AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE
TUESDAY, NOVEMBER 17, 2015

CALL TO ORDER 7:00 a.m., Operations Center, First Floor Committee Room
3512 Michelson, Irvine, California

ATTENDANCE Committee Chair: Douglas Reinhart _____
Committee Member: John Withers _____

ALSO PRESENT

Paul Cook	_____	Cheryl Clary	_____	Harry Cho	_____
Kevin Burton	_____	Patrick Sheilds	_____	Ian Swift	_____
Mark Tettemer	_____	Rich Mori	_____	Scott Toland	_____
Eric Akiyoshi	_____	Randy Lee	_____	Tom Roberts	_____
Paul Weghorst	_____	Mike Hoolihan	_____	Bruce Newell	_____
Kellie Welch	_____	Ken Drake	_____	Lars Oldewage	_____
Kellie Lew	_____	Ken Pfister	_____	Beth Beeman	_____
Steve Malloy	_____	Tom Roberts	_____	_____	_____
Arseny Kalinsky	_____	Malcolm Cortez	_____	_____	_____

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/MORI/BURTON

   Recommendation: Receive and file.

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

   Recommendation: Receive and file.

7. BIOSOLIDS AND ENERGY RECOVERY FACILITIES OPERATIONAL UPDATE – LEE/DRAKE/SHEILDS

   Recommendation: Receive and file.

8. IRWD RESERVOIR MANAGEMENT PLAN FOR 2015-16 – PFISTER/ ROBERTS/SHEILDS

   Recommendation: Receive and file.

INFORMATION - Continued

9. ENERGY STORAGE OPPORTUNITY – SHEILDS

   Recommendation: Receive and file.

10. OPERATIONS ENTERPRISE ASSET MANAGEMENT PRE-IMPLEMENTATION UPDATE – DRAKE/SHEILDS

    Recommendation: Receive and file.

ACTION

11. ENTERPRISE ASSET MANAGEMENT SYSTEM PROJECT SUPPORT VARIANCE – DRAKE/SHEILDS

    Recommendation: That the Board authorize the General Manager to execute Variance No. 1 to the Professional Services Agreement with GHD in the amount of $310,200 for project management support services for the Enterprise Asset Management System Project.

12. AUTOMATION SUPPORT CONSULTANT SERVICES – NASH/MORI/ BURTON

    Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $200,000 with Vertech for automation support services.

13. DYER ROAD WELL FIELD SURGE TANKS CONSULTANT SELECTION - CHO/CORTEZ/BURTON

    Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with Tetra Tech in the amount of $290,000 for the Dyer Road Well Field Surge Tanks, Project 11754 (5473).

14. LAGUNA CANYON ROAD AND TECHNOLOGY DRIVE CAPITAL RECYCLED WATER FACILITIES – KESSLER/LEW/BURTON

    Recommendation: That the Board authorize the General Manager to accept Irvine Community Development Company's construction contract with Sukut in the amount of $2,344,000 for the Laguna Canyon Road and Technology Drive Capital Recycled Water Facilities, Project 30366.

ACTION – Continued

15. 400 AND 450 SPECTRUM CENTER DRIVE CAPITAL SEWER RELOCATION – LEW/BURTON

Recommendation: That the Board authorize the addition of Project 21304 (6479) to the FY 2015-16 Capital Budget in the amount of $596,200; authorize the General Manager to execute a Supplemental Reimbursement Agreement with Irvine Community Development Company; and authorize the General Manager to accept Irvine Community Development Company's construction contract with KEC Engineering in the amount of $1,490,825 for the 400 and 450 Spectrum Center Drive Sewer Relocation, Project 21304 (6479).

16. THREE-YEAR DAM MONITORING AND SURVEILLANCE CONSULTANT SELECTION – SMYTH/CORTEZ/BURTON

Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with Genterra Consultant, Inc. in the amount of $144,990 for three years of dam monitoring and surveillance services.

OTHER BUSINESS

17. 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.

