station Upgrade projects.

FISCAL IMPACTS:

The IIC East Zone A to B BPS Upgrades, project 06198, is included in the FY 2016-17 Capital Budget. The existing budget is sufficient to fund engineering services.

ENVIRONMENTAL COMPLIANCE:

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

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $213,757 with Lee & Ro for engineering services for the IIC East Zone A to B Booster Pump Station Upgrades, Project 06198.

LIST OF EXHIBITS:

Exhibit "A" – Location Map
Exhibit "B" – Lee & Ro's Scope of Work and Fee

EXHIBIT "A"
LOCATION MAP

IIC EAST BOOSTER PUMP STATION UPGRADES PROJECT

LEE & RO, Inc.

10640 Scripps Ranch Boulevard, Suite 150
San Diego, CA 92131
Tel: (858) 558-4411
www.LEE-RO.com

April 25, 2017

Toni Lynch, Assistant Engineer
IRVINE RANCH WATER DISTRICT
15600 Sand Canyon Avenue
Irvine, CA 92618

Subject: FEE PROPOSAL for
Zone A to B Recycled Water Pump Station Upgrades (Rev 2)

LRI: 1167

Dear Toni Lynch:

We present the following fee proposal for engineering and design services for the Zone A to B Recycled Water Pump Station Upgrades based on our site visit on 3/21/2017 and the Memorandum dated 3/7/2017, title Multi-Zone Pump Station – Irvine IIC East Pump Station Upgrades.

SCOPE OF WORK

The existing Zone A-B Booster Pump Station contains four Goulds pumps (three duty and one standby), model 14RHMC, and one spare pump can for an additional pump. Each pump has a capacity of 2,000 gpm at a TDH of 201 feet, as verified by efficiency testing (by others). The pumps are housed in a 24-inch diameter pump barrel. The Recycled Water Distribution System Analysis, (by others) recommends installing an additional Goulds pump, model 14RHMC, with the same capacity of 2,000 gpm at a TDH of 201 feet. IRWD has requested that we add a 5th similar pump. The PDR letter report will confirm the selection.

Currently, two pumps are driven by soft-starters, and the other two pumps are driven by VFDs. The two existing VFDs that are not currently functional. Operations has requested that as part of this upgrade project, the two VFDs shall be replaced. Replacing the two VFDs will give Operations Staff more flexibility to meet system demand in Zone B when the Zone B reservoir is offline. The Water District preferers the fifth pump be driven by a soft starter.

The current PLC utilizes a combination of the original PLC, Modicon 984, and a later installed updated PLC, Modicon M340. All of the existing I/O is routed to the Modicon 984 that utilizes Ethernet to communicate to the Modicon M340. The Modicon 984 is antiquated and is no longer produced or supported by Modicon. The anticipated electrical upgrades will consist of replacing the PLC and all other equipment in the PLC cabinet including, the light board, analog displays, and battery backup. The are several possible options and outcomes on how to complete the upgrades depending on the final design criteria. There are significant engineering and construction costs difference between the low end and the high end of the range of possible PLC improvements. The cost proposed herein assumes the more difficult complete replacement of the

PLC and all apparatus with new for the entire station. During the workshops and PDR development, the project team will come to consciences on the most appropriate way to modernize the existing PLC system for the station. In addition, the cost proposal is a not-to-exceed amount and will only be billed on actual effort of hours expended.

In addition, temporary communication may also be required while facilities are upgraded and switched over. There are two sites that are repeated through the pump station: Aufdenkamp 2 turnout and East Irvine (Laguna) Zone B reservoir.

During the PDR development, we will coordinate with Operations Staff and review the mechanical and electrical reliability of the ancillary equipment (such as lighting, HVAC) at the pump station and make recommendations and necessary design improvements.

Work shall generally consist of, but not be limited to, the following tasks.

Task 1 Project Management

LEE & RO will conduct project management activities to ensure adherence to scope, schedule, and budget; promote efficient communication between the Engineer, IRWD, and others as required; and implement an effective quality assurance/quality control (QA/QC) program.

A. Preparation of Project Status Reports. Prepare weekly and monthly status reports. Each weekly status report shall be submitted on Monday and shall consist of a brief (one or two paragraphs) e-mail summarizing the activities completed the previous week, the activities planned for the upcoming week, and critical decisions that need to be made. Each monthly status report shall be submitted on the last Thursday of the month and shall provide more detail, summarizing the work completed and reviewing work status relative to budget and schedule. The project schedule shall also be updated on a monthly basis for inclusion in the monthly status report.

B. Meetings and Workshops. LEE & RO will organize, attend, and conduct meetings and workshops as required; prepare and submit meeting agendas for IRWD review and concurrence at least five days prior to the meeting; and prepare draft and final minutes for all meetings and workshops and submit them to IRWD within one week of the meeting.

Meeting/Workshop	Description
General project management and design development meeting	One (1) two-hour meeting
Site Visits	Two (2) two-hour meetings
Preliminary Design Workshop	One (1) two-hour workshop
Present the 60% design, discuss IRWD's comments, and discuss how the outstanding items were addressed	One (1) two-hour meeting
Present the 90% design, discuss IRWD's comments, and discuss how the outstanding items were addressed	One (1) two-hour meeting
Present the 100% design, discuss IRWD's comments, and discuss how the outstanding items were addressed	One (1) two-hour meeting

C. Quality Assurance/Quality Control. LEE & RO will develop and implement proven QA/QC measures throughout the project to ensure ongoing and consistent quality control throughout all project phases. As part of the QA/QC measures, the Engineer shall capture comments from review meetings and submittals and thoroughly check the work product to ensure that comments are addressed.

Task 2 Preliminary Design

LEE & RO will perform the following subtasks as part of the preliminary design phase. The subtasks shall be documented and compiled into a Preliminary Design Report (PDR) letter report as summarized below.

A. Background Information. LEE & RO will review existing documents available and develop baseline CAD files for the projects use. These baseline CAD files include, mechanical layouts, structural walls, ventilation systems, electrical equipment layouts, lighting, and electrical wiring for the PLC and field devices.

B. Mechanical and Pump Selection. The Recycled Water Distribution System Analysis, (by others) recommends installing an additional Goulds pump, model 14RHMC, with the same capacity of 2,000 gpm at a TDH of 201 feet. We will review the Recycled Water Distribution System Analysis report. The four existing pumps will remain as is and a fifth pump of the same make and manufacture will be specified. LEE & RO will determine specific improvements or modifications required to the mechanical and ancillary systems for the pump station upgrades. In addition, a surge analysis will be provided based on the enclosed fee proposal from Flow Science.

C. Electrical and Controls. LEE & RO will develop electrical and controls design requirements for the pump station. The anticipated electrical upgrades will consist of replacing the PLC and all other equipment in the PLC cabinet including, the light board, analog displays, and battery backup. LEE & RO will determine specific improvements or modifications required to the overall power and control system upgrades.

D. Project Schedule. LEE & RO will prepare a project schedule, which shall include detailed schedules for both design and construction activities. The schedule shall include all critical factors impacting the project schedule including implementation, and coordination activities to ensure that the project is completed in accordance with the proposed schedule. The schedule shall be prepared in Microsoft Project.

E. Opinion of Probable Construction Cost. LEE & RO will prepare a detailed and itemized opinion of probable construction cost for the proposed facilities.

F. Preliminary Design Report (PDR). LEE & RO will determine specific improvements or modifications required for the overall upgrades at the pump station. The work described herein shall be summarized and compiled into a PDR letter report. At a minimum, the PDR shall

summarize the results along with additional design criteria identified by the Engineer during the preliminary design.

Five (5) copies of Draft PDR and one (1) electronic copy in PDF shall be submitted for review. Upon resolution and incorporation of review comments, five (5) copies of the final PDR and one (1) electronic copy in PDF shall be submitted. The final PDR shall be submitted prior to proceeding with the 60 percent design deliverable.

Task 3 Final Design

The final design shall result in the preparation of the Contract Documents. In the final design phase, the Engineer shall address the items discussed hereunder.

A. Project Manual. LEE & RO will prepare a Project Manual in standard IRWD format. IRWD's front end documents shall be utilized, and LEE & RO will assess IRWD's documents to determine any needed supplemental general/special provisions that should be added to comply with IRWD's general provisions and front end requirements. The Project Manual shall describe the allowable shutdown durations and sequencing associated with any connections and tie-ins to existing IRWD facilities. The Project Manual shall also include the IRWD General Technical Specifications, modifications thereto, and any project specific technical specifications. LEE & RO will familiarize themselves with IRWD's standards, use the standards as a starting point, and modify them as needed for the project.

B. Construction Plans. LEE & RO will prepare detailed construction drawings in the latest version of AutoCAD and using NCS V4.0 layering standards, on 22-inch x 34-inch sheets utilizing IRWD's standard border template. Separate sheets with sheet index/location map/legend, general notes, index map, construction notes, condensed profiles, phasing, and detail connections shall be included. Construction notes shall be used (callouts on the plans are not allowed) on all construction drawings. Existing IRWD utilities shall be identified on the plan view by as-built plan set number with the pipeline material and IRWD pressure zone labeled. The index map shall include sheet legend, final alignment, valve locations, surrounding streets, and significant project site locations. Construction plans shall be prepared using the NAVD 88 and NAD 83 survey standards.

C. Electrical/Instrumentation. LEE & RO will prepare an operational scheme including P&IDs, single line diagrams, PLC loop drawings, control equipment list, and method of integrating the proposed facilities into IRWD's existing SCADA system. Prior to this process, LEE & RO will meet with IRWD electrical/automation staff to incorporate IRWD's standard operations, PLC and SCADA programming, and equipment tagging requirements into the design. LEE & RO will develop and provide the operational scheme and functional descriptions (in plain English) for District review and approval.

D. SCE Coordination. LEE & RO will coordinate with SCE early in the design process to assure the existing service is sufficient. This task shall include the coordination efforts necessary to communicate the project requirements, address any comments from SCE, and implement all requirements into the project design.

E. Project Schedule. LEE & RO will maintain and consistently update the project schedule, which shall include detailed schedules for both design and construction activities. The schedule shall include all critical factors impacting the project schedule including implementation, permitting, and coordination activities to ensure that the project is completed in accordance with the proposed schedule. The schedule shall be prepared in Microsoft Project. A preliminary schedule outlining the preliminary and final design phase activities shall be included in the proposal.

F. Liquidated Damages Spreadsheet. LEE & RO will assist in calculating the liquidated damages value for the construction project, should the contract time be exceeded. IRWD's standard liquid damage calculation form will be provided to the Engineer for use.

G. Opinion of Probable Construction Cost. LEE & RO will prepare a detailed and itemized opinion of probable construction cost for the proposed facilities, which shall be updated and submitted with each of the design deliverables described below.

H. Final Design Deliverables. Deliverables shall be made as follows:

a. Five (5) 11"x17" bound copies of the 60 percent submittal and one (1) CD containing a single PDF file of the entire plan set. Show civil/site, mechanical, and electrical plans. Show basic mechanical equipment, structural and architectural layouts, pipeline alignments, preliminary profiles, and existing utilities at a minimum. Provide a complete table of contents for the Project Manual.
b. Five (5) 11"x17" bound copies of the 90 percent submittal and one (1) CD containing a single PDF file of the entire plan set. Show concepts of each component of the design such as civil, structural, mechanical, architectural, electrical and instrumentation. Show plan, profile, connections, details, and location of appurtenances. Plan and profile drawings and mechanical details/drawings shall be developed to a high level of detail. Provide three (3) color coded copies of the 90 percent Project Manual, including all sections; contract documents, general provisions, special provisions, general requirements, technical specifications, and appendix.
c. Five (5) 11"x17" bound copies of the 100 percent submittal, one (1) CD containing AutoCAD files for the entire plan set, and one (1) CD containing a single PDF file of the entire plan set. Include complete plans and three (3) color coded copies of the Project Manual, a notebook with the design calculations (including, but not limited to, mechanical, civil, structural, HVAC, electrical, pipe thickness and restraint), and one (1) CD containing all MS Word files used in the preparation of the Project Manual.
d. One (1) full size final stamped and signed reproducible plan set on mylar and one (1) original signed Project Manual for District's signatures.

I. Addenda Preparation and Pre-Bid Meeting. During the bidding period, LEE & RO will assist with providing information and clarification of bid documents to prospective bidders. This shall include the preparation of up to one (1) addenda including revisions to the design plans

and specifications and assistance with addressing bidder questions. Anticipated addenda preparation activities include:

- Plan Revisions: LEE & RO has budgeted eight (8) hours of appropriate staff time for plan revisions to the construction drawings.
- Specification Revisions: LEE & RO has budgeted four (4) hours of appropriate staff time for revisions or additions to the project specifications.
- Bidder Questions: LEE & RO has budgeted eight (8) hours of appropriate staff time to address and respond to bidder questions.
- Pre-Bid Meeting: During the bidding period, LEE & RO will prepare for and conduct one (1) two-hour pre-bid meeting and shall provide agendas, exhibits, sign-in sheet, and minutes for the meeting. This may include a site visit with potential bidding contractors.

SCHEDULE

The anticipated project schedule is as follows.

• Notice of Award (Design)	June 1, 2017
• Kick-Off Meeting	June 14, 2017
• Draft PDR	August 2017
• Final PDR	September 2017
• 60% Design Submittal	November 2017
• 90% Design Submittal	December 2017
• 100% Design Submittal	January 2018
• Plans Approved	February 2018

LEE & RO will provide the above services per the enclosed Fee Breakdown Exhibit for Engineering Design Services not-to-exceed $213,757.

Enclosed: 1) Fee Breakdown
2) Hourly Billing Rate Schedule
3) Other Direct Costs (ODC) Billing Rate Schedule
4) Flow Science Proposal

Thank you for your consideration,

Sincerely,

Eric Lovering, P.E.
Principal Engineer
San Diego Area Manager

cc: Joseph McGehee

Exhibit 1: FEE BREAKDOWN
Zone A to B Recycled Water Pump Station Upgrades

TASK NO.	ENGINEERING CLASSIFICATIONS: E8 Managing Eng, E7 Supervising Eng, E6 Principal Eng, E5 Senior Eng, E3 Associate Engineer, T4 Designer, T3 Associate Designer, A2 Word Processor II (See Billing Rate Schedule for Entire Labor Classifications).	LEE & RO Hours per Labor Category									Total Hours	Labor Cost	Other Direct Costs (ODCs)	Subs	TOTAL FEES
		E8	E7	E6	E5	E4	E3	T4	T3	A2					
		Billing Rates ($/Hour)													
	PROJECT TASK DESCRIPTION	$238	$214	$192	$174	$157	$140	$125	$109	$94		1.00			
1	**Project Management**														
1.A	Weekly / Monthly Status Reports	8				12				2	22	$3,976			$3,976
1.B	Meetings and Workshops														
1.B.1	General Project Management and Design Development Meeting (1 two-hour meeting)	3			3						6	$1,236	$150		$1,386
1.B.2	Site Visits (2 two-hour visits)				6						6	$1,044	$50		$1,094
1.B.3	Preliminary Design Workshop (1 two-hour workshop)	4			3						7	$1,474	$50		$1,524
1.B.4	60% Design Review (1 two-hour workshop)	4			3						7	$1,474	$50		$1,524
1.B.5	90% Design Review (1 two-hour workshop)	4									4	$952	$50		$1,002
1.B.6	100% Design Review (1 two-hour workshop)	4									4	$952	$50		$1,002
1.C	QA/QC	20	12							8	40	$8,080			$8,080
	SUBTOTAL TASK 1 - PROJECT MANAGEMENT	47	12	0	15	12	0	0	0	10	96	$19,188	$400	$0	$19,588
2	**Preliminary Design**														
2.A	Background Information	8			40	10		40	80	2	180	$24,342			$24,342
2.B	Mechanical and Pump Selection	8				16	6				30	$5,256		$14,450	$19,706
2.C	Electrical and Controls	16			80						96	$17,728			$17,728
2.D	Project Schedule	2					4				6	$1,036			$1,036
2.E	Opinion of Probable Construction Cost	2			2	2	4				10	$1,698			$1,698
2.F	Preliminary Design Report (PDR)	14			30	30		4		16	94	$15,266	$250		$15,516
	SUBTOTAL TASK 2 - PRELIMINARY DESIGN	50	0	0	152	58	14	44	80	18	416	$65,326	$250	$14,450	$80,026
3	**Final Design**														
3.A	Project Manual	8			8	24	16			14	70	$10,620			$10,620
3.B	Construction Plans	24			24	80	16	40	40		224	$34,048			$34,048
3.C	Electrical/Instrumentation	36			160			80	100		376	$57,308			$57,308
3.D	SCE Coordination				4						4	$696			$696
3.E	Project Schedule	2				4					6	$1,104			$1,104
3.F	Liquidated Damages Spreadsheet					3					3	$471			$471
3.G	Opinion of Probable Construction Cost	4			4	4					12	$2,276			$2,276
3.H	Final Design Deliverables	4				8				8	20	$2,960	$900		$3,860
3.I	Addenda Preparation and Pre-Bid Meeting	2			16			4			22	$3,760			$3,760
	SUBTOTAL TASK 3 - FINAL DESIGN	80	0	0	216	123	32	124	140	22	737	$113,243	$900	$0	$114,143
	TOTAL NOT TO EXCEED	177	12	0	383	193	46	168	220	50	1249	$ 197,757	$ 1,550	$ 14,450	$ 213,757

LEE & RO, Inc.

FY 2017-2018 HOURLY BILLING RATE SCHEDULE

PERSONNEL CLASSIFICATION			BILLING RATES ($/HOUR)
ENGINEERS			
Engineer 8	E8	Managing Engineer	$238
Engineer 7	E7	Supervising Engineer	$214
Engineer 6	E6	Principal Engineer	$192
Engineer 5	E5	Senior Engineer	$174
Engineer 4	E4	Engineer	$157
Engineer 3	E3	Associate Engineer	$140
Engineer 2	E2	Assistant Engineer	$125
Engineer 1	E1	Junior Engineer	$109
CAD / DESIGNERS			
Designer 6	T6	Principal Designer	$157
Designer 5	T5	Senior Designer	$140
Designer 4	T4	Designer	$125
Designer 3	T3	Associate Designer	$109
Designer 2	T2	Assistant Designer	$94
Designer 1	T1	Junior Designer	$78
FIELD PROFESSIONALS			
Field Professional 6	F6	Construction Manager	$157
Field Professional 5	F5	Senior Resident Engineer	$140
Field Professional 4	F4	Resident Engineer	$125
Field Professional 3	F3	Senior Inspector	$109
Field Professional 2	F2	Inspector	$125
Field Professional 1	F1	Assistant Inspector	$109
ADMINISTRATIVE			
Administrative 4	A4	Administrative Supervisor	$125
Administrative 3	A3	Senior Word Processor	$109
Administrative 2	A2	Word Processor	$94
Administrative 1	A1	Administrative Assistant	$78

LEE & RO, Inc.

2017 Other Direct Costs (ODC) Billing Rate Schedule

FY 2017 (from November 1, 2016 to October 31, 2017)

Automobile Mileage	IRS Published Rate
In-house Reproduction	$0.08 / sheet (8.5 x 11 Bond B & W) $0.20 / sheet (8.5 x 11 Bond Color) $0.15 / sheet (11 x 17 Bond B & W) $0.40 / sheet (11 x 17 Color) $1.15 / sheet (24 x 36 Bond)
Mylar Original Drawing	$7.00 / sheet (24 x 36 or 22 x 34)
Work Stations and Computers	No Charge
Subconsultant Mark-up	Subconsultant Invoice Amount Plus 5% Unless Client Specifies Otherwise
Reproduction by Outside Printing Firm	Invoice amount plus 5% Handling Charge Unless Client specifies otherwise
Other Direct Costs & Expenses including Overnight Mailing, Project-Specific Software, or Equipment Rental, etc.	At Cost

Flow Science Incorporated
48 South Chester Ave., Suite 200, Pasadena, CA 91106
(626) 304-1134 • FAX (626) 304-9427

April 18, 2017

LEE & RO, Inc.
10640 Scripps Ranch Blvd., Suite 150
San Diego, CA 92131

Attention: Mr. Eric Lovering, P.E.
Managing Engineer, San Diego Regional Manager

Subject: Irvine IIC East Zone B Pump Station Upgrades
Irvine Ranch Water District
Proposal for Pressure Surge Analysis
FSI 171028

Dear Eric,

This letter responds to your request for a proposal to perform a pressure surge analysis of the upgraded Irvine IIC East Zone B Pump Station (IIC East PS) for the Irvine Ranch Water District (IRWD).