November 17, 2015
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
Culver Drive Sewer Manhole Rehabilitation				Summer 2016
IBC Appurtenance Relocation		Fall 2015	Summer 2016	Winter 2016
Newport Coast SLS and SFM Improvements			Spring 2016	
DW Well Rehabilitation No. 3			Fall 2015	Summer 2016
Syphon Reservoir Slide Gate Replacement			Fall 2015	Fall 2015
Dyer Road Wellfield Surge Tanks		Fall 2015	Summer 2016	
Seawatch RW Pipeline Replacement		Fall 2015	Spring 2016	
RW Pipeline for UCI Cooling Tower		Fall 2015	Winter 2016	
MBR Blower Room Valve Actuator Access Platforms			Fall 2015	
Rancho Parkway Zone C RW Pipeline		Summer 2015	Winter 2016	Spring 2016
Chloramine Boosters at Foothill Zone 6 and Portola Zone 9			Winter 2016	Fall 2016
SJM Modifications			Winter 2016	Fall 2016
FPS2 and Wells 12, 13 Roof Modifications			Winter 2016	Fall 2016
Woodhollow Sewer Repair			Winter 2016	Fall 2016
Main Street Diversion Structure Rehabilitation	Fall 2015	Winter 2016	Summer 2016	Winter 2017
Reservoir Piezometer Automation				Winter 2016
East Irvine Zone 1-3 BPS Meter Replacement			Fall 2015	Spring 2016
Santiago Dam Seismic Analysis	In-Process			
Membrane Data Normalization and Process Control Dashboards		Fall 2015		
MWRP Miscellaneous Repair and Rehabilitation		Winter 2016	Summer 2016	Spring 2017
PA 1, Orchard Hills Neighborhood 1 RW (RA w/ICDC)			Fall 2015	Winter 2017
PA 6, Neighborhood 3, Phase 1 RW (RA w/ICDC)				Winter 2016
PA 6, Neighborhood 4B RW (RA w/ICDC)				Summer 2016
PA 6, Bridge and Trail RW (RA w/ICDC)				Spring 2016
Technology Drive Extension Zone B RW (RA w/ICDC)				Summer 2017
Warner, Legacy Rd to Tustin Ranch Rd, Capital DW and RW Improvements (RA w/Tustin)				Fall 2015
Warner and Armstrong DW, RW (RA w/Tustin)				Fall 2015
Tustin Legacy, Park Ave and Moffett DW, S, RW (RA w/Tustin)				Winter 2017
Tustin Legacy, Moffett at Peters Canyon Channel DW, RW (RA w/Tustin)			Summer 2016	Fall 2017
PA 18 South, Hidden Canyon DW RW (RA w/Toll Brothers)				Fall 2015
PA 51, Marine Way DW, RW (RA w/Heritage Fields)				Summer 2016
PA 51, Ridge Valley, Marine to Trabuco, DW, S (RA w/Heritage Fields)				Winter 2016
PA 51, Ridge Valley, Trabuco to Irvine Blvd, DW, S, RW (RA w/Heritage Fields)				Winter 2016
PA 51, C St from Trabuco Rd to LQ St, S (RA w/Heritage Fields)				Winter 2016
PA 51, LQ St from Ridge Valley to LY St, S, RW (RA w/Heritage Fields)				Winter 2016
PA 51, LN St from C St to LY St, DW, RW (RA w/Heritage Fields)				Winter 2016
PA 51, South C St and LY St, S, RW (RA w/Heritage Fields)				Winter 2016
PA 51, LY St from LQ St to Irvine Blvd, DW S, RW (RA w/Heriage Fields)				Winter 2016
PA 51, Alton Pkwy from Technology to Muirlands, DW S, RW (RA w/Heritage Fields)				Summer 2016
PA 51, Marine Way from Barranca Pkwy to Alton Pkwy, DW S, RW (RA w/Heritage Fields)				Summer 2016
PA 51, Cadence from Bosque to Z Street, S, RW (RA w/Heritage Fields)				Summer 2016
PA 51, Alton Interceptor Sewer (RA w/Heritage Fields)				Summer 2016
PA 51, Marine Way from Alton to Barranca Sewer (RA w/Heritage Fields)				Fall 2016
PA 51, Sociable from Z St to B St, RW (RA w/Heritage Fields)				Fall 2016
PA 51, B St from Sociable to Irvine Blvd, DW, RW (RA w/Heritage Fields)				Fall 2016
PA 51, Irvine Blvd from Lambert Rd to Z St, DW, S, RW (RA w/Heritage Fields)			Fall 2015	Winter 2017
PA 51, Terrapin from Trabuco Rd to Cadence RW (RA w/Heritage Fields)			Fall 2015	Winter 2017

IRWD UPCOMING PROJECTS STATUS REPORT

Project Name	Start Planning	Start Design	Construction Award	Construction Final Acceptance
PA 51, Benchmark and Prospective, DW, S, RW (RA w/Heritage Fields)			Fall 2015	Winter 2017
PA 51, GP1 St DW, S, RW (RA w/Heritage Fields)			Winter 2016	Spring 2017
PA 51, GP2 St, DW, S, RW (RA w/Heritage Fields)			Winter 2016	Spring 2017
PA 51, Pusan from Episode to Irvine Blvd DW, RW (RA w/Heritage Fields)			Fall 2015	Winter 2017
PA 51, Benchmark DW, RW (RA w/Heritage Fields)				Winter 2017
PA 51, Cultivate Sewer (RA w/Heritage Fields)				Winter 2017
PA 51, Marine Way from SR133 to Ridge Valley, DW, RW (RA w/Heritage Fields)				Winter 2017
PA 51, Benchmark and Modjeska DW, RW (RA w/Heritage Fields)			Spring 2016	Spring 2017
PA 51, Magnet from Ridge Valley to Bosque RW (RA w/Heritage Fields)			Spring 2016	Spring 2017
PA 51, Irvine Boulevard at Merit RW (RA w/Heritage Fields)			Spring 2016	Spring 2017
PA 40, 8th St RW (RA w/ICDC)			Fall 2015	Winter 2017
Spectrum Center Drive 36" Sewer Relocation (RA w/ICDC)				Winter 2017
MWRP Biosolids and Energy Recovery Facilities				Spring 2017
Baker Water Treatment Plant				Summer 2016
Baker Raw Water Conveyance Facilities				Spring 2016
Peters Canyon Channel Water Capture and Reuse Pipeline				Summer 2016
Stockdale West Integrated Water Banking Project			Winter 2016	Spring 2017
Zone 1 Reservoir No. 2		Winter 2016		
Multi-Zone Regional Pump Station: Zone A-B BPS and Zone A-C BPS		Winter 2016		
ILP North Conversion - Pipelines			Summer 2016	Fall 2017
ILP North Conversion - Reservoir			Spring 2016	Fall 2017
Rattlesnake Chlorine Gas System Replacement				Fall 2015
Orchard Hills Zone D BPS		Winter 2016		
Water Recycling Plant Master Plan Update	Winter 2016			
Santiago Hills II Zone 6 Reservoir		Spring 2016		
Santiago Hills II Zone 5-6 BPS		Spring 2016		
Santiago Hills II RW BPS		Spring 2016		
IDF Sodium Hypochlorite Storage and Feed System			Spring 2016	Winter 2017
Great Park SAMP Update	In-Process			
WRMP Update - Chap 2,3,4,5, 7,10	In-Process			
Sewer Collection System Master Plan/Generation Factors	In-Process			
Update to Replacement Planning Model	Winter 2016			
Oracle Phase II Project Management Module Implementation	Winter 2015			
Regional Recycled Water Analysis	In-Process			
Lake Forest Groundwater Supply Evaluation Update	In-Process			
Fiscal Year 2015-16 Capital Budget and Long-Term Capital Program Analysis	Winter 2015			
GIS-Based Sewer Line Cleaning and Maintenance History	In-Process			
	Category	**Months**		
	Winter	Jan. Feb. & Mar.		
	Spring	Apr. May & June		
	Summer	Jul. Aug. & Sep.		
	Fall	Oct. Nov. & Dec.		

November 17, 2015
Prepared by: C. Spangenberg/L. Oldewage
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

RESEARCH BUSINESS PLAN UPDATE

SUMMARY:

The purpose of this item is to 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 is participating. 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. Requests for IRWD to participate in research projects have declined over the past few years, but staff continues to participate in a few research projects. A status update on the current research projects is attached as Exhibit "A".

FISCAL IMPACTS:

The FY 2015-16 Operating Budget included $20,000 for staff time associated with the research projects. In addition, approximately $75,500 was included in the FY 2015-16 Operating Budget for IRWD's annual memberships in research organizations such as National Water Research Institute, the WateReuse Foundation, the Water Research Foundation and the Water Environment Research 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	MBR and UV Disinfection Virus Removal Study at MWRP	Determine actual virus/pathogen removal rates through the membrane bioreactor process, for which no credits are currently given.	Lee	IRWD/CH2M Hill	Demonstration	In-Kind Service and Outside Lab Analysis @ $15K (staff time, contract lab and materials)	Aug-14	Open	The goal of this demonstration testing is to document virus and pathogen removal through the MBR process, for which no credits are currently given, in order to reduce UV disinfection dosing levels and related O&M costs. The UV system was approved by the Division of Drinking Water (DDW) in October 2015 and the system has been in operation since November 2015. Staff will resume the project with CH2MHill during the next quarter.
2	Water Research Foundation Hexavalent Chromium Focus Area Scoping Study to Review Contributions of Chromium to Drinking Water from Corrosion in the Distribution System	Scoping study to review contributions of chromium to drinking water from corrosion in the distribution system to develop further research.	Spangenberg	Water Research Foundation/HDR, Inc.	Literature review and utility survey	In-Kind Service @ $3K (staff time)	Oct-14	Aug-16	Staff received the survey questionnaire documents and is gathering water quality and infrastructure information that are relevant to corrosion. This includes pipe material, size, age, condition of pipes, types of valves and appurtenances used, condition, quantity, size, water quality in the domestic system as it enters the distribution system including pH, dissolved solids, redox, dissolved oxygen and chromium analysis. It will take a few months to gather the information requested and to properly format it prior to sending it out to the research team. Staff anticipates the survey information will be gathered by January 2016.
3	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)	Nov-15	Feb-17	WateReuse Research Foundation awarded the research project to the University of New Mexico pending completion of contract negotiations with an expected start of the research project in November 2015.
4	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	Expert workshop scheduled for November 10 - 11, 2015 to be held at West Basin MWD.

November 17, 2015
Prepared by: R. Lee / K. Drake
Submitted by: P. Sheilds
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

BIOSOLIDS AND ENERGY RECOVERY FACILITIES OPERATIONAL UPDATE

SUMMARY:

Staff will update the Committee on the staffing projections for the operations and maintenance (O&M) of the Biosolids and Energy Recovery Facilities (Biosolids Project), as originally proposed to the Engineering and Operations Committee on March 18, 2014. This update includes staff's evaluation of outsourcing various aspects of O&M including organic waste addition, renewable energy generation and pellet marketing and distribution (M&D).

BACKGROUND:

The Biosolids Project will ultimately allow the District to cost-effectively dewater solids concentrated from the processes utilized to recycle 33 million gallons per day of sewage. Currently, all solids from the Michelson Water Recycling Plant (MWRP) are conveyed to Orange County Sanitation District (OCSD) for processing and disposal. In 2009, alternative solids handling strategies were evaluated by the District. The resulting *System-Wide Biosolids Management Alternatives Report* concluded that it would be cost-effective to implement solids handling at MWRP rather than continue to transport solids to OCSD, and in late 2009, IRWD's Board approved the implementation of solids handling at MWRP. Factors that were considered included long-term viability, technology, environmental stewardship, community impacts, implementability, and autonomy. On March 25, 2013, the Board awarded the construction of the Biosolids Project to the low bidder, Filanc Balfour Beatty JV, in the amount of $163,465,940.

To achieve IRWD's O&M goals in a cost-effective manner, the proposed plan from 2014 included adding staff along with outsourcing certain O&M portions of the process. Strong consideration was given to leveraging the District's existing organizational infrastructure and resources. Staff recommended hiring 12 new employees in two phases. Seven positions, consisting of an operations supervisor, two operators, an automation specialist, an instrumentation technician, an electrical technician, and a maintenance mechanic (as shown in Exhibits "B", "C", and "D"), were added in Fiscal Year 2014-15; eight staff members have been hired to date. Staff also recommended that the work associated with the biogas cleaning and renewable energy generation O&M, the pellet M&D, and the organics addition evaluation tasks be outsourced.

Project Schedule:

Construction of the largest capital project ever undertaken by IRWD began in July 2013 with the project scheduled for completion by early 2017. The following is a summary of the most current completion dates associated with major milestones:

Milestone	Processes	Completion Dates	
		Original	Revised
1	Sludge Thickening	8/2015	7/2016
2	Organics Addition	9/2015	7/2016
3	Anaerobic Digestion	1/2016	9/2016
4	Dewatering	3/2016	10/2016
5	Biogas Treatment/Energy Production	6/2016	10/2016
6	Thermal Drying & Odor Control	8/2016	12/2016
Final	Project Complete	10/2016	1/2017

Processes and staffing:

The following table provides a summary of the key processes included in the project along with the operating schedules anticipated for each process:

BIOSOLIDS PROCESSES

Processes	*Description*	*Operation*
Sludge Thickening	Densifying of primary and waste activated sludges (WAS) to reduce water content prior to anaerobic digestion (AD).	24/7*
Anaerobic Digestion	Decomposition of thickened sludge and organic waste to reduce volume and convert volatile components into biogas.	24/7
Dewatering	Reduce water content of anaerobically digested sludge with centrifuges prior to thermal drying (TD). Produce Class B biosolids.	24/4**
Thermal Drying and Odor Control	Drying of the dewatered sludge to achieve Class A biosolids that can be marketed as fertilizer.	24/4
Organics Addition	Fats, oil, and grease (FOG) and food waste addition facility for organic addition to augment biogas production in AD.	24/7
Biogas Conditioning and Renewable Energy Production	Biogas cleaning and compression prior to renewable energy production with microturbines.	24/7