As part of the IRWD's plan to improve its recycled water distribution system, it will be upgrading the existing IIC East PS in conjunction with the addition of the Multi-Zone Pump Station (MZPS). The IIC East PS currently pumps from Zone A into Zone B, feeding the East Irvine and Quail Hill Zone B service areas. Once the MZPS is brought online, the IIC East PS will feed the East Irvine, Quail Hill, PA 51, and Northwood Zone B service areas. In order to accommodate the associated projected increases in demands, one more pump will be added to the IIC East PS by utilizing the existing open pump can. The purpose of this pressure surge analysis is to evaluate whether the existing surge protection is adequate at the higher design capacity of the upgraded IIC East PS.

Pressure surges will be created by the operation of the pumps at the IIC East PS through the sudden loss of power and start up of the pumps. These transients will propagate out into the distribution systems on both the suction and discharge sides of the pump station and, if of large enough magnitude, can potentially damage the system piping and lead to its failure. A pressure surge analysis determines the severity of such pressure transients. If these transients are deemed to be of sufficient magnitude that the maximum allowable surge pressures within the system would be exceeded, or unsafe negative pressures would occur, then recommendations for surge mitigation measures will be provided.

Flow Science previously developed a skeletonized version of the Zone A recycled water distribution system as part of our analysis of the Zone A-C/C+ Booster Pump Station (BPS) for the Irvine Lake Pipeline (ILP) North Conversion Project (FSI Project No. 141072, final report dated August 20, 2015). The existing skeletonized model of the Zone A system will be updated and appended as needed, and a skeletonized model of the Zone B system will be developed and added to

the model, to reflect the planned improvements after the MZPS is brought online and the IIC East PS has been upgraded, in order to evaluate pump power failure and startup of the IIC East PS.

Note that this proposal does not include the analysis of the surges created by any other pumps/pump stations in the recycled water system. It is assumed that any other pumps/pump stations have adequate surge protection, and evaluation of pressure surges generated by those pump stations is beyond the scope of the analysis. It is further noted that surge protection recommendations, if deemed necessary, will only be developed for the future condition under which the MZPS has been brought online and the IIC East PS has been upgraded (*i.e.*, alternative recommendations will not be provided for different operating conditions and/or for existing or interim project phases).

Based on the above and our previous experience with the IRWD recycled water distribution system, we see the following Scope of Work and Budget as necessary to complete a pressure surge analysis of this system.

SCOPE OF WORK

Task 1 - Gather necessary information to update and append the existing skeletonized Zone A model as needed, and create and add a skeletonized computer model of the Zone B system, to reflect the future conditions with the proposed improvements after the MZPS is brought online and the IIC East PS has been upgraded, under both maximum and no demand (*i.e.*, reservoir fill) scenarios. It is assumed that the Zone B system can be adequately modeled with up to 200 nodes. This will require IRWD's updated hydraulic model of the recycled water distribution system converted to EPANET for the maximum demand scenario, as well as pump curves for the existing and new pump at the IIC East PS. The pressure reducing stations and other pumps/pump stations in Zones A and B will be represented as constant head reservoirs or demands.

It is assumed that distribution system model provided by IRWD will be an updated version of the previous model provided to Flow Science in 2015 for development of the pressure surge model of Zone A for the ILP North Conversion Project (*i.e.*, the IRWD models are directly comparable in terms of node and pipe names, elevations, demands, lengths, and diameters, and reservoir water surface elevations, except where the new model has been updated to reflect proposed improvements). Otherwise, additional effort will be required to update and append the Zone A model.

Task 2 - Establish initial non-transient hydraulic grade line elevations for power failure and startup of the IIC East PS under maximum and no demand flow conditions for the future system.

Task 3 - Perform simulations for pump power failure and startup of the IIC East PS under both maximum and minimum static head conditions (*i.e.*, high and low suction and discharge reservoir water surface elevations) and both demand and no demand (*i.e.*, reservoir fill) conditions for the future system.

This task does not include the analysis of the surges created by any of the other pumps/pump stations in Zones A or B. If evaluation of a system-wide power loss condition is desired, our scope and budget can be expanded to include examination of simultaneous pump power loss occurring at all Zone A and B pump stations to allow worst-case surge conditions to be evaluated.

Task 4 - Review the results of the analysis and, if deemed necessary, recommend surge protection measures to eliminate possible adverse surges created by the power failure and startup of the IIC East PS under future conditions. Although normal pump shutdown will not be modeled, the recommendations developed for pump power failure will provide adequate surge protection for planned pump shutdown as well. Surge protection measures may include, but are not limited to, discharge and suction side pressurized surge tanks, pressure/surge relief/anticipator valves, vacuum relief valves, or any combination thereof.

Task 5 - Prepare a draft and final technical memorandum in PDF format describing the results of the analysis and recommendations for the safe operation of the IIC East PS. Hard copies will not be provided.

Task 6 - Participate in up to one (1) one-hour meeting or conference call with LEE & RO, Inc., and IRWD to discuss the findings of the analysis. This task does not include preparation of a PowerPoint presentation/workshop.

BUDGET

We propose to complete the above Scope of Work for the Not-to-Exceed fee of $14,450, which is based on the following estimated level of effort and our previous experience with this system.

Principal Consultant, 2 hours @ $310/hr	$ 620
Principal Engineer IV, 18 hours @ $230/hr	4,140
Project Engineer, 68 hours @ $142/hr	9,656
Misc. @ direct cost	34
Total Not-To-Exceed fee	$ 14,450

We estimate that we can complete the above scope of work within 25 business days upon receipt of a signed contract, written notice to proceed, and all the required system information

(including EPANET model of maximum demand scenario, pump curves, pipe materials, pressure classes, and operating details). Upon completion of the final design, we will review the plans and specifications as they pertain to the surge protection to insure conformity to our recommendations.

If you have any questions or need any other information, please do not hesitate to call me at (215) 235-3569. We look forward to working with you and IRWD again.

Sincerely,

Kristen Bowman Kavanagh

Kristen Bowman Kavanagh, P.E.
President and Principal Engineer

May 16, 2017
Prepared by: C. Spangenberg/M. Cortez
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

FOURTH AMENDMENT TO THE SETTLEMENT AGREEMENT
MCAS EL TORO GROUNDWATER REMEDIATION PROJECT

SUMMARY:

A Fourth Amendment to the Settlement Agreement for the Marine Corps Air Station (MCAS) El Toro Groundwater Remediation Project is required to formalize the decommissioning of Wells IDP-1 and IDP-3. Staff recommends that the Board authorize the Board President and Secretary to execute the Fourth Amendment to the Settlement Agreement for the MCAS El Toro Groundwater Remediation Project.

BACKGROUND:

Wells IDP-1, IDP-2, IDP-3 and IDP-4 were installed by Orange County Water District (OCWD) in 1992 and 1993. The original purpose of these wells was to extract groundwater contaminated by a volatile organic compound (VOC) originating from the former MCAS El Toro, as well as groundwater with high total dissolved solids (TDS) resulting from past agricultural activities. Under the 2001 Settlement Agreement, the Department of the Navy reimbursed OCWD for the costs of constructing the IDP production wells. The IDP wells were installed under a previous design concept whereby the water would be treated to remove VOCs and TDS, and then discharged to IRWD's potable distribution system. Subsequently, the IDP design was modified to two components, potable and non-potable, which have been successfully operating since 2006; the four original wells were not utilized in the new design.

IRWD initially requested that OCWD maintain the original wells for possible future use. In 2004, IRWD purchased the property on which IDP-4 was located, along with the ownership of IDP-4. IRWD later determined that IDP-4 was not suitable for use and destroyed the well in 2011 under the Third Amendment to the Settlement Agreement. In 2004, OCWD converted IDP-2 from a production well to a monitoring well (IDP-2R), which remains active to date. Through recent staff discussions, OCWD and IRWD both agree that the two remaining IDP wells have no future purpose. Existing OCWD and Navy monitoring wells in that area provide adequate monitoring of groundwater conditions. Consequently, staff concurs with OCWD's recommendation to destroy the remaining wells IDP-1 and IDP-3.

In 2001, OCWD approved the Settlement Agreement and Shallow Groundwater Unit (SGU) Contract with the U.S. Departments of Justice and Navy and IRWD. These agreements established the scope, responsibilities, and cost allocation for construction and operation of portions of the IDP to clean up contaminants from the former MCAS El Toro. Since IDP-1 and IDP-3 are part of the 2001 Settlement Agreement, the U.S. Departments of Justice and Navy have requested the decommissioning of these wells be addressed in an amendment (the Fourth Amendment) to the Settlement Agreement.

The Fourth Amendment to the Settlement Agreement, attached as Exhibit "A", was approved by the OCWD Board on April 19, 2017. The U.S. Departments of Justice and Navy have reviewed the amendment language and will execute the amendment after IRWD and OCWD approve it.

FISCAL IMPACTS:

IRWD owns the IDP-1 well vault, appurtenances, and pipeline from the SGU to the well and will reimburse OCWD for the cost of removal. The estimated reimbursement is $20,000 with the work scheduled to be completed in fall 2017.

ENVIRONMENTAL COMPLIANCE:

The decommissioning of wells IDP-1 and IDP-3 is exempt from the requirements of the California Environmental Quality Act pursuant to the California Code of Regulations, Title 14, Chapter 3, Section 15301, and the OCWD is filing the Notice of Exemption with the County Clerk.

RECOMMENDATION:

That the Board authorize the Board President and Secretary to execute the Fourth Amendment to the Settlement Agreement for the MCAS El Toro Groundwater Remediation Project.

LIST OF EXHIBITS:

Exhibit "A" – Fourth Amendment to the Settlement Agreement

EXHIBIT "A"

[DOJ Letterhead]

[Date]

Ms. Joan Arneson
Bowie, Arneson, Wiles, and Giannone
4920 Campus Dr.
Irvine, CA 92660

Mr. Joel D. Kuperberg
Rutan & Tucker
611 Anton Blvd., Suite 1400
Costa Mesa, CA 92626-1931

Re: OCWD/IRWD/Former MCAS El Toro

Ms. Arneson and Mr. Kuperberg:

In accordance with Section VII.N of the original 2001 Settlement Agreement, my understanding is that the parties are in agreement with the attached Fourth Amendment to the Settlement Agreement. If this conforms to your understanding, please sign below and return a fully executed copy to me.

For the United States

_____
Leslie M. Hill Date
Environmental Defense Section

For the Orange County Water District

_____ _____
President Joel D. Kuperberg Date

_____
General Manager

For the Irvine Ranch Water District

_____ _____
President Joan Arneson Date

_____
Secretary

Fourth Amendment to the Settlement Agreement Among the Settling Federal Agencies (SFA), Orange County Water District (OCWD), and Irvine Ranch Water District (IRWD) in Regard to the Former Marine Corps Air Station (MCAS) El Toro Groundwater Remediation

WHEREAS Section III.A. of the Second Amendment to the Settlement Agreement Among the Settling Federal Agencies (SFA), Orange County Water District (OCWD), and Irvine Ranch Water District (IRWD) in Regard to the Former Marine Corps Air Station (MCAS) El Toro Groundwater Remediation (the "Agreement"), entitled "OCWD's and IRWD's Obligations To Design, Construct, and Operate and Maintain OCWD/IRWD Assets of the CCMI," paragraph 1, provides that "OCWD and IRWD are jointly and severally responsible for and will design, construct, operate and maintain the OCWD/IRWD Assets of the CCMI in accordance with this Agreement, the ROD and the requirements set forth in the former MCAS El Toro FFA and FFA deliverables set forth in Section 8.2 of the FFA that receive concurrence from USEPA and CALEPA or otherwise become finalized pursuant to the FFA including, but not limited to, the schedules set forth therein";

WHEREAS Recitals P.a.6 and P.a.7 of the Agreement, as amended, define the "basic assets of the Modified IDP Non-Potable System (hereinafter referred to as the 'CERCLA Component of the Modified IDP' or 'CCMI')" to include "Injection Well IDP-1" and "Monitoring Wells IDP-2 and IDP-3" and Appendix 4, Sections l.a.6 and 1.a.7 state that the CCMI consists of "Injection Well IDP-1" and "Monitoring Wells IDP-2 and IDP-3";

WHEREAS the Settling Federal Agencies, OCWD, and the IRWD agree that the wells identified as IDP-1 and IDP-3 are not required by the ROD as changed in the Explanation of Significant Differences (ESD) to the ROD dated December 2005 or by the requirements set forth in the former MCAS El Toro FFA and FFA deliverables set forth in Section 8.2 of the FFA that receive concurrence from USEPA and CALEPA or otherwise become finalized pursuant to the FFA;

WHEREAS the OCWD and IRWD intend to cease operation and maintenance of wells IDP-1 and IDP-3 and decommission the wells;

WHEREAS the Settling Federal Agencies do not object to OCWD and IRWD decommissioning wells IDP-1 and IDP-3;

WHEREAS the Settling Federal Agencies will bear no costs related to decommissioning of wells IDP-1 and IDP-3;

WHEREAS Section VII.N. provides that the "Agreement may be modified only upon the mutual agreement of the Parties reflected in a written document signed by duly authorized representatives of the Parties, which document expressly makes reference to this Agreement and the intent to modify the terms of this Agreement";

WHEREAS, capitalized terms used herein and not otherwise defined shall have the meanings given such terms in the Agreement;

THEREFORE, the Agreement is hereby modified as follows:

Strike "to Injection Well IDP-1 and" from Recital P.a.6 and Appendix 4, Section 1.a.6.

Replace "Wells" with "Well" and strike "IDP-3" from Recital P.a.7 and Appendix 4, Section 1.a.7.

May 16, 2017
Prepared by: H. Cho/M. Cortez
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

NEWPORT COAST LIFT STATION REHABILITATION
CONSTRUCTION PHASE SERVICES CONSULTANT SELECTION

SUMMARY:

The Newport Coast Lift Station Rehabilitation project will recoat the lift station wet well, construct a building to house electrical cabinets and odor control system, construct a stairway into the lift station dry well, and rehabilitate the original ductile iron force main. The project is currently out to construction bid, with the bid opening scheduled for May 25, 2017. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement with GHD Inc. in the amount of $199,642 to provide construction phase services for the Newport Coast Lift Station Rehabilitation.

BACKGROUND:

The Newport Coast Lift Station was constructed in 1990 to pump sewage through a 12-inch ductile iron (DI) force main in Newport Coast Drive that subsequently connects to an Orange County Sanitation District trunk sewer in Pacific Coast Highway. A location map is shown in Exhibit "A". In 2005, a redundant 12-inch PVC force main was constructed to be used as the primary force main, and the original 12-inch DI force main would be used as the secondary force main.

This lift station has operated nearly 30 years, and requires substantial rehabilitation. The Newport Coast Lift Station Rehabilitation project will provide the following improvements:

- *Recoating of the wet well and access shafts*: The lift station wet well was originally coated with an epoxy liner that has degraded;
- *New flow meter and pressure transmitter*: The discharge piping pump header does not include a flow meter which is needed for remote monitoring;
- *A new building to house the lift station's electrical cabinets including the motor control cabinets and Programmable Logic Controller (PLC)*: The new building will also house a tank and pump for odor control chemicals;
- *Relining the entire 3,000-foot length of the 12-inch DI force main*: Portions of the existing lining have detached from the pipe, preventing its use as a secondary force main. The liner installation will require two new manholes spaced at intermediate intervals; and
- *New stairway to provide a safer primary access into the dry well*: The dry well is 25 feet below grade and is currently accessible via a vault hatch, ladder and Safe-T Climb.

In May 2015, GHD was selected to provide design plans for the rehabilitation and improvements. GHD completed the design in April 2017, and the project went out to construction bid. The engineer's estimate is $3,524,000, and the bid opening is scheduled for May 25, 2017.

Consultant Selection:

Staff solicited a proposal from GHD for construction phase services and negotiated a fee in the amount of $199,642, as shown in Exhibit "B". As GHD completed the design and is most familiar with the project, staff recommends awarding the construction phase services to GHD.

FISCAL IMPACTS:

Projects 05470 and 06400 are included in the FY 2016-17 capital budget. Budget increases to Project 05470 and Project 06400 to fund the construction award and construction phase services will be presented to the Board on June 12.

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; Section 15303 which provides an exemption for construction of location of new small facilities; and Section 15282 provides an exemption for the installation of new pipeline or maintenance, repair restoration, removal, or demolition of an existing pipeline as set forth in Section 21080.21 of the Public Resources Code, as long as the project does not exceed one mile in length. A Notice of Exemption for the project was filed with the County of Orange on October 19, 2015.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with GHD Inc. for construction phase services in the amount of $199,642 for the Newport Coast Lift Station Rehabilitation, Projects 05470 and 06400.

LIST OF EXHIBITS:

Exhibit "A" – Site Location Map
Exhibit "B" – GHD Inc. Proposal

EXHIBIT "A"

Newport Coast Lift Station and Force Main

April 26, 2017 (Revised May 3, 2017)

Harry Cho, P.E.
Irvine Ranch Water District (IRWD)
3512 Michelson Drive
Irvine, CA 92612

SUBJECT: IRWD Newport Coast Sewer Lift Station Rehabilitation Project (Project) Proposal for Construction Phase Services

Dear Mr. Cho,

Per our discussions and based on your email requests, GHD is pleased to submit this letter proposal to perform Construction Phase Services for the Newport Coast Sewer Lift Station Rehabilitation Project (Project). It is our understanding that the construction phase services work will be performed under a new Professional Services Agreement with IRWD. This letter presents the scope of work and fee for the construction phase services as described below.

Scope of Work

Task 1.1 Construction Meetings

- One GHD staff will attend up to fifteen (15) construction meetings of a duration of two (2) hours each at IRWD's Sand Canyon office, construction site office, or as requested by IRWD. It is assumed that construction meeting #1 is the Pre-construction meeting.
- It is assumed that all meeting planning, scheduling, and coordination, and preparation of meeting minutes, will be the responsibility of the Contractor or IRWD.

Task 1.2 Contractor's Requests for Information (RFI)

- GHD will provide responses to RFI initiated by the Contractor and forwarded by IRWD. Our responses will be completed on IRWD's standard form submitted electronically (Word file) to IRWD's construction manager via email.
- The budget for this task is based on a total of responding to forty (40) RFIs.

Task 1.3 Preparation of Conformed Construction Documents

- GHD will provide minor plan revisions to the construction drawings as needed in preparation of a "Conformed" set of construction drawings and Project Manual prior to the commencement of the work, as needed.
- The budget for this task is based on a total of sixty (60) hours of GHD staff time, and a single submission of up to four (4) hard-copy sets of the Conformed documents.

GHD Inc.
175 Technology Drive, Suite 200, Irvine, CA 92618 USA
T 1 949 648 5200 F 1 949 648 5299 E irvine@ghd.com W www.ghd.com

Task 1.4 Site Visits

- Up to two GHD staff will accompany IRWD staff to the construction site on up to ten (10) site visits of a duration of up to two (2) hours each visit as requested by IRWD.
- It is assumed GHD will not be asked to provide any direction to the Contractor at the site visits, and GHD may bring up any observed construction quality issues and safety issues immediately to the attention to IRWD.

Task 1.5 Shop Drawings

- GHD will review shop drawings submitted by the Contractor per the specifications and forwarded by IRWD. Our review comments will be completed on IRWD's standard form submitted electronically (Word file) to IRWD's construction manager via email.
- The budget for this task is based on a total of reviewing one hundred twenty-five (125) shop drawing submittals. It is assumed a total of sixty (60) shop drawings will be resubmitted for a second review.

Task 1.6 Record Drawings

- GHD will provide CAD drafting services to prepare record drawings from a single consolidated set of marked up red-line drawings approved and provided by IRWD after the construction has been completed. The red-line drawings shall be clear and legible of the design changes during construction on up to 58 design drawings, excluding traffic control.
- The budget for this task is based on preparing a final set of record drawings on 24-inch by 36-inch mylars, reissued signed mylars (as needed), a single combined PDF file on CD, and AutoCAD electronic files on CD.