**24 hours per day, 7 days per week*
***24 hours per day, 4 days per week*

The operations of sludge thickening, anaerobic digestion, organic waste addition, biogas conditioning, and renewable energy production will occur 24 hours a day, seven days a week with fully automated control systems allowing for day shift only O&M coverage, as shown in the Process Flow Diagram attached as Exhibit "A". Processes such as dewatering, biosolids heat drying, centrate treatment, and volatile organic compound (VOC) treatment are required to operate concurrently and continuously for three to four days around the clock and will require staff coverage during those periods. Based on design intent and confirmation from other

agencies with similar processes, the dryer operates optimally on a continuous basis, not cycled on and off on a daily basis. The VOC treatment through a regenerative thermal oxidizer (RTO) is required to operate while the dryer is in operation to ensure Title V permit compliance. RTO takes approximately four hours to reach proper operating temperature from a cold start and another four hours to cool down after the dryer stops operation. Dewatering and pelletizing operations will require two operators on two 12-hour shifts to match dryer operation. The exact length of dryer runs will depend on the amount of digested sludge inventory at any given time. Below is a table that summarizes the proposed staffing plan and current status:

BIOSOLIDS O&M STAFFING STATUS

Position Titles	Planned Positions	Hired to Date	To Be Hired
Operations Supervisor	1	1	0
Operators	6	3	3
Mechanics	2	1	1
Automation	1	1	0
Electrical	1	1	0
Instrumentation	1	1	0
Total	12	8	4

The majority of the additional staff for the Biosolids Project has been hired in preparation for pre-commissioning, training, and start-up plan development during construction. Organizational charts for MWRP Operations, Electrical Services, and Mechanical Maintenance are shown in Exhibits "B" through "D". All new operators hired for the Biosolids Project have prior biosolids handling experience. The new Operations Supervisor, a Grade V certified operator, has more than 10 years of experience with sludge and biosolids processes including sludge thickening, phased anaerobic digestion, and centrifuge dewatering operations. Additional staff with heat dryer and pelletizing operation experience have been hired.

Staff has been directly involved in providing input to construction management meetings, reviewing submittals, pre-commissioning training, and start-up plan reviews. Staff has participated in and provided input during control philosophy and Supervisory Control and Data Acquisition (SCADA) system design meetings. The Operations Supervisor has been networking with local municipalities to facilitate training for IRWD operators including biosolids facility tours; development of project specific biosolids training modules; and coordination of several week-long, hands-on-training with Encina Wastewater Authority (EWA) staff on its dryer operations. The Biosolids Operations Supervisor has also conducted research on the organic waste market, regulations, and tracking facilities that are experimenting with co-digestion with organic waste. Other training received by staff includes Volatile Organic Compounds Control Technology and Oxides of Nitrogen (NOx) and Carbon Monoxide (CO) Control Technology provided by the California Air Resources Board. Compliance staff has provided several training sessions on the requirements of the new Title V air quality permit. Operations staff has also provided general overview training of the biosolids project to IRWD management, O&M, and compliance staff.

Outsourcing:

Outsourcing options being evaluated by staff include organic waste addition; biogas conditioning and renewable energy generation; and pellet M&D.

Organics Addition:

The Biosolids Project includes a facility for the acceptance of organic waste such as FOG and food waste. Organic waste addition can augment the generation of biogas which in turn can be used to generate more renewable energy. In 2011, the IRWD Biosolids Project design engineer evaluated potential organic waste including FOG and food waste co-digestion as a way to enhance biogas production. The evaluation concluded that the facility can accommodate FOG and food waste with the following recommendations:

- Only decontaminated and liquefied food waste should be accepted, and
- Organic waste should be introduced into the digestion system after at least 12-months of stabilized operations after commissioning. This will provide baseline performance of the digestion system.

Staff recently conducted an updated literature research; internal review of IRWD's own FOG program; a survey of local companies that handle FOG and food waste; contacted facilities that are currently co-digesting organic waste; and discussed potential partnership with local food waste sources that might be interested in partnering with IRWD.

FOG Addition:

Based on a recent review of IRWD's FOG program database, there is a substantial amount of FOG available in the service area. IRWD permits approximately 1,000 Food Service Establishments (FSE), and approximately 588 of those FSE requires the use of a grease interceptor (GI) due to the type cooking equipment on site, and approximately 440 GIs are currently in use (with some shared between restaurants). As a result, there is an estimated 3 million gallons per year of unprocessed FOG available in IRWD's service area. The FOG was delivered to OCSD for processing; it recently stopped accepting FOG due to digester capacity limitations. Currently, FOG haulers that service the IRWD area transport the material to the Inland Empire or Los Angeles County areas for disposal.

Facilities that accept FOG have increased biogas production by up to 20%. Some of the challenges associated with accepting unprocessed FOG include trash and debris such as gravel, plastics, metal utensils, and napkins that come into the receiving station causing downstream O&M issues. Decontaminating FOG prior to co-digestion is very important to ensure reliable, consistent, and stable digestion process.

Food Waste Addition:

Staff visited or contacted several water recycling facilities that are co-digesting organic waste to gain insight from lessons learned. Many facilities that co-digest food waste have experienced an increase in biogas production of approximately 23%. This type of food waste is typically

liquefied and decontaminated requiring pretreatment to remove plastic, glass, metal, and other inert contaminants to ensure this material contains high levels of volatile solids necessary to produce high quality and consistent biogas. Agencies have contracts with vendors that specify the acceptable ranges of pH, total chemical oxygen demand (COD), total solids, ammonia, and other parameters.

This type of food waste accepted by facilities located in California will be regulated by the recently-revised Compostable Material, Transfer/Processing Regulation. The revision included a section that excluded publicly-owned treatment works (POTW) such as IRWD from complying with the full regulation as stated in §17896.6(1)(1). The exclusion does allow POTW to process kitchen grease, food and vegetative food material, and specify the types of receiving station in a POTW. It requires the POTW to develop Standard Operating Procedures (SOPs), notify the Regional Water Quality Control Board of the facility's intent, and add language to address the acceptance of anaerobically digestible material into the National Pollutant Discharge Elimination System (NPDES) permit. IRWD has already included the necessary language in the current NPDES permit, and staff is developing the necessary SOPs.

Considering the lessons learned from local municipalities, organic waste availability, and status of the current regulations, staff recommends that co-digestion of organic waste should first start with FOG. It is also recommended that staff develop a Request for Proposal (RFP) and secure competitive bids for the transportation of locally sourced FOG after one year of stable operations of the digestion facility.

Biogas Conditioning and Renewable Energy Generation:

The renewable energy generation consists of five Capstone microturbines, each producing 200 kilowatts (kW) operating on biogas and natural gas blended as required. During normal operation the microturbines will synchronize with utility power. The power output will be directed through the biosolids switchgear to a transformer located at MWRP.

Biogas has high moisture content and is contaminated with unwanted gases that need to be removed prior to combustion in the microturbines. The biogas pretreatment system is designed to remove hydrogen sulfide (H_2S), siloxanes, moisture, and particulates. The treatment component of the renewable energy generation must function reliably at all times to assure the consistent operation of the microturbines and prevent costly damage to their internal components.

There is an inseparable bond between the reliable generation of renewable energy and the delivery of sustained and properly treated biogas to the microturbines. Staff met with other agencies, such as the Sanitation Districts of Los Angeles County, to determine the best course of action for IRWD. Dependability and cost effectiveness are best delivered through outsourcing the combined O&M of the biogas cleaning facilities and microturbines. This will be accomplished through a competitively bid Power Purchase Agreement (PPA) transferring risk to the contractor who receives compensation only upon successful delivery of compliant renewable energy. To this end staff has completed an operational summary of the energy recovery facilities and is preparing an RFP for distribution to prospective vendors.

Pellet M&D:

As discussed with the Committee in 2014, staff is proposing that the pellet M&D be outsourced. Staff has contacted both local municipalities that produce pellets and companies that market and distribute pellets. There are currently three biosolids pelletizers in operation in California, and IRWD will be the fourth. Based on design projection the Biosolids facility will produce approximately 90 tons per week of pellets during startup.

Facilities experienced with producing pelletized biosolids have explored different M&D models from developing all facets of this effort internally, to designing pellet bags, to hiring their own sales staff, to contracting out all aspects of M&D to a third party. All California based biosolids pelletizing facilities are currently contracting out their M&D effort.

As part of the startup preparation activities, staff has been in contact with several major local and national fertilizer M&D companies that have relevant experience and understanding of the biosolids pellet market. Some of these vendors are currently in contact with the local biosolids pelletizers. The vendors have all expressed interest in partnering on this project so the District should receive competitive bids.

The local pelletizers such as EWA and City of Corona both use purchase agreements with separate vendors for the M&D of their pellets. EWA's vendor trucks the pellets to a blending facility in Stockton where other nutrients are added to increase the value of the pellets which are sold as fertilizer. The City of Corona's vendor trucks its pellets to a local bagging facility without adding any additional nutrients for sale at local retail home improvement centers at $12.48/36 pound per bag ($0.346 per pound). Following is a table summarizing the biosolids pellet M&D methods employed by the municipalities in the State:

Agency	Annual Production (ton/yr)	M&D	Contract Type	Key Purchase Agreement Terms				
				Start	Length	Extension	Minimum Volume	Purchase Price
EWA	5,000	Out-source	Purchase Agreement/Bulk	1/2015	1-yr	2 1-yr	1st yr: 1,000 ton/yr 2nd yr: 2,000 ton/yr 3rd yr: 3,000 ton/yr	$30/ton ($0.015/lb), no CPI
Corona	2,300	Out-source	Purchase Agreement/Bulk	6/2014	3-yr	1 3-yr	2,000 ton/yr	$10/ton ($0.005/lb) + annual CPI
SRCSD/ Synagro	7,300	Out-source	Facility is DBOO by Synagro*	Unknown				
IRWD	4,700	Out-source	Purchase Agreement & Profit Sharing	Mid to Late 2016	TBD	TBD	TBD	TBD

*SRCSD: Sacramento Regional County Sanitation District; DBOO: Design-Build-Own-Operate; * 20 year capital lease agreement ends in 2024*
TBD: to be determined

Based on discussions with vendors and lessons learned from local biosolids pelletizers, staff is developing an RFP to obtain competitive bids with a requirement for profit sharing with the District for the biosolids pellet M&D contract six months prior to the startup of the digestion process. IRWD will utilize the South Orange County Wastewater Authority's biosolids contract as a backup for emergencies and/or maintenance of the dryer for the disposal of Class B biosolids.

Agreement with OCSD:

IRWD and OCSD entered into an agreement on April 28, 2010 for the transfer of MWRP solids from sewage treatment process. The agreement outlined the payment schedule and methodologies used to determine the capital and O&M components of the solids handling cost incurred by OCSD. The initial term of this agreement is valid until the earlier of when the MWRP solids handling facilities are operational or on December 31, 2016. It also states that if the MWRP solids project is delayed, both parties are to meet and confer in good faith to prepare and enter into an amendment to the agreement.

IRWD and OCSD management staff has initiated the preliminary discussions on the terms and conditions of the amendment. It is anticipated that the amended agreement will be finalized in 2016.

FISCAL IMPACTS:

The O&M costs for the Biosolids Project will be budgeted in the FY 2016-17 and FY 2017-18 Board-adopted budgets.