Task 1.7 Miscellaneous Construction Support

- GHD will provide ongoing construction support to assist IRWD with construction issues, contractor questions, reviewing change orders, and other general engineering support throughout the construction period, as needed.
- The budget for this task has been established by IRWD at an allowance amount of $50,000.

Task 1.8 CCTV Video Review

- GHD's NASSCO certified staff will review the CCTV inspection video of the force main CIPP after the completion of the CIPP work. It is assumed we will submit one Technical Memorandum to IRWD for information only that summarizes our findings from our CCTV video review.
- The budget for this task is based on a total of forty (40) hours of GHD staff time.

Task 1.9 Project Management

- GHD will prepare monthly billing for a duration of fifteen (15) months covering the entire period from the construction notice-to-proceed to the submission of our final invoice following the completion of the record drawings.
- The first 13 months of the 15 months duration is the current construction schedule of 13 months (390 calendar days) from the Contractor's date of the notice to proceed.

Fee

Based on the scope of work herein, GHD's proposed fee to perform construction phase services is a not-to-exceed amount of $199,642 on a times-and-materials basis as shown in the attached man-hour breakdown and fee table. Extra work beyond the scope of work described herein can be performed at the request of IRWD upon mutal agreement of additional budget.

If you have any questions regarding this proposal, please contact me anytime **at (949) 585-5215 or greg.watanabe@ghd.com.**

Sincerely,

GHD Inc.

Greg Watanabe, P.E.
Project Manager

Irvine Ranch Water District

Newport Coast Sewer Lift Station Rehabilitation

Fee Proposal – Construction Phase Services

April 26, 2017 (Revised May 3, 2017)

Task Description	Project Manager	Sr. Civil / Structural	Civil / Structural	Electrical / I & C / HVAC	CAD Designer	Project Assistant	Total Hours	Labor	Other Direct Costs	Total
Hourly Rates	$215	$205	$160	$160	$119	$94				
Task 1 – Construction Phase Services										
Task 1.1 – Construction Meetings (15 Meetings)	30		-	-	-	-	30	$ 6,450	$ 180	$ 6,630
Task 1.2 – Contractor's RFIs (40 total)	-	20	30	45	-	-	95	$ 16,100	$ 570	$ 16,670
Task 1.3 – Preparation of Conformed Docs (60 hours total)	4	8	12	12	24	-	60	$ 9,196	$ 1,110	$ 10,306
Task 1.4 – Site Visits (10 site visits)	20	20	-	-	-	-	40	$ 8,400	$ 240	$ 8,640
Task 1.5 – Shop Drawings (125 initial/60 resubmittals)	20	64	180	190	-	8	462	$ 77,270	$ 2,769	$ 80,039
Task 1.6 – Record Drawings (58 sheets, No Traffic Control)	2	6	8	8	88	2	114	$ 14,880	$ 684	$ 15,564
Task 1.7 – Miscellaneous Construction Support ($50k)	40	40	96	96	-	8	280	$ 48,272	$ 1,728	$ 50,000
Task 1.8 – CCTV Video Review (40 hours total)	2	8	28	-	-	2	40	$ 6,738	$ 240	$ 6,978
Task 1.9 – Project Management (15 months)	15	-	-	-	-	15	30	$ 4,635	$ 180	$ 4,815
Total Construction Phase Services (Not-to-Exceed)	**133**	**166**	**354**	**351**	**112**	**35**	**1,151**	**$ 191,941**	**$ 7,701**	**$ 199,642**

May 16, 2017
Prepared by: H. Cho/M. Cortez
Submitted by: K. Burton KLB
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

RESERVOIR LADDER FALL PROTECTION BUDGET ADDITION

SUMMARY:

The Reservoir Ladder Fall Protection project will replace the existing fall protection equipment on the ladders at 13 domestic and two recycled water reservoirs. Staff recommends that the Board authorize the addition of Project 10119 in the amount of $100,000 and Project 10120 in the amount of $40,000 to the FY 2016-17 Capital Budget for the Reservoir Ladder Fall Protection project.

BACKGROUND:

Currently, there are 18 aboveground domestic water and two aboveground recycled water reservoirs with ladders in the District. The Saf-T Climb fall prevention system is used at 17 reservoirs. The remaining three reservoirs have ladder cages, and staff use other fall protection equipment that attaches to the ladder when climbing.

When using the Saf-T Climb, the operator's harness is attached to a ratcheting sleeve that travels up and down a pole installed in the center of the ladder's rungs. The pole is notched, and in the event of a fall, the ratcheting sleeve will catch in a notch and prevent the operator from falling any further. A drawback to the Saf-T Climb system is that the operator must move the sleeve by hand a few notches at a time when ascending or descending the ladder, and thus have only one hand gripping the ladder.

In 2016, staff installed an alternative ladder fall protection system, LAD-SAF, at two reservoirs (Fleming and Chapman). The LAD-SAF system uses a cable instead of a notched pole, and its harness sleeve is designed to grip the cable and stop traveling when weight is pulled down on the sleeve. This unit will freely travel along the cable as the operator ascends or descends the ladder allowing the operator to have a more continual grip on the ladder. The LAD-SAF catalog cut sheet is shown in Exhibit "A".

The Reservoir Ladder Fall Protection project will install the LAD-SAF system and replace the Saf-T Climb fall protection equipment at the remaining 13 domestic water reservoirs and two recycled water reservoirs. The 13 domestic water reservoirs include Lomas Valley Zone 3, Quail Hill Zone 4, Orchard Hills Zone 5, Portola Springs Zone 6, Foothill Zone 6, Foothill Zone 6A, Portola Zone 8, Portola Zone 9, El Toro Zone 4 No. 1, El Toro Zone 4 No. 2, Canada Zone 4, Shaw, and Benner reservoirs. The two recycled water reservoirs are Portola Springs Zone D and Lake Forest Zone C No. 2. The 2016 installation of the LAD-SAF units at Fleming and Chapman reservoirs cost $3,510 each. Staff's estimate for installation at the 15 reservoirs is $52,000.

FISCAL IMPACTS:

Projects 10119 and 10120 are not included in the FY 2016-17 Capital Budget. Staff requests the addition of Project 10119 and Project 10120 to the FY 2016-17 Capital Budget as shown in the table below. Funding for Projects 10119 and 10120 will be provided from Improvement Districts 1100 and 2100, respectively.

Project No.	Current Budget	Addition <Reduction>	Total Budget
10119	$-0-	$100,000	$100,000
10120	$-0-	$40,000	$40,000
Total	$-0-	$140,000	$140,000

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. It is expected that preliminary analysis will lead to the preparation of a Notice of Exemption for the project.

RECOMMENDATION:

That the Board authorize the addition of Project 10119 in the amount of $100,000 and Project 10120 in the amount of $40,000 to the FY 2016-17 Capital Budget for the Reservoir Ladder Fall Protection project.

LIST OF EXHIBITS:

Exhibit "A" – LAD-SAF Fall Protection System Catalog Information Sheet

LAD-SAF®

DBI SALA®

Globally Approved Vertical Fall Arrest System

- Globally Certified to ANSI, CE and CSA standards, so can be used anywhere in the world.
- Choice of Cable Options for flexibility of installations, allows the best cable option be used per application.
- Certified with 8mm(5/16") and 9.25mm(3/8") Lad-Saf® cable.
- Passes fall back test using anthropomorphic dummy in numerous fall positions, giving peace of mind and confidence when using.
- Choice of stainless steel or galvanised steel options for both cable and bracket options allowing for use both on and off-shore.

Vertical Fall Arrest Systems

Vertical Fall Arrest Systems ensure that users remain safe whilst climbing.

It is important that the user can ascend and descend comfortably and safely, which is why the Lad-Saf® system has been so popular over the years.
It has been available for over 30 years and is the biggest selling vertical fall arrest system. It has been installed in all continents across the globe and is this experience which has led the development of one fully certified system, including the shuttle that is now the new standard Lad-Saf® system.

From telecommunications and oil and gas to wind turbines and utility towers, the Lad-Saf® system has the flexibility to allow connection to all of the wide range of structures there may be.

Global Safety

The new Lad-Saf® sleeve has been designed to meet all applicable safety standards around the world, in conjunction with other Lad-Saf® components, creating a universally approved vertical fall arrest system. This means that the Lad-Saf® system can be used the world over and there is no requirement for different components in each region around the globe.
The whole system is certified to EN 353-1:2002, ANSI-ASC A14.3-2008 and CSA-Z259.2.1-98 (R2004).

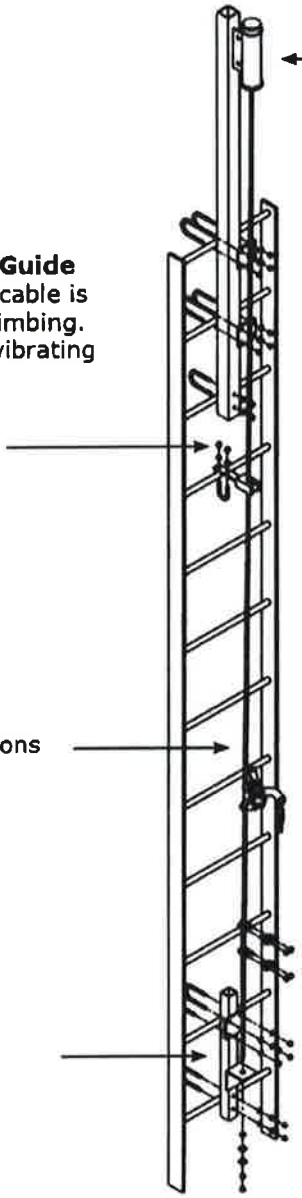
Users only need one product or system specification across the globe unlike with previous versions where different specifications are required. This is essential for multi-national organisations who have assets globally, but are not able to purchase form one hub, instead having to purchase in different regions which can cause confusion.
With a globally approved system it can be specified globally and purchased through a single purchasing location.

System Usage

The Lad-Saf® system retains its ability to allow up to 4 users use the system at once and enables them to connect and disconnect at any point of the lifeline.
The design also allows the shuttle to remain attached to the user to eliminate the potential for dropping and creating Lost Time Incidents or causing potential injury. Alongside the new shuttle the new Lad-Saf® system has extra options. Previous versions have only allowed 9.25mm (3/8") cable be used which can be difficult to handle especially in confined environments. The new global system introduces the availability of 8mm (5/16") cable options.
There are new top bracket assemblies for the range of 8mm cables too. New internal components are used within the head assembly to ensure optimal performance and safety. It is important to ensure that the correct bracket is used with the correct diameter of cable. Housed inside are the elastometric attenuator (shock absorbing element) and the strand vice, specific for the cable diameter used.

KC3PL280/6116280 (9.25mm/3/8") or 6116278 (8mm/5/16") Top Bracket
Galvanised bracket to be attached to ladder by using 3 off rung fixings.
Contains elastometric attenuator (shock absorber) and strand vice for termination of the cable.
Other fixing options and stainless steel product also available.

KC3PL330/6100400 - Intermediate Cable Guide
Galvanised intermediate cable guide to ensure cable is distanced away from the ladder to aid easier climbing.
Polyurethane guide piece prevents cable from vibrating causing potential damage to the cable.
Rung fix to ladder other fixing options and stainless steel product also available.



Lad-Saf® Cable
See "Cable options" specification below for options available. Only Capital Safety cable permitted.

KC3PL90/6100090 - Bottom Bracket
Galvanised bracket to be attached to ladder by using 2off rung fixings. Cable gripped to tensioner bar and bar tensioned to pre-determined value to provide the correct tension on the lifeline.
Other fixing options and stainless steel product also available.

6116507 - Global Sleeve
Cable Sleeve for connection on to Lad-Saf® 8mm (5/16") and 9.25mm (3/8") cable.
Incorporates shock absorber but remains less than 9" from cable for ANSI/OSHA requirements.
Removable at any point on the lifeline.

Cable options available:

7240212 : 1x19 strand, 8mm (5/16") Stainless Steel
6126xxx (xxx length in feet) : 7x19 strand, 8mm (5/16") Galvanised Steel
KC36152xxx (xxx length in feet) : 1x7 strand, 9.25mm (3/8") Stainless Steel
KC36151xxx (xxx length in feet) : 1x7 strand, 9.25mm (3/8") Galvanised Steel

Specifications:

Top Bracket: Contains elastometric attenuator (for shock absorption), Fixing options : rung, weld-on. Up to 4 users capability. Material : Stainless steel or galvanised options ***Cable***: see above ***Bottom Bracket:*** Cable attachment using cable grip. Fixing options: rung fix, bolt-on, weld-on. Material : stainless steel or galvanised options ***Fall Arrest Device (Ref 6116507) :*** 1 user per device, Max weight per user : 141kg. Material : 17-4-PH grade stainless steel ***Standards:*** EN353-1:2002, ANSI-ASC A14.3-2008, CSA-Z259.2.1-98 (R2004).

capital SAFETY

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Capital Safety, home of the DBI-SALA and PROTECTA brands is the world's leading manufacturer dedicated solely to fall protection. We are also the pioneer in the development of intelligent safety technology, leading the way toward a new era of safety management solutions. We are committed to providing new and improved systems to give you the complete confidence you need in your safety program.

- QUALITY for the performance you can trust.
- BREADTH for the best and most cost effective solutions.
- EXPERTISE to meet your unique fall protection requirements.
- TRAINING to ensure and motivate safety compliance.
- INNOVATION to improve your safety and productivity.

DBI SALA® PROTECTA®

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May 16, 2016
Prepared by: S. Malloy
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

MICHELSON WATER RECYCLING PLANT
BIOSOLIDS ODOR MONITORING SYSTEM

SUMMARY:

The Michelson Water Recycling Plant (MWRP) Biosolids and Energy Recovery Facilities (Biosolids Project) has the potential to produce odors that could impact the local area. To monitor odors and allow staff to take prompt action, staff recommends that the Board authorize the General Manager to execute a contract with Odotech for the purchase of an OdoWatch odor monitoring system in the amount of $137,000 for the MWRP Biosolids Project.

BACKGROUND:

IRWD is constructing the MWRP Biosolids Project near the existing recycled water production facilities. The liquid and the biosolids treatment plants include extensive odor control facilities, and both have the potential to generate odors. As a mitigation measure included in the Supplemental Environmental Impact Report for the Biosolids Project, IRWD committed to install an odor monitoring system.

Since the MWRP facilities are located near many residential developments and several preschools, an odor monitoring system is recommended to quickly warn staff if an odor event occurs to ensure that immediate action could be taken to minimize impacts. As there are other sources of odors in the area, such as the pond at the San Joaquin Golf Course, a system that monitors wind direction is also recommended to correlate odor complaints with atmospheric conditions.

Odotech's OdoWatch System:

Odotech of Montreal, Canada offers the OdoWatch system that allows for proactive management of odor emission and provides the odor monitoring features outlined above. OdoWatch provides the following benefits:

- Provides continuous monitoring on a 24-hour/7-day basis;
- Uses "electronic noses" (eNose) for real-time tracking of odor concentrations;
- Uses an on-site weather station with specialized sensors for real-time atmospheric dispersion modeling;
- Alerts staff when an event occurs, such as a threshold exceedance for odors, to allow staff to mitigate impacts;
- Provides real-time data display of atmospheric conditions and potential for odor plumes; and
- Archives data to make it readily available for staff to conduct operational analysis or for regulatory compliance.

The greatest benefit of the OdoWatch system is the Odotech proprietary software that incorporates atmospheric dispersion modeling specific to IRWD's site, a weather station, and data from the eNose devices. If an eNose detects an odor, then the software predicts if the odor will be detected downwind and how long it will take to reach a given location; it will also immediately alerts staff of the information so that action can be taken. Additional detail, including a photo of an eNose and sample displays of OdoWatch information, is included in the OdoWatch brochure, attached as Exhibit "A".

The OdoWatch system will be installed in phases. This proposal is for one weather station and two eNose devices within the recycled water production portion of the MWRP. Previous odor monitoring with Odotech determined the two most likely locations within MWRP. The two eNose devices will be installed at the Headworks odor scrubber and the Flow Equalization Basins. As the Biosolids facilities are completed, additional eNose devices will be installed and incorporated into the OdoWatch system.

Odotech is the only vendor that supplies such an odor monitoring system as described in the Odotech sole source letter, attached as Exhibit "B". Staff recommends the Board authorize the General Manager to execute a contract in the amount of $137,000 with Odotech for the OdoWatch system as detailed in the Odotech proposal, attached as Exhibit "C". This system will include:

- OdoWatch Platform (two eNose devices, a weather station, and Odotech's web-based software);
- Commissioning;
- Mobile Data Plan for the first 12 months;
- Cloud Services for the first 12 months;
- Shipping of equipment and training;
- Maintenance and support for the first year; and
- Operations & Maintenance Manual.

Staff inspected an installation of the OdoWatch system at Orange County Sanitation District (OCSD). As OCSD's plants are located very close to residential areas, OCSD has the OdoWatch system with several eNose devices mounted on a digester guardrail. OCSD indicated it has been very pleased with the OdoWatch system.

FISCAL IMPACTS:

Project 04286 is included in the FY 2016-17 Capital Budget. The existing budget is sufficient to fund the requested purchase order.

ENVIRONMENTAL COMPLIANCE:

The MWRP Biosolids and Energy Recovery Facilities is subject to the California Environmental Quality Act (CEQA) and in conformance with the California Code of Regulations Title 14, Chapter 3, Article 7, a Supplemental Environmental Impact Report (SEIR), SCH # 2011031091,

was certified by IRWD at its October 22, 2012 meeting. The City of Irvine Planning Commission approved a conditional use permit for the IRWD Biosolids Project at its December 6, 2012 meeting.

RECOMMENDATION:

That the Board authorize the General Manager to execute a contract with Odotech for the purchase of an OdoWatch odor monitoring system in the amount of $137,000 for the MWRP Biosolids and Energy Recovery Facilities, project 04286.

LIST OF EXHIBITS:

Exhibit "A" – OdoWatch Brochure
Exhibit "B" – Odotech's Sole Source Letter / OdoWatch
Exhibit "C" – Odotech's OdoWatch Proposal

Odotech
Leader in Odour Science

OdoWatch
Continuous Monitoring Platform

SEEING ODOURS

Wastewater Treatment Plants | Composting | Solid Waste Management | Mining | Chemicals | Pulp & Paper | Industrial Livestock | Agro-food

THE ODOWATCH PLATFORM HELPS REDUCE COSTS RELATED TO ODOUR MANAGEMENT

AVANTAGES

- Alert operators when an event occurs such as threshold exceedance for odours, gaseous contaminants or dust and to allow them to take steps to mitigate impacts;
- Archive data to make them readily available for managers to do operational analysis or for regulatory compliance;
- Automatically integrate observations made by employees or residents and display them directly on the site map;
- Facilitates effective communication between the site operators, the community and local authorities;
- Combines in one platform all the elements of a modern management solution for environmental events occurring at the site;
- Helps the decision process for the selection of the right odour reduction techniques and their dimensioning;
- Allows control of the deodorization systems, creating cost savings.

Measurements displayed in odour units per cubic meter (o.u. / m³) based on an olfactometric calibration performed according to EN 13725 and ASTM E679-04 standards.

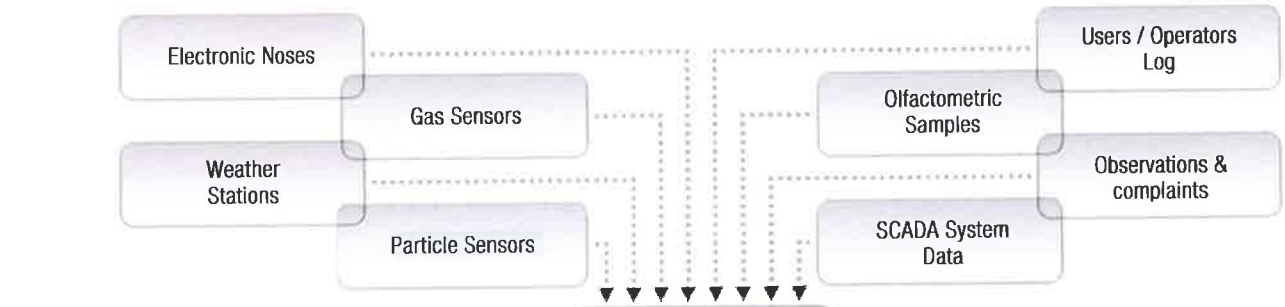
Electronic Nose (eNose)

THE ODOWATCH PLATFORM ALLOWS A PROACTIVE MANAGEMENT OF ENVIRONMENTAL REALITY BY MONITORING IN REAL-TIME SITES ODOUR, GASEOUS CONTAMINANT AND / OR DUST.