ENVIRONMENTAL COMPLIANCE:

The Biosolids and Energy Recovery Project will push MWRP into the Title V air quality program administered by the South Coast Air Quality Management District. The Title V program will require additional reporting and oversight of all existing MWRP air emission-related activities. Environmental compliance requirements for EPA's biosolids regulations, 40 CFR Part 503, will require compilation of an annual report, and ongoing monitoring for compliance with Class A Exceptional Quality and Class B solids standards and ensuring biosolids are being utilized properly based on its classification. Language needed to comply with the California Code of Regulation Title 14 Compostable Material, Transfer/Processing Regulation is included in the current NPDES permit.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Biosolids Project Process Flow Chart
Exhibit "B" – MWRP Operations Organizational Chart
Exhibit "C" – Electrical Services Organizational Chart
Exhibit "D" – Mechanical Maintenance Organizational Chart

EXHIBIT "A"

Biosolids Project
Process Flow Chart

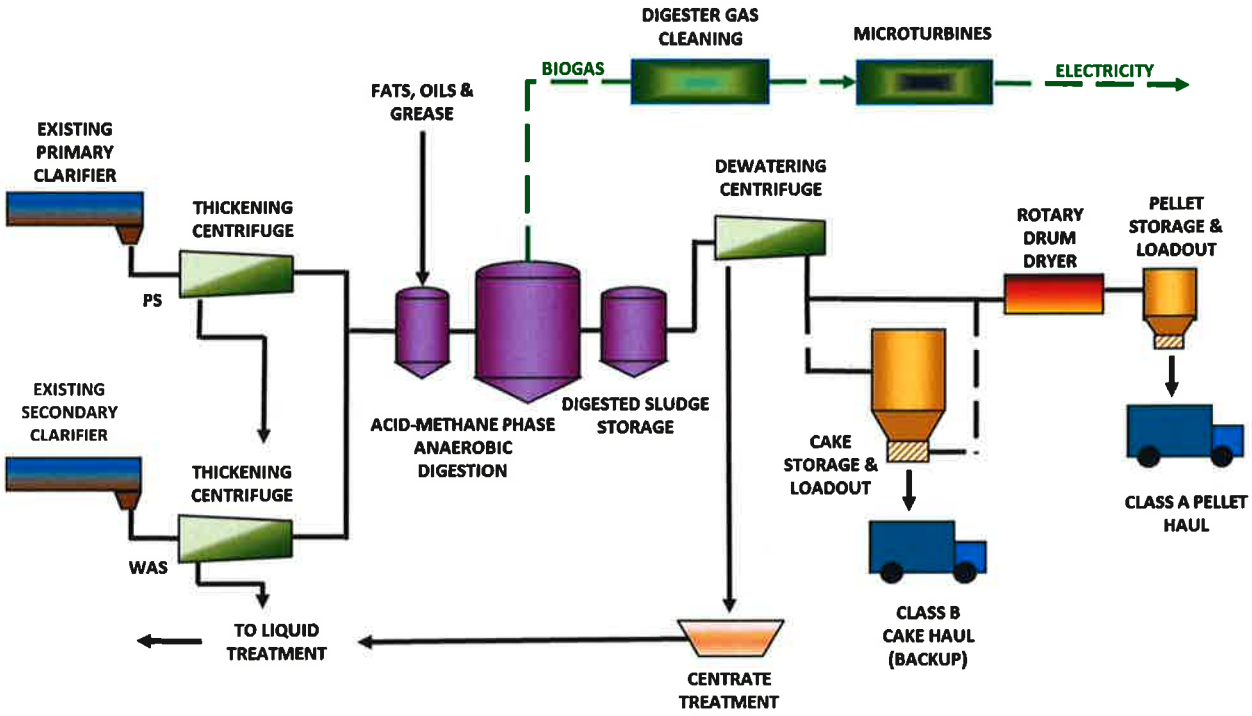


EXHIBIT "B"

MWRP Operations Organizational Chart

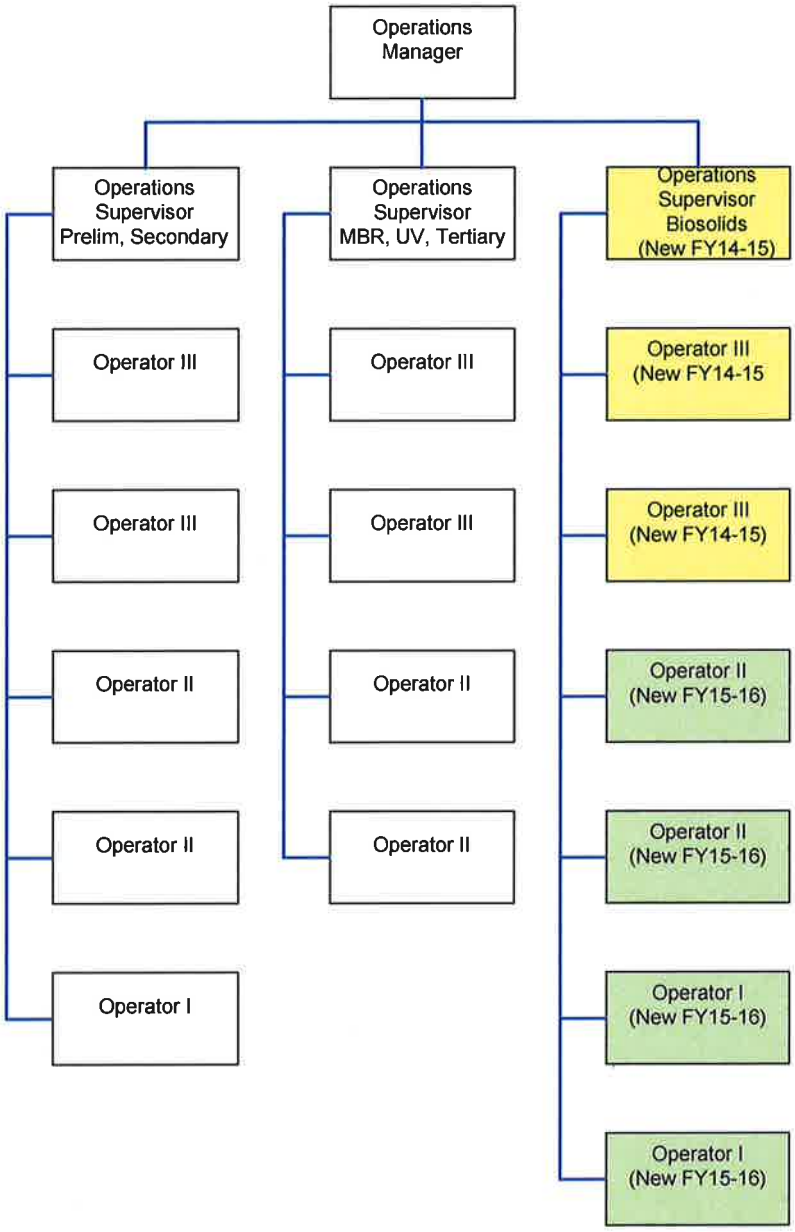


EXHIBIT "C"

Electrical Services Organizational Chart

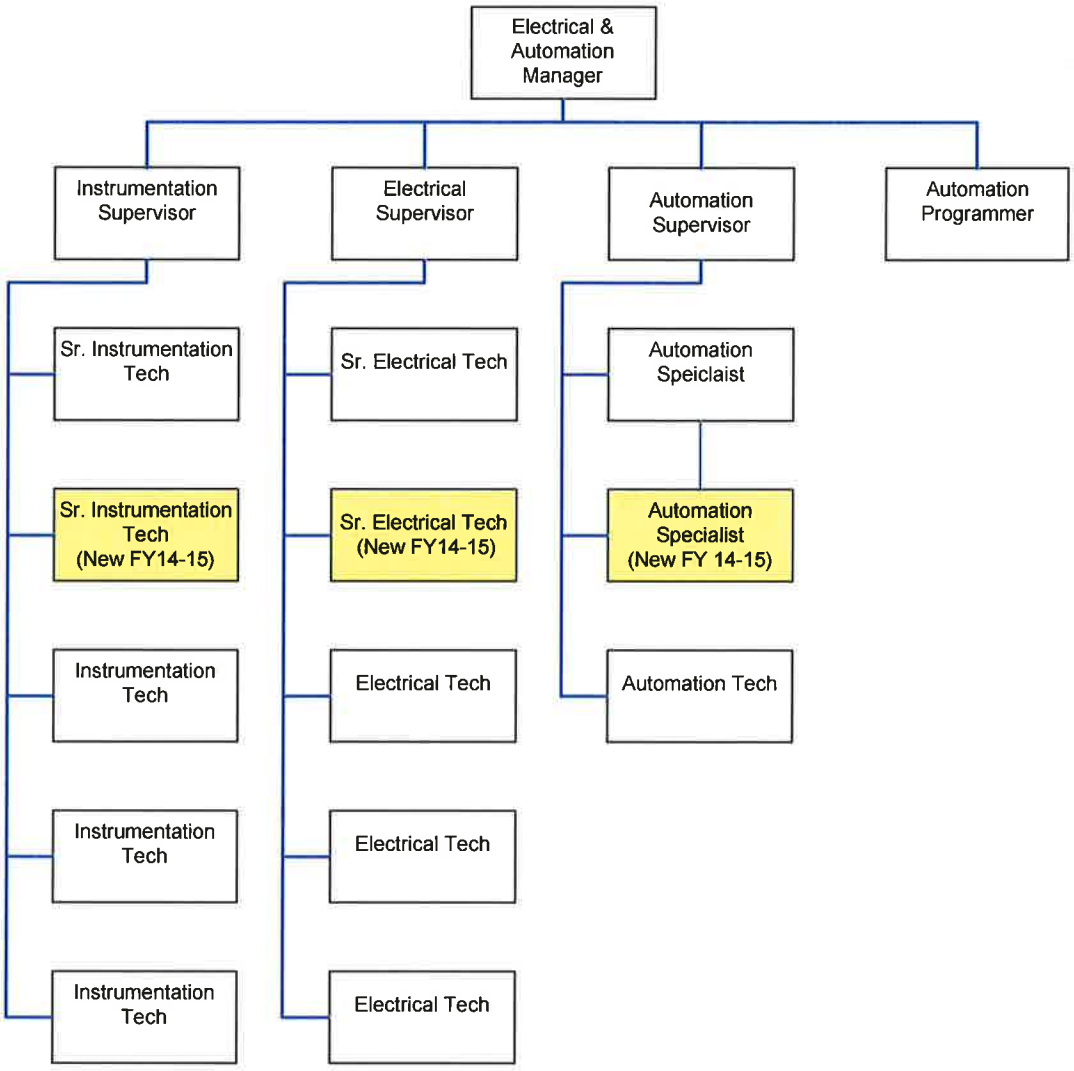
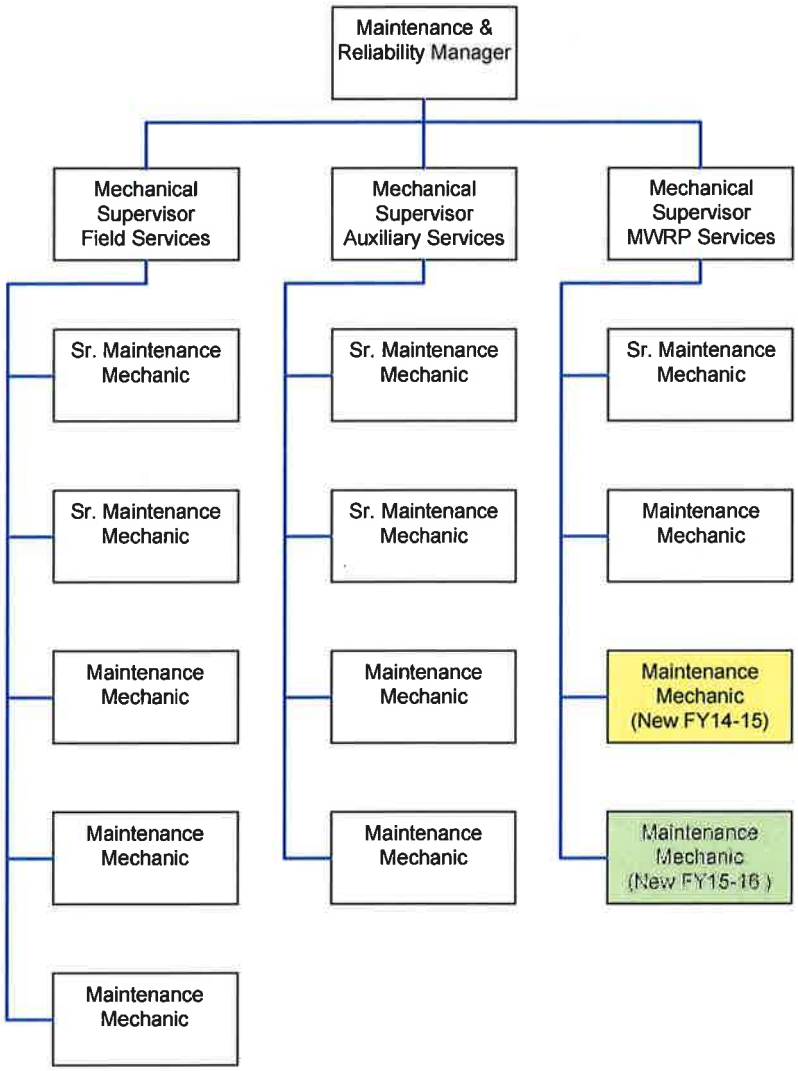