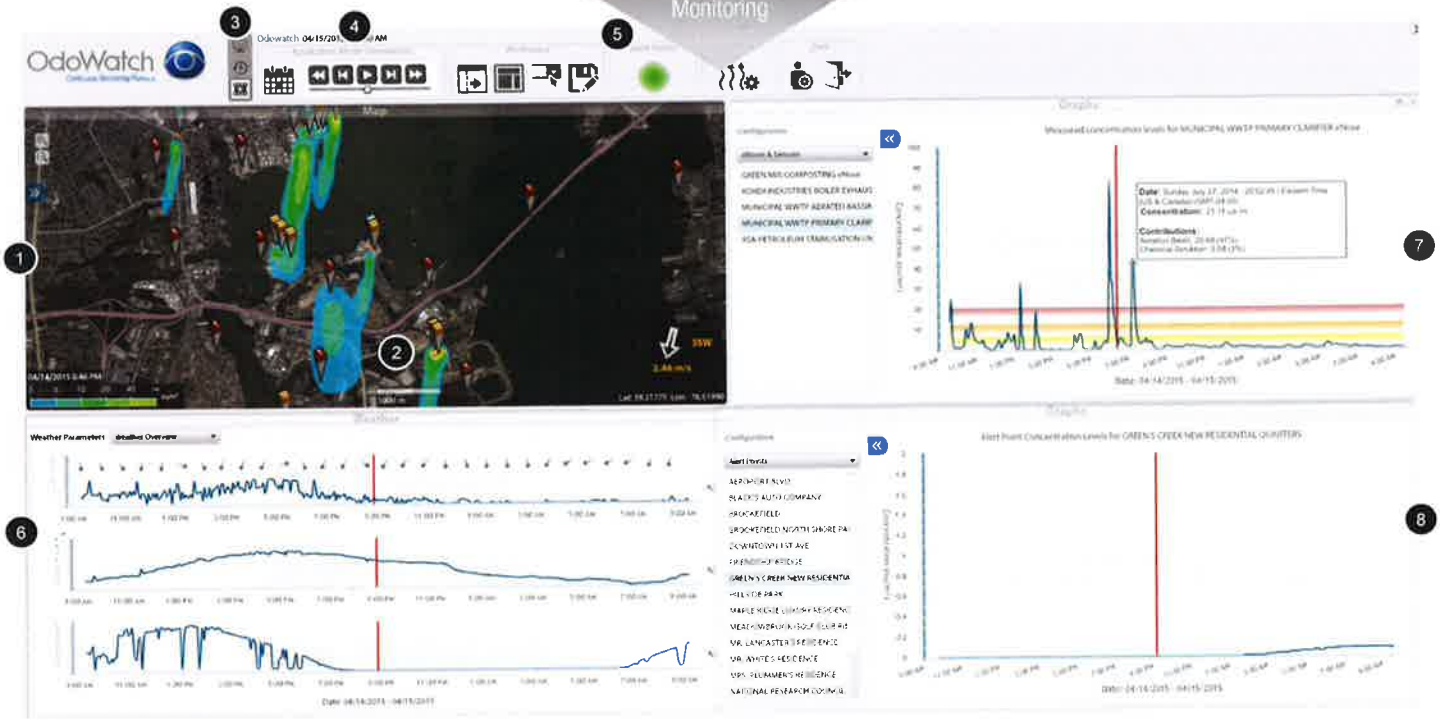
FEATURES

- Provides continuous monitoring on a 24-hour / 7-day basis;
- Centralizes and automates the monitoring of odours, gas and / or dust contaminants
- Models atmospheric dispersion (AERMOD or CALPUFF) as recommended by the US EPA and others agencies;
- Integration on site of:
  - Gas sensors (H2S, CH4, NH3, etc.);
  - Electronic noses (eNose) for real-time tracking of odour concentrations;
  - On-site weather stations with specialized sensors for real-time atmospheric dispersion modeling;
- Automatic integration of community observations / complaints (web, tablet and smartphone);
- Integration of management tools for site operators (logbook and others);
- Provides alert when exceeding predetermined olfactory thresholds;
- Real-time data display including atmospheric dispersion;
- Multi-user interface accessible through a Web browser;
- Automatic report generation;
- Archiving of all collected and calculated data;
- And many others.

The OdoWatch platform allows the continuous and real-time monitoring of environmental events occurring at sites managed by private companies and public utilities.



- **Automatic Reporting**
- **Atmospheric Dispersion (AERMOD or CALPUFF)**
- **RF Communication or mobile**
- **Cloud Server or onsite**



1. Site Map Window
2. Odours Plume (colour code depending on the concentration)
3. Replay the last hours movie
4. Access to historical data
5. Alert Points Status
6. Weather Data Window
7. Concentrations / Alerts / Reports window
8. Events / Alerts Window

Site Map

By merging the data received from the weather stations with the data received from the sensors (eNose / gas / dust) installed on site, the OdoWatch platform will perform real-time modeling of the atmospheric dispersion and display the plume superimposed on an aerial view of the site.

Odotech
Leader in Odour Science
www.odotech.com

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EXHIBIT "B"

Odotech
Leader in Odour Science

Steve Malloy, P.E.
Principal Engineer
Irvine Ranch Water District-IWRD
3512 Michelson Drive
Irvine, CA, 92612

April 10, 2017

Subject: Official Sole Source Letter / OdoWatch

3333 Queen-Mary Rd
Suite 301
Montreal, Quebec
H3V 1A2, Canada

www.odotech.com

+1 514 340 5250

Reference: Competitive Bid Exception for OdoWatch real-time odor and gas pollutants monitoring platform

Mr. Malloy:

This is to confirm that Odotech Inc. is the only manufacturer of OdoWatch real-time odor and gas pollutants monitoring platform in the world. We sell direct to end-users in the United States. The only way to procure OdoWatch equipment is thus through Odotech Inc.

If you should have any questions regarding this letter, please contact me at 514-340-5250 ext 701.

I trust this is to your convenience and we look forward to continue doing business with you in the near future.

In the meantime, please accept my kindest regards.

Sincerely,

Guy Laliberté
Chief Executive Officer

EXHIBIT "C"

PROPOSAL SUBMITTED TO: IRVINE RANCH WATER DISTRICT Michelson Water Recycling Plant

Object: OdoWatch Real-time Odor Monitoring Platform for the Water Recycling Plant

Odotech
Leader in Odour Science

CITIZENS AT THE CENTER OF OUR BUSINESS

PRESENTED BY ODOTECH
CONTACT PERSON: Mr. Yves Martin (ymartin@odotech.com)
North America Sales Director – 514-340-5250 (706)

Proposal No: P2105
April 20, 2017
Valid for 90 days

LETTER OF INTRODUCTION

Montreal, April 20, 2017

Irvine Ranch Water District
C/O Steve Malloy
3152 Michelson Dr.
Irvine, Ca
92612

Object: Proposal for an OdoWatch real-time odor monitoring platform

Mr. Malloy:

We are pleased to forward you a proposal for the delivery of a comprehensive OdoWatch technological platform for the real-time (24/7) monitoring of odor emissions from the Michelson Water Recycling Plant). This platform will help you monitor in real-time possible odor impacts off-site. We understand what is at stake and we have worked with numerous such plants in the USA and abroad.

Odotech has been focusing on one thing for the last 18 years: developing tools and services to help its clients track odors. With its headquarters in Montreal, and offices in Europe and South America, we have successfully conducted over 700 similar interventions, in more than one hundred sites on all continents. We can safely say that we are among the world leaders in that expertise.

We are fully confident that our technology, backed by years of experience in similar projects, will help the IRWD in preventing any such problems evolving into an odor nuisance situation.

I am available to review the proposal at your earliest convenience. Please suggest a time and day to do so.

Until then, Mr. Malloy, please accept our kindest regards.

Yves Martin
Sales Director North America
514-340-5250 (706); 514-865-1870 (cel)
ymartin@odotech.com

TABLE OF CONTENT

1 INTRODUCTION

ODOTECH is an environmental company with a patented and comprehensive platform for the real-time measurement and monitoring of odors: OdoWatch. Among its many benefits, the system alerts operators when odors begin to reach threshold values, enabling them to proactively respond before an odor problem occurs.

The OdoWatch® Platform is a real time odor monitoring system working 24/7. It is fully customizable to each site particularities. It is composed of different sensors strategically located near odor and/or gas emission sources in order to accurately characterize emissions. An onsite weather station is also used to have the most accurate weather conditions at the site for precise atmospheric dispersion modeling (and odorous impacts on communities around the plant). This is a comprehensive and yet, easy to use platform.

ODOTECH is headquartered in Montreal, Canada, with offices in Chile and France. It has successfully carried out more than 700 interventions worldwide, and has installed its system in over 120 sites. Based on these credentials, achieved over the last decade, ODOTECH is considered to be the world leader in this field.

In early 2016, ODOTECH received a mandate from IRWD to characterize six odor sources from the Michelson Water Recycling Plant (MWRP). The results and report was submitted and after analysis of the measurements of the odor sources, IRWD is ready to proceed with the deployment of a real-time odors monitoring platform.

This document is a proposal for a comprehensive and modular real-time technology platform for real-time monitoring of odors coming from the MWRP located in Irvine, CA. Since ODOWATCH is scalable, IRWD will be able to add features or modules once the platform is installed (would necessitate another proposal for such possible add-ons to the existing platform).

ODOTECH fully trusts that IRWD will find this proposal to be compelling and is looking forward to work on the successful deployment of such platform.

2 PROJECT OVERVIEW

IRWD operates the Michelson Water Recycling Plant in Irvine, CA. The facility converts an average of 28 MGD of wastewater or sewage into recycled water used for landscape and agricultural irrigation, and for industrial and commercial needs. From the headworks (enclosed), the sewage first goes into the primary treatment sedimentation tanks (enclosed). The flow is then directed to either a membrane bioreactor (MBR), equalization basins, or the activated sludge basins for further processing. The flow from the MBR passes through UV disinfection whereas the flow from the other units passes through sedimentation tanks, a clarifier and a chlorine contact tank.

IRWD is interested in installing a comprehensive OdoWatch platform for the real-time and 24/7 monitoring of odors coming from this facility and the potential impacts on the surrounding community. The odorous sources will be monitored through the installation of two (2) eNoses, whose data, in unit odor by cubic meter, (u. o./m3) will be complemented with the use of fixed measurement of the odor coming from two (2) other odor sources to display a real-time odor plume outside the site of the plant.

The use of OdoWatch will allow IRWD to monitor in real-time the impacts of the odors coming from its site and maybe to react pro-actively through the comprehensive alert system that is an integral part of the OdoWatch platform.

3 PROPOSED SOLUTION

Odowatch Platform

For this particular project, the Odowatch Platform consists of 2 eNoses, a weather station, the CALPUFF dispersion modelling tool, software (algorithms and users interface), and a central computer unit (located on *cloud*). Besides the input from the eNoses, two (2) other fixed sources of odors from the site will be sampled and quantified through olfactometry analysis. The measurements from these 4 odor sources will be used as input into the dispersion model. The client will be able to incorporate other eNoses or sampled sources into the model once this initial platform has been installed. A proposal for any such additions into the platform would be needed.

For every off-site impact, the Odowatch platform is able to provide a breakdown of the contribution (%) of each modelled source to better understand the origin of the impact. This is a powerful tool to help the operators understand the source (s) of their odor nuisance issues.

eNose and Sampled Sources (Odors)

The OdoWatch Platform will be configured for continous odor monitoring using two (2) electronic noses (eNoses). The eNose is used to monitor odor emissions at a specific source where the odor emission is variable.

Its main characteristics are:

- Weatherproof 22-inch x 20-inch x 10-inch enclosure (NEMA 4X), weight 57 lbs.
- Automatic sampling system using a sampling micropump[1].
- Sturdy measurement system for harsh weather conditions (25% to 95% R.H. and -20°C/-4°F to 40°C/104°F (under shelter).
- 120/60 Hz AC grid power.

Note 1: When measuring extreme odor concentrations, a pre-dilution unit may be required. This is expected in this project for the eNose located at the headworks scrubbers and such provision is included in the budget.

Note 2: The eNose needs to be protected against excessive heat or humidity coming from the odor source they monitor. This is expected in this project for the eNose located at the headworks scrubbers and such provision is included in the budget.

The two eNoses proposed in the platform are to be located at these following odor sources:

1. The scrubber at the headworks; will be protected against heat & humidity.
2. The flow equalizer basin (ambient air ; possibly at the SE corner of such basin); no protection- see note below.

If the localization of the eNose (s) change, Odotech reserves the right to review the proposal in light of the new localization of the eNose (s). At issue would be the fact that the eNose needs to be protected against high humidity, temperature, and concentrated gases.

Further to the data received from these two eNoses, odor measurement will be used as input into the dispersion modelling from two (2) other sources from the site. These sources will be characterized into the model using fixed measurements. These measurements would be obtained through sampling on site and olfactometry tests in specialized laboratory in Montreal according to North American standards. All these tasks (labor and expenses) are included in the proposal.

The two additional odor sources from the site to be considered in the dispersion model are the following:

- The flow equalization basin (another corner from the eNose, presumably NW);
- The primary clarifier scrubbers outlet;

State-of-the-art Anemometer Weather Station

For accurate atmospheric dispersion modeling, a sophisticated weather station will be installed on site to monitor the following key meteorological data:

- Wind speed and direction (ultrasonic anemometer);
- Temperature;
- Solar radiation;
- Relative humidity;
- Atmospheric pressure;
- Rain.

This weather station has been designed to correctly register low wind speed which are critical in evaluating the odor impacts off-site through atmospheric dispersion modelling. The station will be geared with telecommunication equipment to relay measurements to the OdoWatch Central Control Unit, located in the cloud. A tower for the weather station is included in the proposal but not the base to install such tower.

CALPUFF Dispersion Model

The CALPUFF dispersion model is used to project how odors from the configured sources will disperse in the vicinity of the site based on real-time data from the weather station located on site, the region topography, and data from the odorous sources. This is how off-site impacts can be assessed.

The CALPUFF model is more accurate for site with certain characteristics including the proximity to river as in the case for the current facility.

Central Control Unit

The data from the weather station and the input from the eNoses will be sent to the OdoWatch Central Control unit ("CCU") located in the Cloud for analysis and display. The CCU will record the measurements and run the algorithms (data analysis) for display in OdoWatch.

Mobile Communication and Cloud Hosting

The eNose and weather station will transmit data using Mobile communications. The CCU and database will be hosted in the cloud. The proposed solution includes one year of data transmission as well as one year of cloud hosting. Subsequent communication and hosting costs will be billed to IRWD on a yearly basis. Please refer to section 7 for more details on those annual recurring fees.

System Set-Up

Data communication between the eNoses, the meteorological station, and the OdoWatch platform will be achieved through the use of mobile communication (GPRS or HSPA protocol). Following this communication protocol, the signals from the sensors and meteorological station are sent, via 3G cellular network, to a computer server located in "the cloud" for process. The database is also in the cloud.

Operators with adequate user's access rights will access "the cloud" server using the Internet. Security protocols (username and password) are required to access the OdoWatch Platform and user interface.

OPTIONAL MODULE: The Observation Module

Moreover, Odotech proposes its observation module as an option. This module allows for the centralization, collection, and management of all observations and complaints done by the citizens and employees (operators) related to odors from the facility. These observations are collected through the Internet (through a dedicated web site done by Odotech). This would help IRWD in the time consuming tasks of collecting complaints, cataloguing them, and investing the efforts to generate reports and relevant information out of them. The OdoWatch platform would help do all that. This is also another step to show the community that IRWD is committed to improve things with regards to odor issues. The use of such module is usually helping to reduce complaints as neighbors understand that the WWTP is actively pursuing options to resolve the issues. The additional cost of such module is $5,000 and it is not included in the budget presented in section 6.

4 SCOPE OF SERVICES INCLUDED IN THE PROPOSED SOLUTION

The following services tasks are included in the proposal:

- Sampling on site (4 sources: 2 for the eNoses & 2 other sampled sources), and olfactometry analyzes done in Montreal for all the air samples;
- Run-In & calibration of equipment;
- Configuration, validation;
- Commissioning – see next paragraph for important notes on installation;
- Training (done VIA WEB);
- Total site visits = 2;
- One year support and maintenance (1st year); *Annual maintenance and support fee will be invoiced after first year, unless IRWD decides to opt out of this service.*
- Remote trouble-shooting if necessary.

INSTALLATION – NOT INCLUDED

Installation of the OdoWatch equipment by ODOTECH is specifically excluded and will be undertaken by IRWD or their installation subcontractor. ODOTECH will provide information and guidance to facilitate installation requirements. In essence, ODOTECH will *supervise* the installation.

ODOTECH will provide Data Sheets and OdoWatch equipment drawings and commissioning procedures specific to the OdoWatch equipment.

All enabling and infrastructure work (power supply, isolatable power sockets, internet connection, equipment installation,) is excluded from ODOTECH's scope of supply and must be completed and operational prior to ODOTECH commencing the commissioning phase.

ODOTECH have budgeted for a maximum of 3 meters for all power cables supplied by ODOTECH (needed between the isolatable power supply and the OdoWatch equipment); cable lengths in excess of 3m per cable, if needed, are to be provided by IRWD.

The OdoWatch system requires a 60Hz 120V stable AC power supply for all equipment. The voltage shall be stable within ± 5% of the specified voltage.

In the unlikely event that any lifts, ladders, craneage or scaffolding is required to complete the ODOTECH commissioning or odor sampling work, these equipments are excluded from the ODOTECH scope of supply and IRWD would be the responsible to provide such equipment.

The OdoWatch system does not have ATEX rating. Therefore, the eNoses are to be located outside zoned areas, if relevant.

Additional visits to site or additional time at site due to project changes or delays outside ODOTECH's control would be charged at an additional cost.

5 CHARACTERISTICS AND BENEFITS OF PROPOSED SOLUTION

With the Solution proposed, IRWD will be able to constantly monitor its odorous plume and its odorous impact on the community. Furthermore, virtual alert point (s) could be set-up to alert the operators when the perceived odor, at any virtual point set-up around the site, exceed a given threshold. This could be a great tool to act pro-actively to alleviate such issue. Finally, data will be collected for historical reports on odorous impacts off-site. All this would equip IRWD with a comprehensive solution to help the city work efficiently towards preventing or fixing any odor nuisance issues with the community.

Main characteristics of the proposed OdoWatch Solution:

- Centralized & automated odor monitoring;
- 24/7 display of odor plume, with concentration indicated in u.o./m^3;
- Automatic and real time odor concentration reading at pre-selected locations off-site (alert points - selected by client);
- Alerts when preconfigured thresholds are reached (at various locations off site);
- Possibility to set-up any points outside the boundary of the facility where odor measurements (in u.o./m^3) will be collected in real time and archived for future references and reporting (this is done through the dispersion modelling and algorithms);
- Concentrations, modelling, and weather data updated every 4 minutes.
- Data log and history of odors dispersion (archive);
- Possibility to access the OdoWatch interface from any internet browser (with users' login control);
- CALPUFF dispersion modelling;
- Display of the weather data from the weather station installed on site;
- Extensive reports (plus print screen and animation videos) generating capabilities;
- Possibility to export archived data;
- Easily scalable solution; for example possibility to add other eNose (s), H2S sensor (s), sampled sources, once the platform has been installed.

Key Benefits of the Proposed ODOWATCH Platform:

Some of the most likely benefits of deployment of the proposed platform include:

- Help confirm odor management priorities;
- Prove good faith to improve relationships with community (citizens, municipality, province);
- Facilitate community relations; Integrate citizens in the continuous process to find solutions through the observation module;
- Enhanced capability to respond to questions about odor impacts at any time (historical data);
- Save on investigations and reporting;
- Reduce documentation costs;
- Help in the optimization of odor abatement processes and equipment;
- Capacity to see (onsite) sources of odor impacts off site; enhanced capability to defend itself in a rational way if citizens complaint against odor issues;
- Reduce possible onsite sampling & measurement needs.

6 COSTS OF PROPOSED SOLUTION

Item	Description	Comments
1	OdoWatch Platform (as described in proposed OdoWatch Platform - section 3, excluding Observation module)	Included
2	Commissioning	Installation not included
3	Mobile Data Plan for 1st 12 months	Included
4	Cloud Services for 1st 12 months	Included
5	Shipping of equipment & Training – via WEB	Included
6	Maintenance & Support for 1st year	Included
7	Operational and Maintenance Manual (PDF Format)	Included

Total Price: 137,000$

Travel related expenses are included in the lump sum costs. Taxes are not included and are to be paid by client. This price is DAP, Irvine, CA.

The observation module is not included and would add $5,000 to costs.

PAYMENT TERMS

Payment terms are as follows:

- Fifty percent (50%) of the Agreement total value at the time of order.
- Forty percent (40%) at shipment of main equipment.
- Ten percent (10%) upon commissioning (final acceptance) or no later than 6 months from PO.

All invoices are payable upon receipt.

LEAD TIME

The estimated lead time from the time of the PO to the shipment of the equipment is approximately 8-10 weeks from payment of first invoice. The exact lead time may be impacted by the timing of the Purchase Order. ODOTECH will reconfirm the lead time at PO. ODOTECH will do its best efforts to lower lead time.

7 RECURRING ANNUAL COSTS

The OdoWatch Platform proposed consists in part of a cloud computer and field monitoring equipment that communicate via cellular technology. Both the cloud computer hosting fees along with the cellular data plan for the field units are included in the proposal and cover a period of 1 year.

Following the first year of warranty, Odotech will invoice the client on a yearly basis the cost of the cloud computer hosting fees along with the cellular data plan for the field units. This is not to be confused with the support and maintenance service that is optional from year 2 (once the warranty expires).

As of February 2017, the cost of these reoccurring fees for the proposed system at IRWD are estimated to be $6,500. The costs at the start of year 2 will be invoiced to the client.

8 TERMS AND CONDITIONS

This Agreement is subject to the following General Terms and Conditions.

Validity. This Agreement is open to acceptance for a period of ninety (90) days from the issued date.

Shipping. Pricing is DAP the site of IRWD – Irvine, CA.

Additional Visits. Additional visits to site or additional time at site due to project changes or delays outside ODOTECH's control will be charged as an additional cost.

Governing Law. This Agreement shall be governed by and construed in accordance with the laws of Quebec without giving effect to the principles of choice or conflict of laws provisions thereof. Any disputes, controversy or differences arising out of or in relation to this Agreement or the breach hereof, shall be finally settled by arbitration. The arbitration shall be conducted in Quebec.

Rights. ODOTECH retains all rights, intellectual property, titles and interest in the OdoWatch software, equipment and documentation. It is understood that all the names, documents and tools developed, presented and used by ODOTECH within the framework of this project shall remain the exclusive property of ODOTECH and cannot be copied or reproduced in any other way without ODOTECH's prior consent.

Payments shall be made by wire transfer to:

PAYMENT TO:	**IN FAVOR OF:**
SWIFT Code: *CCDQCAMM* *CC081530500* La Caisse Populaire Desjardins 5-100, Promenade, C.P.244 Complexe Desjardins Montréal, Québec, Canada H5B 1B4	*801 282* ODOTECH Inc.

Payment is due on receipt of invoice. Fees of 1.5% monthly or 18% annually will be charged on late payments.

Liability and Indemnity. ODOTECH's liability shall be strictly limited to the obligations in this Agreement. It is expressly understood that ODOTECH shall be held harmless and may not be subjected to claims for indemnification or damages, including intangible or indirect or consequential damages such as loss of income, loss of use or profit, and third-party claims.

IRWD Purchase Order. It is understood by both Parties that no provisions of the Purchase Order to be issued by IRWD, which are in contradiction to the terms and conditions herein, shall apply to this Agreement.

Acceptance of Conditions. IRWD must return to ODOTECH a duly signed copy of this Agreement and a Purchase Order specifying the number of this exclusive offer and the acceptance of the provisions thereof.

Change Request. Any suppression, amendment or addition to this Agreement shall only bind the Parties if it is confirmed in writing and signed jointly by authorized representatives of IRWD & PAPER and ODOTECH.

Non-solicitation of personnel. ODOTECH and IRWD agree that neither IRWD, nor its directors, officers nor shareholders, may directly or indirectly solicit the services of, contract, offer employment to, or encourage the defection of any resource person delegated by ODOTECH within the framework of its contract with IRWD This prohibition shall throughout the term of the contract between ODOTECH and IRWD, and for one (1) year after termination of the contract.

Use as a reference. ODOTECH will be able to use the logo of IRWD in the list of clients on its web site, unless specifically asked not to do so by IRWD.

Counterparts. This Agreement may be executed in counterparts, each of which will be deemed an original.

9 TRAINING

To properly use and understand the OdoWatch Platform, training to all relevant users is required. Please allow one full day divided in two for a training session once installation, configuration, and validation is completed. The training included in this proposal will be done through the INTERNET once the platform is installed and commissioning is completed.

- Part A for operators: Understanding your OdoWatch and how to use it.
- Part B for maintenance staff: Basic maintenance for OdoWatch.

A Users' Manual is standard with the system and will be available to IRWD.

10 WARRANTY

The OdoWatch Platform is covered by a one (1) year warranty on parts and related labor. The warranty provided in this Agreement covers the following items:

- Call-back (telephone & email)
- Consumables
- Replacement Parts

Replacement Parts are under warranty for the remaining period of the original warranty.

ODOTECH undertakes to correct any operating defect due to a flaw in the design, material or workmanship within the limitations of the provisions below. ODOTECH's obligation shall not apply where the defect is due either to material supplied or design imposed by IRWD.

Nor shall the warranty apply to incidents due to Force Majeure or Acts of God, or to replacement or repairs resulting from normal wear and tear, deterioration or accidents due to IRWD's negligence, its failure to guard and maintain the equipment, or its incorrect use thereof.

IRWD's Obligations Under Warranty

IRWD must advise ODOTECH forthwith in writing of any alleged equipment flaws and provide the justifying evidence available. IRWD must facilitate access to ODOTECH for the latter to be able to find the flaw or defect and to fix it. IRWD shall abstain from fixing it themselves, or from having it fixed by third parties, unless ODOTECH has explicitly consented to do so.

Implementation of Warranty

Once notified, ODOTECH shall diligently correct the defects at its own expense. ODOTECH reserves the right, if applicable, to modify features of the equipment in order to meet its obligations.

The work resulting from the warranty obligation shall be performed by ODOTECH or by the staff of a representative duly mandated by ODOTECH. Transportation cost of equipment or parts repaired or replaced shall be borne by ODOTECH. Parts replaced free of charge shall be returned to ODOTECH at its discretion, and become its property.

11 ANNUAL MAINTENANCE AND SUPPORT

Following the one (1) year warranty, annual maintenance and support is strongly recommended to ensure the proper operation of the system. This period begins twelve (12) months after the commissioning of the system.

The annual cost of the maintenance and support is 10% of the total Agreement value.

The following are the services included in the maintenance and support agreement.

Services:

- 1 year-end inspection visit (covering 21 points) and 1 inspection report per year with Certificate
- Recalibration of eNose (one time); anytime twelve months after PO if Annual Maintenance Contract is paid.
- Up to 20 hours of technical assistance (including training and service calls)
- OdoWatch Software updates (4.X generation)[1]
- OdoWatch Computer Operating system upgrades and licences[2]
- OdoWatch Computer Antivirus and updates
- Odor Alert e-mail notifications
- Weekly remote equipment check

Parts:

- Up to 2 sets of pumps per e-nose per year
- Up to 1 set of particulate filters (1x140um, 1x70um) per e-nose per year
- Up to 1 membrane per e-nose per year
- Up to 1 weather station per 2 years
- Up to 1 set of gas sensors per e-nose per year
- Up to 2 SIM cards per year
- Up to 1 IO card per year

---

[1] *Updates do not include:*
- *(a) Platform extensions including product extensions to (i) different hardware platforms; (ii) different windowing system platforms; (iii) different operating system platforms;*
- *(b) New functions such as (i) new functionality in the market data delivery infrastructure; (ii) new market data feeds; (iii) new applications; and (iv) new presentation tools.*

[2] *Maintenance Services do not include:*
- *(a) custom programming services;*
- *(b) support of any software that is not genuinely present on the OdoWatch Computer.*

12 ACCEPTATION OF PROPOSAL

IRWD accepts the proposal and its terms. By signing the current document and returning the signed copy to ODOTECH (digitally is accepted), we hereby give the official approval for the realization of the project as presented in the current proposal, including budget and terms. **The signature of this document would be considered as a formal PO by Odotech.**

ODOTECH looks forward to work with you on this project.

Sincerely,

Odotech Inc.	IRWD
_____	_____
Yves Martin	_____
Sales Director, North America	_____
Date: _____	Date: _____

REFERENCE:

April 20, 2017

PROPOSAL NUMBER: P2105

PROPOSAL SUBMITTED TO Irvine Ranch Water District - MWRP (Irvine, CA)

C/O Steve Malloy

OBJECT:

REAL-TIME MONITORING OF ODORS WITH ODOWATCH

LOCATION: Irvine, CA

COSTS: 137,000 USD

First Payment: 50% at PO.

APPENDIX 1: ODOWATCH BROCHURE

To be sent separately

APPENDIX 2: OPTIONAL FEATURE: ODOVIEW: COMPREHENSIVE OBSERVATION MODULE FOR ODOWATCH

To be sent separately

APPENDIX 3: ODOTECH BROCHURE – CONSULTING SERVICES

SERVICES

Measurement & Analysis of Odors

1998 - 2014
17 years
of service

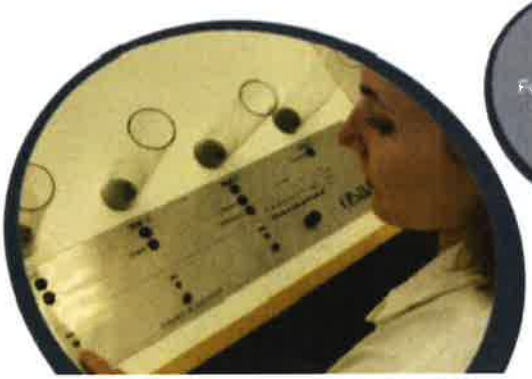
Odotech: Innovative Technologies, Customized Tools and Services for the Measurement & Analysis of Odors

Olfactometric analysis • Point zero • **Consulting & Planning** • Olfactory Nuisance Management Plan • **Diagnosis** • Odor Observer Committee • **Impact Study** • Audit • **Atmospheric dispersion modeling** • Training • **Sampling** • Olfactometry

Odor is caused by volatile organic compounds usually emitted several at a time, as a mix. The perceived odor is the result of their combined interaction with the huge number of sensors in the human nose. For the sake of illustration, human DNA contains 1 gene for hearing, 3 for vision, 12 for taste, and 1000 for smell.

Accurate instrumentation for odor measurement is crucial. Odotech has developed some of the best instruments available today, including OdoWatch™ - the advanced electronic nose system, and ODILE™ - the world's leading dynamic dilution olfactometer.

In the service of industry for 10 years, Odotech has a significant fund of multidisciplinary human resource capital at your service.

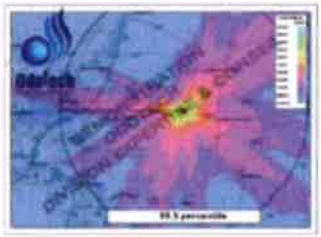


For more information:
www.odotech.com

Odotech

SERVICES

Measurement & Analysis of Odors



Benefits

We can help you:

- accurately quantify odor emissions
- accurately and hierarchically rank the sources of odor
- assess the odor impact of an industrial site
- identify the sources responsible for odors
- identify an odor abatement solution
- ensure that the odor treatment solution is dimensioned appropriately for its task
- set appropriate parameters for a deodorization system in order to reduce operating costs
- develop an odor index within a Management System/ Environmental Management System

Audit

- The first stage of an odor intervention consists of a "preliminary audit" conducted by an engineer/odor expert. The objective of the audit is to validate the parameters associated with regulatory documents, complaints or issues at stake.

Laboratory

- Our laboratories are equipped with ODILE™ dynamic dilution olfactometers which allow objective quantification of odors such as odor concentration measurements as per Standards EN 13725 and ASTM E679-91, hedonic tone analyses, odor intensity analyses, etc.

Impact Study

- Our odor impact studies are designed and carried out according to a scientific method similar to that of impact studies conducted to study air quality. Using techniques and tools specific to odor, the odor impact study provides the information needed to assess and examine the impact of a project with respect to odor emissions. Its purpose is to help satisfy current regulatory requirements.

Diagnosis

- Our experts will develop an odor diagnosis based on the data collected during the audit, which includes criteria relating to odor sampling directly at source (point source/surface sampling using the ODOFLUX™ Sampling Chamber), followed by olfactometric analyses.

Odor Observer Committee

- The main objective of the on site odor monitoring and surveillance program is to detect the impact of odors on neighbors by having them participate in any action undertaken by the operator or the municipality.
- Popular participation in characterizing the odors around the site will create greater involvement of the community in the main aspects of the project and improve understanding and quantification of the odor issue.

Composting • Landfills • **Waste Water Treatment Plants** • Rendering • **Agribusiness**
Food Processing • **Refineries** • Petrochemicals • **Breweries** • Methanisation Plants
Biofuel • Chemical Plants • **Pulp & Paper Mills**

Odotech

Odotech inc. is a leading designer and producer of odor measuring and monitoring systems. It carries out odor impact and other related studies as for governments, waste disposal and waste water treatment operators, industries and other organizations facing odor issues, worldwide.

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May 16, 2017
Prepared by: E. Akiyoshi/M. Robinson
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

FISCAL YEAR 2017-18 CAPITAL BUDGET

SUMMARY:

Staff will provide a presentation on the forecasted Fiscal Year (FY) 2017-18 Capital Budget. The projected expenditures for the FY 2017-18 Capital Budget are $98.1 million. This item is presented for information and discussion purposes prior to Board adoption of the FY 2017-18 Capital Budget in June 2017.

BACKGROUND:

The forecasted capital expenditures for the upcoming fiscal year are presented annually to the Engineering and Operations Committee and Board for review. The presentation, attached as Exhibit "A", includes an update on FY 2016-17 budget-to-actual capital expenditures, and forecasted FY 2017-18 capital expenditures.

In the current fiscal year, FY 2016-17, budgeted expenditures were originally estimated at $159.6 million: A total of $34.7 million was added to the budget at mid-year (e.g., Board-approved Palo Verde Irrigation District land purchases). Actual expenditures on projects identified in last year's projected expenditures are forecasted at approximately $128 million (approximately 80% of projected expenditures) plus an additional $34.7 million from the mid-year increases: Total estimated expenditures are $165.3 million.

Estimated capital expenditures for FY 2017-18 are $98.1 million. Three projects will consist of approximately 45% of projected expenditures: 1) Michelson Water Recycling Plant Biosolids and Energy Recovery Facilities, 2) Orange County Sanitation District's Capital Outlay Revolving Fund, Equity, and Solids Facilities, and 3) the Irvine Lake Pipeline North Conversion. System repairs and rehabilitations will consist of an additional 15% to 20% of projected expenditures.

FISCAL IMPACTS:

The following table shows the major IRWD capital projects for FY 2017-18. The FY 2017-18 Capital Budget, attached as Exhibit "B", provides details on all capital projects with anticipated expenditures in FY 2017-18.

Project	FY 2017-18 ($ Million)
ILP Conversion and Operational Enhancements	16.2
MWRP Biosolids and Energy Recovery Facilities	15.4
OCSD / CORF / Solids Facilities	9.7
Operational Enhancement Projects	9.6
System Repair and Rehabilitation	9.4
Annual Operational System Repair and Rehabilitation	7.6
Asset Optimization	4.3
Development - Regional Projects	4.2
Water Resources	3.3
Well Rehabilitation	2.8
Subtotal	**$82.5**
Total All Projects	**$98.1**

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

That the Committee provide comments on the Fiscal Year 2017-18 Capital Budget in advance of Board adoption in June 2017.

LIST OF EXHIBITS:

Exhibit "A" – Capital Budget Presentation
Exhibit "B" – Draft FY 2017-18 Capital Budget

EXHIBIT "A"

Fiscal Year 2017-18 Capital Budget

Engineering & Operations Committee
May 16, 2017

Capital Budget Presentation Outline

- Review Fiscal Year (FY) 2016-17 budget
  - Update on expenditures for FY 2016-17
- Review proposed FY 2017-18 budget
  - FY 2017-18 Capital Budget Summary
  - Long-Term Capital Program
  - Flagged Projects

Irvine Ranch WATER DISTRICT

Review FY 2016-17 Expenditures

Description	Budgeted Expenditures ($ Million)*	Forecasted 2016-17 Expenditures ($ Million)*
Top 10 project groups	$129.2	$108.5
Other projects	$30.4	$22.1
Subtotal	**$159.6**	**$130.6**
Mid-Year Board Approved Expenditures	$34.7	$34.7
FY 2016-17 Total	**$194.3**	**$165.3**

* Capital offsets (grants, reimbursements, and other non-IRWD funding sources) not subtracted.

Review FY 2016-17 Top 10 Expenditures

No.	Description	Budgeted Expenditures ($ Million)*	Forecasted Expenditures ($ Million)*
1	MWRP Biosolids & Energy Recovery Facilities	45.6	30.4
2	OCSD Capital Expenditures	18.2	21.0
3	ILP North Conversion	14.6	1.8
4	Water Banking	11.5	19.7
5	Baker Water Treatment Plant	10.4	9.9
6	Great Park Development Areas	9.0	11.3
7	General Plant	5.6	5.6
8	Annual Operational System Repair and Rehab	5.0	3.0
9	Business Software	4.8	4.5
10	Asset Optimization	4.6	1.2
	Other Projects	$30.4	$22.1
	Subtotal	**$159.6**	**$130.6**
	Mid-Year Budget Increases (e.g. PVID purchases)	$34.7	$34.7
	Total	**$194.3**	**$165.3**

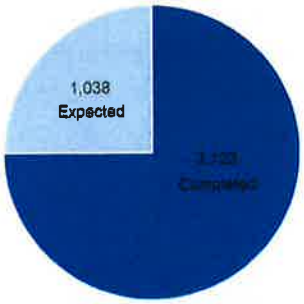
* Capital offsets (grants, reimbursements, and other non-IRWD funding sources) not subtracted.

Irvine Ranch WATER DISTRICT

Development Projects

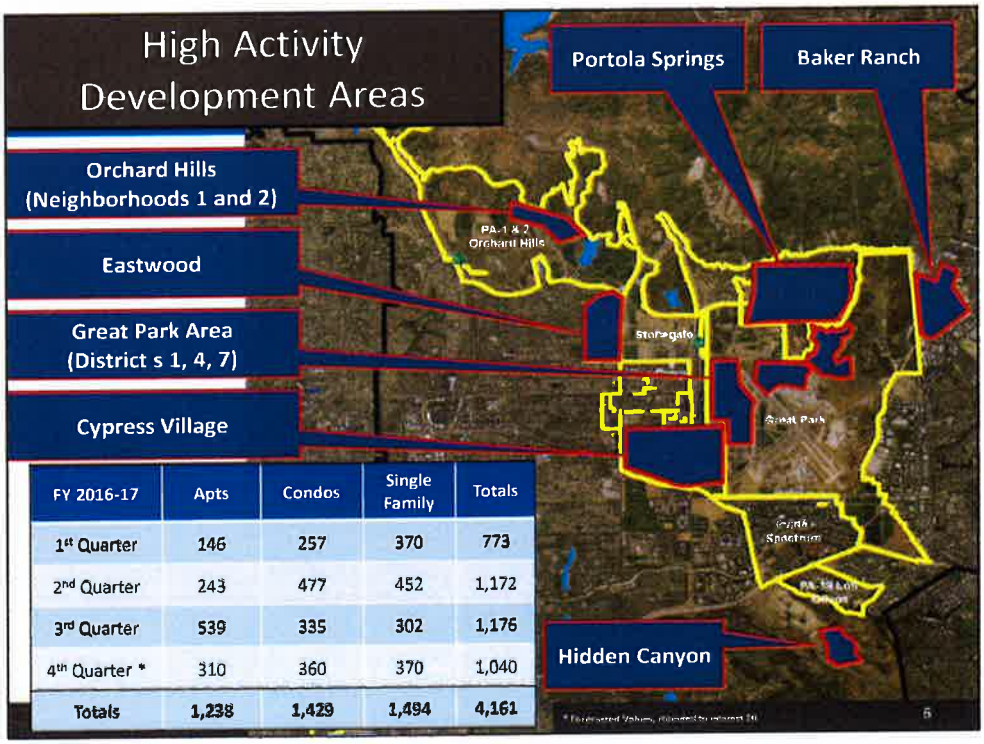
- **FY 2016-17 Development Activity**
  - Focused in areas with existing infrastructure
    - Baker Ranch
    - Orchard Hills and Portola Springs
    - Great Park Neighborhoods (District 1)
    - Cypress Village and Eastwood
    - Hidden Canyon
- **FY 2017-18 Development Activity**
  - Forecasted releases are similar to 2016-17
  - Multi-family and single family dwelling units continue to be developed in: Orchard Hills, Portola Springs, Cypress Village, Eastwood, Great Park Neighborhoods (District 1) and Baker Ranch.

FY 2016-17 Residential Releases
Total is 4,161 Dwelling Units



Irvine Ranch Water District 5

High Activity Development Areas



FY 2016-17	Apts	Condos	Single Family	Totals
1st Quarter	146	257	370	773
2nd Quarter	243	477	452	1,172
3rd Quarter	539	335	302	1,176
4th Quarter *	310	360	370	1,040
Totals	**1,238**	**1,429**	**1,494**	**4,161**

6

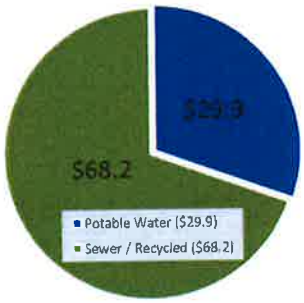
Irvine Ranch WATER DISTRICT

FY 2017-18 Forecasted Expenditures

Total Projected FY 2017-18 Expenditures = $98.1 million

Expenditures by Category

Expenditures by System



Irvine Ranch Water District 7

FY 2017-18 Top 10 Project Groups

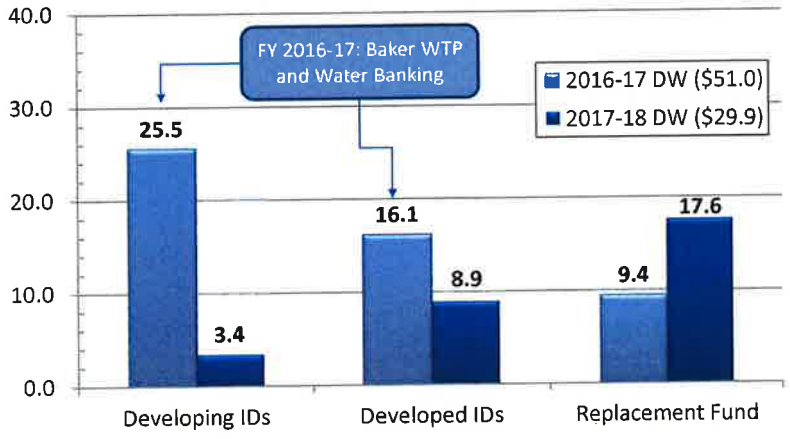
Rank	Description	Forecasted FY17-18 Exp. ($ Millions)*
1	ILP Conversion Projects	16.2
2	MWRP Biosolids & Energy Recovery Facilities	15.4
3	OCSD Capital Expenditures	9.7
4	Operational Enhancement Projects	9.6
5	System Repair and Rehabilitation	9.4
6	Annual Operational System Repair and Rehabilitation	7.6
7	Asset Optimization	4.3
8	Development - Regional Projects	4.2
9	Water Resources (UCI RW Conversions)	3.3
10	Well Rehabilitation	2.8
	Subtotal	**$82.5**
	Other Projects	$15.6
	Total	**$98.1**

* Capital offsets (grants, reimbursements, and other non-IRWD funding sources) not subtracted.

Irvine Ranch WATER DISTRICT

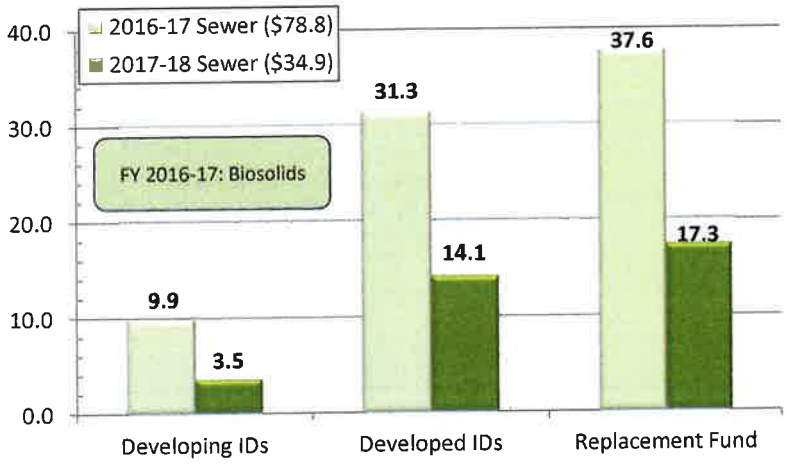
Capital Budget Funding Sources

Domestic Water Projects ($29.9 million)



Capital Budget Funding Sources

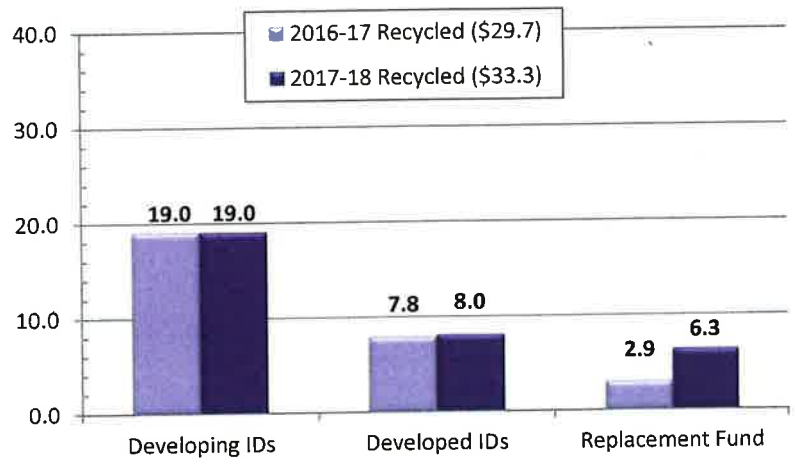
Sewer System Projects ($34.9 million)



Irvine Ranch WATER DISTRICT

Capital Budget Funding Sources

Recycled Water Projects ($33.3 million)



FY 2017-18 Flagged Projects

Flagged projects require additional Board review prior to capital expenditures. FY 2017-18 flagged projects include:

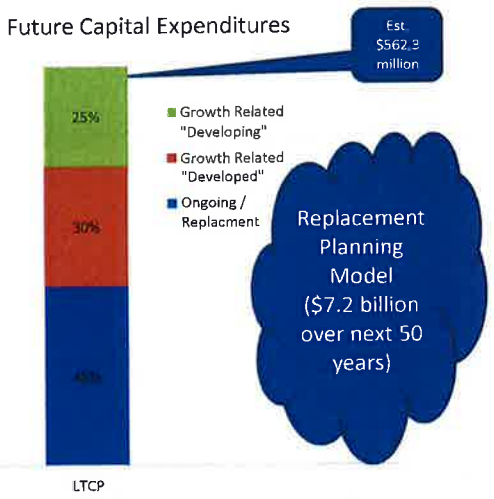
- **01100 – Lake Forest Well 1 Drilling**
- **01117 – Lake Forest Well 1 Wellhead**
- **07140 – Tustin Legacy Redhill Well Drilling & Equipping**
- **01402 – Wells 51/52/53 Treatment Alternatives Study**
- **03808 – Syphon Reservoir Expansion**

All projects with start dates beyond the FY 2017-18 must be presented to the board prior to any expenditures.

Irvine Ranch WATER DISTRICT

Long Term Capital Program Summary

- The Long-Term Capital Program (LTCP) is used in the Financial Enterprise Model to assist in setting Connection Fees, Property Taxes, and User Rate component of Replacement Fund
- The LTCP also helps estimate capital cash flow to assist the Treasury department
- Replacement Planning Model used beyond 2019-20



Long Term Capital Program Summary ($ Million)

Component [1]	Budget and Expenditures
Total Unexpended LTCP FY2016-17	$641.6
Mid-Year Board Approved Increases	$34.7
Forecasted FY2016-17 Expenditures	($165.3)
Proposed LTCP Increases	$51.2
Total Unexpended LTCP FY2017-18	**$562.3**

[1] All costs and expenditures account for applicable offsets

Irvine Ranch WATER DISTRICT

Increases to the Long-Term Capital Program

Project Groups	Increases Including Offsets ($Million)
• Replacement - Facilities	$19.6
• Reduced Syphon Reservoir Offset Assumption from 50% to 25%	$15.2
• Development (e.g. Multi-Zone Pump Station, PA51)	$10.9
• OCSD - CORF - Solids Lease	$8.4
• Added Santiago Area Distribution Projects and eliminated "Two-Source" Water Supply Concept	($10.7)
• Other	$7.8
Total	**$51.2**

Summary of Proposed Increases($ Million)

Funding Source	Proposed LTCP Increases
Replacement IDs*	$29.0
Developed IDs	$25.2
Developing IDs	($3.0)
Total**	**$51.2**

* Excludes Replacement Planning Model expenditures, ** Capital offsets subtracted

Irvine Ranch WATER DISTRICT

Next Steps

- **Capital Budget Workshop / Adoption, June 12 Board Meeting**
- **Finance Connection Fee Discussions, June 2017**

Irvine Ranch WATER DISTRICT

CAPITAL BUDGET

FISCAL YEAR 2017-18

DRAFT
May 9, 2017

Irvine Ranch
WATER DISTRICT

Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, CA 92618

Irvine Ranch Water District
Fiscal Year 2017-18 Capital Budget
Section 1 - Projected Expenditures by Project

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Recycled	01015	TECHNOLOGY DR AND LAGUNA CANYON RD RW Z	11/1/14	6/30/18	$1,110,955	$3,223,500												21.0				79.0			
Potable	01100	LAKE FOREST WELL 1 DRILLING	3/1/18	12/31/19	$22,307	$1,417,600		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	01117	LAKE FOREST WELL 1 WELLHEAD	4/1/18	12/31/19	$13,732	$1,035,100		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	01257	HQ OFFICE IMPROVEMENTS-RW	7/1/11	12/31/19	$22,925	$81,400										100.0									
Potable	01264	ASSET OPTIMIZATION-LAKE FOREST DEVELOPMEN	7/1/07	12/31/17	$115,378	$7,752,500	100.0																		
Potable	01336	HQ OFFICE IMPROVEMENTS-DW	7/1/11	12/31/19	$91,005	$277,300	100.0																		
Potable	01383	OCWD ANNEXATION FEE 17/18	8/1/17	4/30/18	$589,300	$589,300		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	01402	WELLS 51/52/53 TREATMENT ALTERNATIVES STUD	6/1/18	12/31/19	$3,830	$133,100		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	01414	SAND CANYON 16 INCH DW PIPELINE ANODE REPL	12/1/17	12/31/19	$24,251	$243,100	100.0																		
Sewer	01530	OCSD EQUITY 16/17	8/1/16	9/30/17	$1,321,444	$11,893,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Sewer	01542	OCSD EQUITY 17/18	7/1/17	12/31/18	$1,200,000	$39,620,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Sewer	01549	HQ OFFICE IMPROVEMENTS-SS	7/1/11	12/31/19	$78,806	$245,900										100.0									
Sewer	01568	OCSD CORF 17/18	7/1/17	9/30/18	$5,759,000	$5,814,000										72.7	9.0	0.9	0.9	13.3		2.6	0.1	0.4	0.1
Recycled	01722	PA1 NHB4 ORCHARD HILLS RW	2/1/17	3/31/18	$528,709	$566,500																100.0			
Recycled	01762	PA9B PHASE 5 GATEWAY PARK RW PIPES	12/1/16	6/30/19	$104,752	$506,100																100.0			
Recycled	01813	SANTIAGO DAM OUTLET TOWER REPLACEMENT	7/1/13	12/31/17	$184,300	$568,700											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Potable	03566	ENTERPRISE ASSET MGMT SOFTWARE IMPLEMENT	10/1/11	12/31/17	$277,781	$2,682,100		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	03567	ENTERPRISE ASSET MGMT SOFTWARE IMPLEMENT	10/1/11	12/31/17	$277,781	$2,682,100											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Recycled	03734	PA40 TRAVELAND FACILITIES-RW	12/1/16	6/30/19	$69,396	$447,700												21.0				79.0			
Recycled	03735	PA39 PH2 FACILITIES-RW	6/1/16	10/31/18	$174,315	$226,600																100.0			
Sewer	03750	SOCWA ETM PROTECTION-TRAIL BRIDGE CROSSIN	8/1/16	12/31/20	$2,609	$951,500										100.0									
Potable	03766	STOCKDALE WEST INTEGRATED WATER BANKING P	3/1/12	12/31/17	$571,731	$12,340,600		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	03780	SAN JOAQUIN RESERVOIR LINER REPLACEMENT	5/1/18	12/31/20	$38,463	$2,807,900										100.0									
Recycled	03808	SYPHON RESERVOIR EXPANSION	6/1/15	12/31/21	$417,364	$60,169,200											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Recycled	04147	PA51 MARINE WAY ZNB-RW	11/1/12	12/31/17	$13,471	$1,201,200												87.4				12.6			
Potable	04153	PA51 MARINE WAY ZN3 DW	11/1/12	12/31/17	$6,086	$420,200			20.9			79.1													
Sewer	04267	PA51 RIDGE VALLEY-MARINE WAY TO TRABUCO SS	1/1/13	12/31/17	$20,481	$1,493,800												22.9				77.1			
Potable	04268	PA51 RIDGE VALLEY-MARINE WAY TO TRABUCO D	1/1/13	12/31/17	$6,920	$486,200			20.9			79.1													
Recycled	04278	PA51 RIDGE VALLEY-MARINE WAY TO TRABUCO R	1/1/13	12/31/17	$6,720	$464,200												87.4				12.6			
Sewer	04286	MWRP BIOSOLIDS AND ENERGY RECOVERY FACILIT	4/1/13	12/31/18	$15,412,800	$216,073,100										45.5	18.9	1.5	1.5	27.7		4.1	0.1	0.6	0.1
Recycled	04400	MULTI-ZONE BPS-ZONE A-C	3/1/16	6/30/19	$2,070,121	$7,520,000												56.0				44.0			
Recycled	04457	MULTI-ZONE BPS-ZONE A-B	3/1/16	6/30/19	$1,639,864	$5,950,000										13.7		48.2				38.1			
Sewer	04467	MWRP REPAIRS: ACT SLUDGE-2DARY TANKS-RAS/	10/1/16	6/30/19	$50,909	$3,181,600										100.0									

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Potable	04512	PA5B PHASE 1A 12 ZONE 3 DW	5/1/13	12/31/17	$2,571	$132,000						100.0													
Recycled	04513	PA5B PHASE 1A AND 1B 6 -8 RW	5/1/13	12/31/17	$5,047	$298,200																100.0			
Recycled	04514	PA5B PHASE 1A AND 1B 36 RW	5/1/13	12/31/17	$16,008	$1,769,400											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Recycled	04557	PA6 PHASE 1 NEIGHBORHOOD 3 ZONE C RW	6/1/13	12/31/17	$5,312	$315,700																100.0			
Sewer	04614	PA51 REACH A SEWER IMPROVEMENTS	6/1/13	12/31/17	$33,655	$3,956,500												67.0				33.0			
Potable	04645	PA51 C ST FROM LQ ST TO O ST DW	7/1/13	12/31/17	$3,856	$211,700			67.3			32.7													
Recycled	04646	PA51 C ST FROM LQ ST TO O ST RW	7/1/13	12/31/17	$4,911	$266,200												99.6				0.4			
Recycled	04647	PA51 LY ST FROM TRABUCO RD TO LQ ST RW	7/1/13	12/31/17	$4,856	$205,700												99.6				0.4			
Sewer	04648	PA51 LQ ST FROM O ST TO LY ST SS	7/1/13	12/31/17	$4,244	$255,200												61.5				38.5			
Recycled	04649	PA51 LQ ST FROM O ST TO LY ST RW	7/1/13	12/31/17	$1,567	$78,100												93.5				6.5			
Potable	04650	PA51 LY ST FROM LQ ST TO IRVINE BLVD DW	7/1/13	12/31/17	$1,633	$51,700			98.2			1.8													
Sewer	04651	PA51 LY ST FROM LQ ST TO IRVINE BLVD SS	7/1/13	12/31/17	$17,689	$1,262,200												100.0							
Recycled	04652	PA51 LY ST FROM LQ ST TO IRVINE BLVD RW	7/1/13	12/31/17	$19,478	$938,300												99.6				0.4			
Sewer	04653	PA51 C ST FROM TRABUCO RD TO LQ ST SS	7/1/13	12/31/17	$7,967	$403,700												100.0							
Potable	04680	PA18S HIDDEN CANYON 12 DW	7/1/13	12/31/17	$5,967	$315,700						100.0													
Recycled	04681	PA18S HIDDEN CANYON 6 -8 RW	7/1/13	12/31/17	$5,967	$315,700																100.0			
Recycled	04753	PA5B PHASE 2 6 RW	7/1/13	12/31/17	$911	$57,200																100.0			
Recycled	04984	TUSTIN LEGACY ARMSTRONG ZONE A-WARNER ZO	11/1/13	12/31/17	$15,996	$773,300													100.0						
Potable	04988	TUSTIN LEGACY WARNER FROM ARMSTRONG TO L	11/1/13	12/31/17	$1,380	$150,500				100.0															
Recycled	04989	TUSTIN LEGACY WARNER FROM ARMSTRONG TO L	11/1/13	12/31/17	$6,084	$332,700													100.0						
Sewer	05016	PA51 C ST FROM LV ST TO TRABUCO SS	11/1/13	12/31/17	$8,844	$370,700												100.0							
Potable	05027	BAKER WATER TREATMENT PLANT	1/1/14	7/31/17	$224,186	$100,852,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	05154	SJR SEISMIC EVALUATION (DSOD)	6/1/18	6/30/20	$1,400	$150,700											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Recycled	05156	LAGUNA CANYON RD RW PIPELINE CORROSION RE	1/1/18	7/31/19	$65,000	$588,500										100.0									
Recycled	05168	PA18S HIDDEN CANYON 36 RW PIPELINE	3/1/13	12/31/17	$19,159	$2,208,200											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Sewer	05174	MAIN ST DIVERSION STRUCTURE GROUND SETTLIN	8/1/15	8/31/17	$5,809	$617,700										100.0									
Recycled	05243	PA6 NHB4B 6 RW ZONE D	2/1/14	12/31/17	$12,881	$526,900																100.0			
Potable	05404	LAKE FOREST Z2-2RA PRV AT COMMERCENTRE	6/1/17	12/31/19	$3,158	$412,700								100.0											
Potable	05406	EL MODENA INLET MODIFICATION	6/1/18	6/30/19	$1,818	$156,200		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	05407	ILP NORTH CONVERSION-RESERVOIR	3/1/14	12/31/19	$7,715,192	$14,382,500										0.3		40.1	0.1	16.8	0.3	42.3		0.1	
Potable	05410	COASTAL ZONE 2 PRV MODIFICATION (DPR16)	12/1/17	6/30/19	$41,200	$187,100					100.0														
Sewer	05427	WATER RECYCLING TRT PLANT MSTR PLAN UPDATE	4/1/16	1/31/19	$325,165	$921,300											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Sewer	05470	NEWPORT COAST SLS AND FM RECOATING (REHAB	6/1/15	7/31/18	$1,041,296	$1,432,200										100.0									
Potable	05473	WELLS 11 AND 15 SURGE TANK REPLACEMENT	11/1/14	6/30/18	$2,884,248	$3,626,200	100.0																		
Recycled	05476	RATTLESNAKE ZONE A BPS REBUILD	5/1/17	10/31/20	$1,932	$3,937,700										100.0									
Potable	05499	STOCKDALE STORAGE FOR RECOVERY CAPACITY	7/1/15	4/30/18	$1,500,000	$1,590,800		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Sewer	05520	MAINTENANCE ACCESS FOR FOUR SEWER REACHE	7/1/17	7/31/19	$41,200	$368,000										100.0									
Sewer	05535	PA51 LQ ST FROM BOSQUE TO Z ST 12 -SS	5/1/14	12/31/17	$61,147	$1,510,300												100.0							
Recycled	05536	PA51 LQ ST FROM BOSQUE TO Z ST 12 RW	5/1/14	12/31/17	$9,259	$416,900												99.6				0.4			
Potable	05756	PA51 B ST FROM SOCIABLE TO IRVINE BLV 12 ZN 4	8/1/14	12/31/17	$6,746	$243,100			98.2			1.8													
Recycled	05757	PA51 B ST FROM SOCIABLE TO IRVINE BLV 16 ZN C	8/1/14	12/31/17	$5,400	$240,900												99.6				0.4			
Recycled	05758	PA51 CADENCE-PUSAN TO CHINON 12_16RW	8/1/14	12/31/17	$5,810	$271,700												87.4				12.6			
Potable	05761	EAST IRVINE ZONE 1 RESERVOIR INTERIOR RECOATI	6/1/18	9/30/19	$2,286	$2,748,500	100.0																		
Recycled	05763	PA6 NHB5A RW ZONE D	8/1/14	12/31/17	$3,073	$132,000																100.0			
Sewer	05788	PA51 ALTON PKWY SS RELOCATION 12 AND 18	8/1/14	12/31/17	$39,117	$1,832,300												100.0							
Potable	05816	PA51 ALTON-TECHNOLOGY TO MUIRLANDS 12 DW	9/1/14	12/31/17	$4,515	$177,100			20.9			79.1													
Sewer	05817	PA51 ALTON-TECHNOLOGY TO MUIRLANDS SS REL	9/1/14	12/31/17	$16,995	$1,326,300												100.0							
Recycled	05818	PA51 ALTON-TECHNOLOGY TO MUIRLANDS 16 RW	9/1/14	12/31/17	$8,295	$344,300												87.4				12.6			
Recycled	05823	ILP NORTH CONVERSION-PIPELINES	3/1/14	12/31/18	$8,470,477	$10,991,100										2.1		2.5	1.0	46.3	1.8	46.0		0.3	
Recycled	05919	PA1 NHB1 ORCHARD HILLS 16 ZC 6 ZC+	10/1/14	12/31/17	$27,222	$521,400																100.0			
Sewer	06010	TUSTIN LEGACY PARK AVE FROM JAMBOREE TO VI	12/1/14	12/31/17	$1,767	$64,900													100.0						
Potable	06016	PA51 IRVINE BLVD-LAMBERT TO Z ST 12 DW	12/1/14	12/31/17	$16,057	$256,200			98.2			1.8													
Sewer	06017	PA51 IRVINE BLVD-LAMBERT TO Z ST 16 SS	12/1/14	12/31/17	$6,734	$115,500												100.0							
Recycled	06018	PA51 IRVINE BLVD-LAMBERT TO Z ST 20 RW	12/1/14	12/31/17	$80,674	$1,412,400												99.6				0.4			
Potable	06023	ROSEDALE DROUGHT RELIEF PROJECT FACILITIES	1/1/15	6/30/18	$374,912	$9,872,500		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	06048	PA51 MARINE WAY-ALTON TO BARRANCA 18 SS	1/1/15	12/31/17	$38,250	$1,424,500												100.0							
Potable	06080	CAPITAL PLANNING SUPPORT 17/18 DW	7/1/17	6/30/18	$300,000	$300,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	06081	CAPITAL PLANNING SUPPORT 17/18 RW	7/1/17	6/30/18	$250,000	$250,000											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Sewer	06082	CAPITAL PLANNING SUPPORT 17/18 SS	7/1/17	6/30/18	$250,000	$250,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Potable	06086	PA51 MARINE WAY FROM ALTON TO BARRANCA 1	1/1/15	12/31/17	$11,117	$238,700			20.9			79.1													
Recycled	06087	PA51 MARINE WAY-ALTON TO BARRANCA 16 RW Z	1/1/15	12/31/17	$7,600	$281,600												87.4				12.6			
Sewer	06098	LAWRP SYSTEM REPLACEMENTS 17/18	7/1/17	6/30/18	$138,600	$138,600										100.0									
Potable	06109	TUSTIN LEGACY PARK AVE-MOFFETT DR 12 DW	2/1/15	12/31/17	$16,523	$579,700				100.0															
Sewer	06110	TUSTIN LEGACY PARK AVE-MOFFETT DR 16 AND 15	2/1/15	12/31/17	$53,024	$387,200													100.0						
Recycled	06111	TUSTIN LEGACY PARK AVE-MOFFETT DR 16 AND 6	2/1/15	12/31/17	$16,265	$568,700													100.0						
Potable	06121	VAULT LID REPLACEMENT-DW	6/1/18	7/31/19	$14,786	$397,700	100.0																		
Sewer	06122	VAULT LID REPLACEMENT-SS	6/1/18	7/31/19	$5,029	$96,300										100.0									
Recycled	06123	VAULT LID REPLACEMENT-RW	6/1/18	7/31/19	$9,671	$195,300										100.0									
Potable	06159	CANADA ROAD JOINT BONDING	6/1/18	7/31/19	$6,123	$233,200	100.0																		
Potable	06160	CENTRALIZED CONTROL ROOM AT MWRP-DW	6/1/18	12/31/19	$7,500	$170,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	06161	CENTRALIZED CONTROL ROOM AT MWRP-SS	6/1/18	12/31/19	$7,500	$170,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Potable	06162	CRYSTAL COVE RECTIFIER INSTALLATION-DW	6/1/18	6/30/19	$3,809	$138,800	100.0																		

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Recycled	06163	CRYSTAL COVE RECTIFIER INSTALLATION-RW	6/1/18	11/30/19	$5,437	$133,300										100.0									
Recycled	06164	CULVER ANODE BED AND RECTIFIER #5 REPLACEM	6/1/18	6/30/19	$6,257	$244,200										100.0									
Potable	06165	DRWF SURGE TANKS	1/1/16	6/30/18	$1,042,091	$1,250,500		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	06168	SAN JOAQUIN MARSH IMPROVEMENTS	9/1/15	8/31/17	$12,471	$2,032,900		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	06169	ZN 8-9 PIPELINE ANODE BED LEAD WIRE REPLACE	6/1/18	6/30/19	$6,648	$315,200	100.0																		
Potable	06170	WELL MAINTENANCE AND REHABILITATION 17/18	7/1/17	6/30/18	$450,000	$450,000	100.0																		
Sewer	06172	MECH-ELEC SYS REPLACEMENT 17/18-SS	7/1/17	6/30/18	$550,000	$550,000										100.0									
Potable	06173	MECH-ELEC SYS REPLACEMENT 17/18-DW	7/1/17	6/30/18	$950,000	$950,000	100.0																		
Recycled	06174	MECH-ELEC SYS REPLACEMENT 17/18-RW	7/1/17	6/30/18	$660,000	$660,000										100.0									
Sewer	06175	MWRP SYS REPLACEMENTS 17/18	7/1/17	6/30/18	$450,000	$450,000										100.0									
Recycled	06198	IIC EAST ZONE B BPS UPGRADES	1/1/16	10/31/18	$525,657	$734,600												54.2		23.1		22.7			
Potable	06205	GIS SUPPORT APPLICATIONS 17/18-DW	7/1/17	6/30/18	$100,000	$100,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	06206	GIS SUPPORT APPLICATIONS 17/18-RW	7/1/17	6/30/18	$100,000	$100,000											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Sewer	06207	GIS SUPPORT APPLICATIONS 17/18-SS	7/1/17	6/30/18	$100,000	$100,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Potable	06208	PA51 MARINE WAY: SR133 TO RIDGE VALLEY 12 ZO	3/1/15	12/31/17	$8,633	$82,500			20.9			79.1													
Recycled	06209	PA51 MARINE WAY: SR133 TO RIDGE VALLEY 6 ZO	3/1/15	7/31/17	$641	$53,900												87.4				12.6			
Potable	06210	ASSET OPTIMIZATION-SAND CANYON PROFESSION	2/1/16	7/31/19	$4,209,076	$17,624,300	100.0																		
Sewer	06211	GEN SYS MODS 17/18-SS	7/1/17	6/30/18	$330,000	$330,000										100.0									
Potable	06212	NTS INFILTRATION STUDY	6/1/18	6/30/19	$3,846	$64,900		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	06213	IDF SODIUM HYPOCHLORITE STORAGE AND FEED S	1/1/16	1/31/18	$634,165	$2,913,900		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	06214	PDF SODIUM HYPOCHLORITE STORAGE AND FEED	4/1/17	8/31/20	$200,495	$2,976,900		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	06216	NORTHWOOD ZONE B BPS DEMOLITION	5/1/17	3/31/20	$1,932	$539,000												54.2		23.1		22.7			
Potable	06217	1 TO 2 METER REPLACEMENT 17/18-DW	7/1/17	6/30/18	$348,400	$348,400	100.0																		
Recycled	06218	1 TO 2 METER REPLACEMENT 17/18-RW	7/1/17	6/30/18	$93,400	$93,400										100.0									
Potable	06219	CSR METER REPLACEMENT 17/18-DW	7/1/17	6/30/18	$228,850	$228,850	100.0																		
Recycled	06220	CSR METER REPLACEMENT 17/18-RW	7/1/17	6/30/18	$65,200	$65,200										100.0									
Potable	06221	GEN SYS MODS 17/18-DW	7/1/17	6/30/18	$190,300	$190,300		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	06222	GEN SYS MODS 17/18-RW	7/1/17	6/30/18	$102,300	$102,300											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Potable	06223	RESIDENTIAL METER REPLACEMENT 17/18-DW	7/1/17	6/30/18	$476,600	$476,600	100.0																		
Potable	06224	SERVICE LINE-VALVE-MAIN REPLACEMENT 17/18-D	7/1/17	6/30/18	$1,864,500	$1,864,500	100.0																		
Recycled	06225	SERVICE LINE-VALVE-MAIN REPLACEMENT 17/18-R	7/1/17	6/30/18	$396,000	$396,000										100.0									
Sewer	06226	SEWER LATERAL-MAIN REPLACEMENT 17/18	7/1/17	6/30/18	$288,200	$288,200										100.0									
Recycled	06244	RW CONVERSION IMPROVEMENTS FOR OFF-SITE 1	7/1/17	6/30/18	$775,500	$775,500										100.0									
Potable	06245	WATER SUPPLY RELIABILITY AGREEMENTS 16/18	7/1/16	6/30/18	$152,855	$440,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	06248	WATER RELIABILITY PLANNING 17/18	7/1/17	6/30/18	$137,500	$137,500		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	06304	PA51 BENCHMARK-BOSQUE TO 550-E/O BOSQUE 1	3/1/15	12/31/17	$2,783	$49,500			98.2			1.8													

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Recycled	06306	PA51 BENCHMARK-BOSQUE TO 550-E/O BOSQUE 6	3/1/15	12/31/17	$2,783	$49,500												99.6				0.4			
Sewer	06331	PA51 GP CULTIVATE (BOSQUE TO 500 E/O BOSQUE	3/1/15	12/31/17	$6,176	$220,000												100.0							
Sewer	06400	NEWPORT COAST SLS IMPROVEMENTS	6/1/15	7/31/18	$1,543,439	$2,059,200															100.0				
Potable	06401	ZONE 1 RESERVOIR NO. 2	4/1/16	8/31/19	$2,938,567	$12,626,300		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	06476	PA51 MARINE WAY. RIDGE VALLEY TO 3000 FT EAS	6/1/15	12/31/17	$22,163	$426,800																100.0			
Sewer	06479	400/450 SPECTRUM CENTER DR 36 SS RELOCATION	6/1/15	7/31/17	$5,613	$596,200											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Potable	06512	PA51 GP-1 ST (MARINE TO GP-2 ST) 12 DW	6/1/15	8/31/17	$9,697	$355,300			20.9			79.1													
Sewer	06513	PA51 GP-1 ST (MARINE TO GP-2 ST) 12 SS	6/1/15	8/31/17	$25,565	$938,300												100.0							
Recycled	06514	PA51 GP GP-1 ST (MARINE TO GP-2 ST) 10 RW	6/1/15	12/31/17	$14,325	$536,800												87.4				12.6			
Potable	06534	PA51 GP PUSAN (EPISODE TO IRVINE BLVD) 12 DW	6/1/15	12/31/17	$922	$44,000			98.2			1.8													
Recycled	06535	PA51 GP PUSAN (EPISODE TO IRVINE BLVD) 12 RW	6/1/15	8/31/17	$2,398	$106,700												99.6				0.4			
Potable	06536	PA51 GP-2 ST (BOSQUE TO GP1 ST) 12 DW	6/1/15	8/31/17	$12,342	$531,300			20.9			79.1													
Sewer	06537	PA51 GP-2 ST (BOSQUE TO GP1 ST) 12 SS	6/1/15	8/31/17	$7,493	$333,300												100.0							
Recycled	06538	PA51 GP-2 ST (BOSQUE TO GP1 ST) 10 RW	6/1/15	8/31/17	$30,854	$1,169,400												87.4				12.6			
Potable	06552	PA51 GP BENCHMARK AND PERSPECTIVE 12 DW Z4	7/1/15	12/31/17	$3,320	$147,400			98.2			1.8													
Sewer	06553	PA51 GP BENCHMARK AND PERSPECTIVE 16 SS	7/1/15	8/31/17	$5,534	$244,200												100.0							
Recycled	06554	PA51 GP BENCHMARK AND PERSPECTIVE 6 RW ZC	7/1/15	8/31/17	$2,951	$129,800												99.6				0.4			
Recycled	06595	PA51 GP TERRAPIN (TRABUCO TO CADENCE) 6 RW	7/1/15	12/31/17	$3,333	$180,400												87.4				12.6			
Potable	06683	PA51 GP BENCHMARK AND MODJEKSA (DISTRICT 4	8/1/15	8/31/17	$4,187	$150,700			98.2			1.8													
Recycled	06684	PA51 GP BENCHMARK AND MODJESKA (DISTRICT 4	8/1/15	8/31/17	$26,446	$971,300												99.6				0.4			
Recycled	06732	PA51 GP MAGNET (FROM RIDGE V. TO BOSQUE) 6	9/1/15	8/31/17	$3,939	$206,800												87.4				12.6			
Potable	06765	TUSTIN LEGACY MOFFETT DR (AT PETERS CYN) 12	10/1/15	7/31/18	$210,205	$287,000				100.0															
Recycled	06766	TUSTIN LEGACY MOFFETT DR (AT PETERS CYN) 16 R	10/1/15	7/31/18	$279,685	$375,000													100.0						
Recycled	06823	PA51 GP EPISODE (FROM FRAME TO PUSAN) 16 R	11/1/15	8/31/17	$10,390	$323,400												99.6				0.4			
Recycled	06915	PA6 NHB5A 6 AND 8 RECYCLED WATER MAIN ZON	12/1/15	7/31/17	$4,956	$402,600																100.0			
Sewer	07009	FPS2 PIPELINE MANIFOLD REPLACEMENT	9/1/16	6/30/18	$638,436	$844,800										100.0									
Potable	07012	PA1 NHB3 ORCHARD HILLS 16 DW Z5	2/1/16	10/31/17	$65,983	$689,700						100.0													
Recycled	07013	PA1 NHB3 ORCHARD HILLS 6 8 10 12 RW ZC	2/1/16	10/31/17	$47,098	$475,200																100.0			
Recycled	07017	PA1 NHB3 ORCHARD HILLS 6 8 RW ZC+	2/1/16	10/31/17	$24,520	$250,800																100.0			
Recycled	07022	PA51 GP-2 ST (FROM GP-3 TO BOSQUE) 12 RWZC	2/1/16	8/31/17	$5,111	$180,400												99.6				0.4			
Sewer	07071	OCSD SOLIDS HANDLING 17/18	8/1/17	4/30/18	$1,391,000	$1,391,000										45.5	18.9	1.5	1.5	27.7		4.1	0.1	0.6	0.1
Potable	07082	POTABLE REUSE ALTERNATIVES ANALYSIS DW	7/1/16	6/30/19	$83,334	$250,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	07083	POTABLE REUSE ALTERNATIVES ANALYSIS SS	7/1/16	6/30/19	$83,334	$250,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Potable	07084	REPLACEMENT PLANNING DW	4/1/18	12/31/19	$62,954	$440,000	100.0																		
Recycled	07085	REPLACEMENT PLANNING RW	4/1/18	12/31/19	$62,954	$440,000										100.0									
Recycled	07086	CALIFORNIA AVE RW PIPELINE-ACADEMY TO THEO	12/1/16	6/30/18	$689,978	$732,000										100.0									

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Potable	07087	DRWF WELL 10 REHAB	5/1/17	2/28/18	$691,667	$770,000	100.0																		
Potable	07088	DRWF WELL 11 REHAB	6/1/18	6/30/19	$37,436	$770,000	100.0																		
Potable	07090	DRWF WELL 17 REHAB	7/1/17	11/30/18	$768,636	$770,000	100.0																		
Potable	07091	DRWF WELL 16 REHAB	6/1/18	6/30/19	$37,436	$770,000	100.0																		
Potable	07093	DRWF WELL 7 REHAB	9/1/16	7/31/17	$20,760	$770,000	100.0																		
Potable	07095	MEMBRANE PLANTS NEW ANTISCALANT PILOT TES	7/1/16	12/31/17	$44,211	$299,300		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	07096	METER AND VAULT FOR OSO RESERVOIR	7/1/17	12/31/19	$46,667	$375,100											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Sewer	07097	MICHELSON DI SFM RELINING	12/1/16	12/31/18	$613,803	$1,367,300										100.0									
Sewer	07098	REBUILD SMH ON MAIN ST E/O MACARTHUR	1/1/17	12/31/18	$107,539	$178,200										100.0									
Recycled	07099	SEAWATCH RW MAIN REPLACEMENT (S/O PACIFIC	12/1/16	12/31/18	$507,639	$720,500										100.0									
Sewer	07100	SEWER LINE REPAIRS	9/1/16	6/30/18	$295,296	$322,000										100.0									
Recycled	07101	UCI CT RW CONV ACADEMY WAY	7/1/16	1/31/18	$796,769	$951,500										100.0									
Recycled	07102	UCI CT RW CONV CALIFORNIA-UNIV TO ACADEMY	7/1/16	1/31/18	$278,358	$346,500										83.0	17.0								
Recycled	07103	UCI CT RW CONVERSION ONSITE PIPELINES	9/1/16	6/30/18	$517,631	$1,050,000										100.0									
Sewer	07112	VACTOR ACCESS TO SMH ON SO IRVINE INTERCEPT	9/1/16	12/31/18	$190,846	$347,600										100.0									
Potable	07117	OPS CENTER ROOF REPLACEMENT-DW	7/1/16	7/31/17	$4,403	$166,000	100.0																		
Sewer	07118	OPS CENTER ROOF REPLACEMENT-SS	7/1/16	7/31/17	$4,758	$166,000										100.0									
Recycled	07119	OPS CENTER ROOF REPLACEMENT-RW	7/1/16	7/31/17	$1,119	$166,000										100.0									
Potable	07127	RAISE SYSTEM VALVES 17/18 UNDER RA-DW	7/1/17	6/30/18	$577,500	$577,500	100.0																		
Sewer	07129	RAISE MANHOLES TO GRADE 17/18 UNDER RA	7/1/17	6/30/18	$346,500	$346,500										100.0									
Recycled	07131	RAISE SYSTEM VALVES 17/18 UNDER RA-RW	7/1/17	6/30/18	$138,600	$138,600										100.0									
Potable	07133	SERRANO SUMMIT IMPROVEMENTS-DW	7/1/16	7/31/19	$605,837	$1,472,000								100.0											
Recycled	07134	SERRANO SUMMIT IMPROVEMENTS-RW	6/1/16	7/31/19	$609,489	$1,465,000																		100.0	
Sewer	07135	SERRANO SUMMIT IMPROVEMENTS-SS	6/1/16	7/31/19	$129,574	$325,600																		100.0	
Recycled	07137	OPA ZONE C+ PIPELINES	10/1/14	12/31/18	$1,174,526	$1,550,900											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Potable	07140	TUSTIN LEGACY RED HILL WELL DRILLING AND EQU	6/1/18	12/31/20	$36,754	$4,559,800		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	07141	WATER RECYCLING TRT PLANT MSTR PLAN UPDATE	4/1/16	1/31/19	$160,341	$454,300											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Potable	07153	WATER AND ENERGY PLANNING STUDIES DW 17/1	7/1/17	6/30/18	$126,500	$126,500		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	07156	NTS INSTRUMENTATION	7/1/16	6/30/18	$45,000	$330,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	07163	TUSTIN LEGACY BELL AVE (REDHILL TO ARMSTRON	3/1/16	12/31/17	$4,278	$162,800													100.0						
Recycled	07169	PA51 GP DIST 7 Z ST AND A ST RW ZC	3/1/16	8/31/17	$13,223	$492,800												100.0							
Potable	07170	UNIVERSITY DR WIDENING APPURTENANCE RELOC	4/1/16	12/31/18	$91,182	$148,000	75.0	25.0																	
Sewer	07171	UNIVERSITY DR WIDENING APPURTENANCE RELOC	4/1/16	12/31/18	$91,182	$148,000										50.0	50.0								
Recycled	07172	UNIVERSITY DR WIDENING APPURTENANCE RELOC	4/1/16	12/31/18	$91,182	$148,000										25.0	75.0								
Potable	07376	SHII PH1 D ST (FROM SANTIAGO TO B ST) 12 DW	6/1/16	7/31/22	$4,367	$162,800						100.0													
Recycled	07377	SHII PH1 D ST (FROM SANTIAGO TO B ST) 6 RW	6/1/16	7/31/22	$4,367	$162,800																100.0			

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Potable	07378	SHII PH2 B/F ST (FROM C ST TO Z5 RES) 12 DW	6/1/16	7/31/22	$4,367	$162,800						100.0													
Sewer	07379	SHII PH2 A ST (FROM SANTIAGO TO B ST) 12 SS	6/1/16	7/31/22	$4,367	$162,800																100.0			
Recycled	07380	SHII PH2 A/B/F ST (TR 17995) 6 AND 8 RW	6/1/16	7/31/22	$4,367	$162,800																100.0			
Potable	07433	PA51 GP IRVINE BLVD @ DIST 5-A ST-12 DW	6/1/16	12/31/17	$6,010	$54,000			100.0																
Recycled	07434	PA51 GP IRVINE BLVD @ DIST 5-A ST-12 RW	6/1/16	12/31/17	$6,010	$54,000												100.0							
Potable	07444	ENERGY STORAGE SYSTEMS	7/1/16	1/31/19	$112,818	$222,200		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	07451	SHII SANTIAGO CYN (FROM D ST TO A ST) 12 DW	7/1/16	7/31/22	$22,430	$1,126,900						100.0													
Sewer	07452	SHII CANYON VIEW (AT JAMBOREE RD) 15 SS	7/1/16	7/31/22	$7,054	$259,600																100.0			
Recycled	07453	SHII SANTIAGO CYN AND JAMBOREE 6 8 12 16 RW	7/1/16	7/31/22	$43,824	$2,228,300																100.0			
Sewer	07484	SHII SOUTH TR 16199 15 AND 12 SS	7/1/16	7/31/22	$4,531	$162,800																100.0			
Recycled	07486	SHII SOUTH TR 16199 12 8 AND 6 RW	7/1/16	7/31/22	$4,531	$162,800																100.0			
Potable	07513	LAKE FOREST ENCANTO COMMERCENTRE DOMEST	6/1/16	7/31/17	$5,404	$255,200								100.0											
Recycled	07535	TUSTIN LEGACY FLIGHT DR 6 RW	8/1/16	12/31/17	$45,906	$270,000													100.0						
Recycled	07555	PA1 NHB3 ORCHARD HILLS F ST (RIDGE GATE TO E	8/1/16	7/31/18	$110,950	$162,800																100.0			
Potable	07589	IDP WELL 107 REHAB	9/1/16	7/31/17	$10,449	$770,000	100.0																		
Potable	07682	PILOT SOUTH BASIN GROUNDWATER CLEANUP	6/1/18	12/31/18	$2,857	$1,127,500		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	07748	SGU DIVERSION TO SEWER	7/1/17	7/31/19	$137,789	$398,200											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Sewer	07749	MWRP INFLUENT FLOW METERS	6/1/18	12/31/18	$9,286	$233,200										100.0									
Potable	07750	ROCKFIELD FLOW CONTROL FACILITY	7/1/17	6/30/18	$187,100	$187,100	100.0																		
Recycled	07806	NON-POTABLE WATER STUDIES 17/18	7/1/17	6/30/18	$60,000	$60,000											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Potable	07809	PA51 SAMP UPDATE-FUTURE AREAS-DW	7/1/17	12/31/18	$40,000	$60,000			100.0																
Sewer	07810	PA51 SAMP UPDATE-FUTURE AREAS-SS	7/1/17	12/31/18	$40,000	$60,000												100.0							
Potable	07824	MICHELSON CAMPUS SECURITY-DW	1/1/17	1/31/18	$73,103	$99,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	07825	MICHELSON CAMPUS SECURITY-SS	1/1/17	1/31/18	$73,103	$99,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Recycled	07826	MICHELSON CAMPUS SECURITY-RW	1/1/17	1/31/18	$73,103	$99,000											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Potable	07881	CNG FILLING STATION-DW	7/1/17	12/31/19	$90,000	$748,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	07882	CNG FILLING STATION-SS	7/1/17	12/31/19	$90,000	$748,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Recycled	07883	CNG FILLING STATION-RW	7/1/17	12/31/19	$90,000	$748,000											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Sewer	07884	DERIAN SEWER UPSIZING	6/1/18	6/30/19	$19,154	$715,000										100.0									
Sewer	07885	SEWER SYSTEM CALCIUM REMOVAL	6/1/18	6/30/19	$18,954	$440,000										100.0									
Sewer	07886	SEWER SIPHON REHABILITATION	6/1/18	6/30/19	$19,877	$440,000										100.0									
Potable	07887	IRVINE LAKE SERVICE IMPROVEMENT	6/1/18	6/30/19	$13,323	$228,800		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	07888	TURTLE RIDGE PIPE REHAB-DW	7/1/17	3/31/18	$309,000	$309,000	100.0																		
Recycled	07889	TURTLE RIDGE PIPE REHAB-RW	7/1/17	3/31/18	$309,000	$309,000										100.0									
Sewer	07890	MWRP HEADWORKS PLATFORMS	7/1/17	12/31/18	$108,399	$175,000											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Sewer	07891	MWRP HEADWORKS SCREENING AREA DIVERTER C	6/1/18	6/30/19	$4,192	$180,500											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Sewer	07892	MWRP FILTER VALVES AND GATE REPLACEMENT	6/1/18	6/30/19	$7,092	$461,000										100.0									
Potable	07893	DATS AND IDP INSTRUMENTATION MODS-DW	6/1/18	6/30/19	$5,869	$112,300		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	07894	DATS AND IDP INSTRUMENTATION MODS-RW	6/1/18	6/30/19	$5,869	$112,300											14.6	10.7	4.1	51.0	7.7	10.4		1.5	
Potable	07895	NTS MASTER PLAN UPDATE	1/1/18	6/30/19	$33,333	$100,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	07896	MARSH O&M PLAN UPDATE	1/1/18	6/30/19	$99,000	$297,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	07897	SOUTH SAN DIEGO CREEK RUNOFF DIVERSION STU	1/1/18	6/30/20	$20,000	$100,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Potable	07898	PLC REPLACEMENT-DW	7/1/17	12/31/20	$106,667	$440,000	100.0																		
Recycled	07899	PLC REPLACEMENT-RW	7/1/17	12/31/20	$106,667	$440,000										100.0									
Sewer	07900	MWRP DUMP STATION IMPROVEMENTS	7/1/17	12/31/18	$150,000	$291,500											33.1	3.4	3.4	48.5		9.7	0.3	1.3	0.3
Potable	10022	PA51 GP NEIGHBORHOODS D5 - CHINON FROM SO	2/1/17	12/31/17	$84,063	$163,000			98.2			1.8													
Sewer	10023	PA51 GP NEIGHBORHOODS D5 CHINON FROM S. C	2/1/17	12/31/17	$84,063	$163,000												100.0							
Recycled	10024	PA51 GP NEIGHBORHOODS D5 16 RW, 12 RW and	2/1/17	12/31/17	$84,063	$163,000												99.6				0.4			
Potable	10047	OPERATIONS CENTER ASPHALT REPLACEMENT - D	7/1/17	9/30/18	$160,000	$200,000	100.0																		
Recycled	10049	OPERATIONS CENTER ASPHALT REPLACEMENT - R	7/1/17	9/30/18	$160,000	$200,000										100.0									
Sewer	10051	OPERATIONS CENTER ASPHALT REPLACEMENT - SS	7/1/17	9/30/18	$80,000	$100,000										100.0									
Potable	10052	INDUSTRIAL COATINGS REPLACEMENT - DW	7/1/17	9/30/18	$160,000	$200,000	100.0																		
Recycled	10053	INDUSTRIAL COATINGS REPLACEMENT - RW	7/1/17	9/30/18	$160,000	$200,000										100.0									
Sewer	10054	INDUSTRIAL COATINGS REPLACEMENT - SS	7/1/17	9/30/18	$80,000	$100,000										100.0									
Potable	10061	SCE-IRWD WATER-ENERGY PILOT PHASE 2	7/1/17	6/30/19	$189,750	$379,500		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Recycled	10063	SALT MANAGEMENT MODELING ON RECYCLED WA	7/1/17	6/30/18	$108,100	$108,100											14.6	10.7	4.1	51.1	7.7	10.3		1.5	
Potable	10065	RELIABILITY EVALUATION PHASE 2 ANALYSIS	7/1/17	6/30/18	$66,000	$66,000		32.6	3.3	3.0	47.5	11.1	0.4	1.6	0.5										
Sewer	10068	PA51 GP REACH A SS PHASE 2	2/1/17	12/31/17	$389,003	$652,000												67.0				33.0			0
Recycled	10071	SERRANO SUMMIT PHASE 2 RW	4/1/17	12/31/19	$88,284	$507,000																		100.0	
Recycled	10093	MWRP RW DISCHARGE TO SAN DIEGO CREEK	7/1/17	12/31/19	$361,000	$1,905,000											33.1	3.4	3.4	48.6		9.6	0.3	1.3	0.3
Potable	10094	PASEO SOMBRA DW UPSIZE AND INTERCONNECTI	6/1/18	12/31/19	$13,263	$582,000					100.0														
Sewer	10095	LAKE FOREST AUTUMNWOOD/ELDERWOOD SEWE	6/1/18	12/31/19	$13,789	$712,000					100.0														
Potable	10096	LAKE FOREST NAKASE DW IMPROVEMENTS	6/1/18	7/31/20	$5,077	$437,000					100.0														
Potable	10097	DRWF WELL 2 REHAB	8/1/17	5/31/18	$770,000	$770,000	100.0																		
Potable	10101	SANTIAGO CANYON FLEMING STORAGE	6/1/18	12/31/22	$87,816	$11,207,500		100.0																	
Potable	10102	SANTIAGO CANYON POTABLE PIPELINE REPLACEM	6/1/18	12/31/22	$52,574	$6,726,000	100.0																		
Potable	10109	GP_Dept 250_FY 17_18	7/1/17	6/30/18	$624,800	$624,800	32.9	4.5	0.5	0.4	6.5	1.5	0.1	0.2	0.1	40.8	4.0	0.5	0.4	6.1	0.1	1.2		0.2	
Potable	10110	GP_Dept 500s_FY 17_18	7/1/17	6/30/18	$135,000	$135,000	32.9	4.5	0.5	0.4	6.5	1.5	0.1	0.2	0.1	40.8	4.0	0.5	0.4	6.1	0.1	1.2		0.2	
Potable	10111	GP_Dept 600_FY 17_18	7/1/17	6/30/18	$331,000	$331,000	32.9	4.5	0.5	0.4	6.5	1.5	0.1	0.2	0.1	40.8	4.0	0.5	0.4	6.1	0.1	1.2		0.2	
Potable	10112	GP_Dept 740_FY 17_18	7/1/17	6/30/18	$44,060	$44,060	32.9	4.5	0.5	0.4	6.5	1.5	0.1	0.2	0.1	40.8	4.0	0.5	0.4	6.1	0.1	1.2		0.2	
Potable	10113	GP_Dept 800s_FY 17_18	7/1/17	6/30/18	$1,377,100	$1,377,100	32.9	4.5	0.5	0.4	6.5	1.5	0.1	0.2	0.1	40.8	4.0	0.5	0.4	6.1	0.1	1.2		0.2	
Potable	10115	2ND ST DW PUMP STATION DEMOLITION	8/1/17	12/31/18	$35,000	$85,000	100.0																		

System	Project	Project Title	Start	End	FY17-18 Direct	Total Direct	1100	1110	1120	1130	1250	1530	1540	1850	1880	2100	2220	2120	2130	2250	2400	2530	256	2850	2880
Sewer	10117	PA51 GP NEIGHBORHOODS D5 CADENCE S FROM	4/1/17	5/31/20	$33,690	$249,000												100.0							
				Totals	**98,051,721**	**710,750,210**																			

Irvine Ranch Water District
Fiscal Year 2017-18 Capital Budget
Section 2 - Flagged Projects

Project Number	Project Title	Flagged Project	Project Status
01100	LAKE FOREST WELL 1 DRILLING	Yes	Board Approved
01117	LAKE FOREST WELL 1 WELLHEAD	Yes	Board Approved
01402	WELLS 51/52/53 TREATMENT ALTERNATIVES STUDY	Yes	Board Approved
07140	TUSTIN LEGACY RED HILL WELL DRILLING AND EQUIPPING	Yes	Board Approved
03808	SYPHON RESERVOIR EXPANSION	Yes	Active

Irvine Ranch Water District
Fiscal Year 2017-18 Capital Budget
Section 3 - Projected FY 2017-18 Expenditures by Fiscal Year Expenditure Groups

FY Exp Category	Total Direct	FY17-18 Direct	FY Replacement	FY Developed	FY Developing
ILP Conversion Projects	$25,373,600	$16,185,669	$201,026	$5,393,597	$10,591,046
Solids Handling	$216,073,100	$15,412,800	$7,012,824	$7,182,365	$1,217,611
OCSD - CORF - Solids Lease	$58,718,000	$9,671,444	$4,819,698	$3,989,962	$861,785
Operational	$41,406,600	$9,646,161	$782,642	$7,332,723	$1,530,796
Replacement - Facilities	$43,842,100	$9,408,270	$8,436,837	$805,335	$166,097
Replacement - FY System	$7,572,350	$7,572,350	$7,572,350	$0	$0
Property Management	$25,376,800	$4,324,454	$4,324,454	$0	$0
Development - Sub Regional	$15,339,800	$4,243,187	$224,661	$126,453	$3,892,072
Water Resources	$12,194,600	$3,203,717	$3,010,915	$163,851	$28,951
Well Rehabilitation	$5,840,000	$2,786,384	$2,786,384	$0	$0
Water Banking	$24,381,400	$2,736,998	$0	$2,192,335	$544,663
General Plant	$2,511,960	$2,511,960	$1,851,315	$532,536	$128,110
Development - PA51	$34,803,400	$2,503,158	$0	$0	$2,503,158
Planning	$3,771,100	$2,109,258	$125,908	$1,495,961	$487,390
Development - Lake Forest	$6,168,500	$1,473,876	$0	$32,130	$1,441,747
Development - PA1	$2,415,600	$779,963	$0	$0	$779,963
Development - Tustin Legacy	$3,951,800	$651,113	$0	$0	$651,113
OCWD Annexation	$589,300	$589,300	$0	$472,029	$117,271
Replacement-Business Software	$5,364,200	$555,563	$0	$449,172	$106,390
Sewage Treatment	$1,375,600	$485,506	$0	$382,865	$102,641
Nonpotable Storage	$60,169,200	$417,364	$0	$305,928	$111,436
Baker WTP	$100,852,000	$224,186	$0	$179,573	$44,613
Development - PA39	$226,600	$174,315	$0	$0	$174,315
Development - PA9B	$506,100	$104,752	$0	$0	$104,752
Development - SHII	$4,754,400	$104,206	$0	$0	$104,206
Development - PA40	$447,700	$69,396	$0	$0	$69,396
Development - PA6	$1,628,000	$50,743	$0	$0	$50,743
Development - PA18	$2,839,600	$31,093	$0	$14,043	$17,049
Development - PA5B	$2,256,800	$24,536	$0	$11,734	$12,802
		$98,051,721			

May 16, 2017
Prepared by: J. Dayer
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Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

OPERATIONS CENTER AIR HANDLING DUCT REPLACEMENT PROJECT

SUMMARY:

The air handler units at the Michelson Operations Center distribute conditioned air to this building through a network of insulated roof-mounted ductwork. The existing duct work, which is original to the building, shows normal wear expected of galvanized metal ducting exposed to the elements over thirty years and now requires replacement. Staff recommends that the Board authorize the General Manager to execute a contract with Triton Air in the amount of $107,718.25 for replacement of the Operations Center air handling ducts.

BACKGROUND:

IRWD's Michelson Operations Center was built in 1994 and provides office and shop workspace for multiple departments. The indoor air quality of these spaces is maintained by four air handler units that filter, regulate, and circulate air as part of the heating, ventilating, and air-conditioning system. While the air handler units remain in good operating condition, the air handling ductwork is showing wear due to environmental exposure; this ducting now requires replacement. This project will be implemented in two phases: Phase I is the replacement of ducting for the four air handlers and Phase II will be the replacement of the existing roof coating with a single component elastomeric top coat; both phases are funded through a capital project titled Operations Center Roof Replacement.

Staff issued a request for proposal to a select list of four qualified contractors in April 2017 for Phase I – the replacement of the ducting on the roof. Three contractors attended a job walk held on April 20, 2017. The bid opening was held on May 4, 2017. Only two contractors submitted bids: Ram Air, Inc. in the amount of $219,962.50 and Triton Air in the amount of $107,718.25. The third contractor, Orange County Air Conditioning, declined to bid citing its current workload and project timing. The bid summary is as follows:

Supplier	Bid Amount
Triton Air	$107,718.25
Ram Air Engineering	$219,962.50
Orange County Air Conditioning	No Bid

FISCAL IMPACTS:

Projects 07117, 07118, and 07119 are included in the 2016-17 Capital Budget; sufficient funds are budgeted to complete the Operations Center Air Handling Duct Replacement Project, which is Phase I of the Operations Center Roof Replacement Project.

ENVIRONMENTAL COMPLIANCE:

This activity does not constitute a project as defined by the California Environmental Quality Act pursuant to section 15378 of the California Code of Regulations, Title 14, Division 6, Chapter 3.

RECOMMENDATION:

That the Board authorize the General Manager to execute a construction contract with Triton Air in the amount of $107,718.25 for the Operations Center Air Handling Duct Replacement Project.

LIST OF EXHIBITS:

None.