EXHIBIT "D"

Mechanical Maintenance Organizational Chart



November 17, 2015
Prepared by: K. Pfister/T. Roberts
Submitted by: P. Sheilds
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

IRWD RESERVOIR MANAGEMENT PLAN 2015-16

SUMMARY:

Staff is providing the 2015-16 Reservoir Management Plan, which summarizes the anticipated operation of Irvine Lake, San Joaquin, Rattlesnake, Syphon and Sand Canyon Reservoirs.

BACKGROUND:

Staff has prepared two operational plans. The first plan is a 12-month projection for Irvine Lake that includes 7,000 acre-feet (AF) of rainfall runoff from the forecasted El Niño winter weather season while taking into account reduced demands from the state-wide conservation initiative. This is the minimum amount of runoff needed from projected storms to meet untreated and recycled water system supplemental demands. If the estimated rainfall runoff is less than 7,000 AF, untreated water will be purchased from Metropolitan Water District (MWD) to account for any shortfalls. These purchases will be managed to minimize evaporation losses impacts during the corresponding Capacity Reservation Charge (CRC) period from May 1, 2016 through October 1, 2016. This plan was developed with the following assumptions:

- 7,000 AF of local rainfall runoff based on 10 to 20 inches of rain, with the possibility of up to 20,000 AF of runoff
- Flash boards can be installed on the Dam's spillway no earlier than April 1, 2016 with prior approval from the Division of Safety of Dams to capture up to an additional 3,000 AF of runoff
- Imported untreated water purchased at $594 per AF
- Demands based on a two-year average

The second plan is a 12-month projection for the San Joaquin, Sand Canyon, Syphon, and Rattlesnake recycled water reservoirs. This plan was developed with the following assumptions:

- Maximum possible combined storage of recycled water of 5,247 AF by May 1, 2016
- Full production at Los Alisos Water Recycling Plant for up to eight months
- Wells 106 and 72 off for the year to meet the Basin Pumping Percentage of 70%
- Ten to 20 inches of rainfall capturing up to 800 AF off runoff in the recycled reservoirs
- Providing water to the Green Acres Pipeline as needed for reservoir management
- Demands based on a two-year average

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

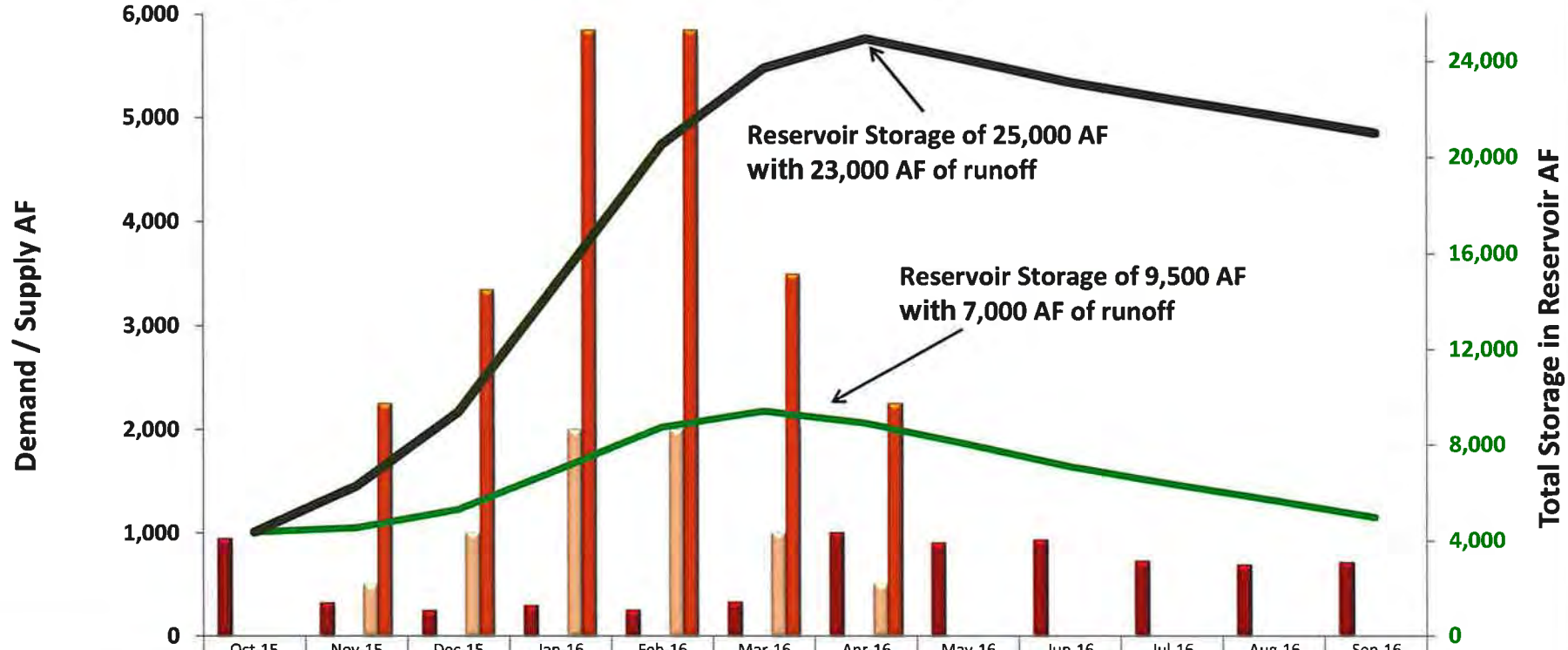
Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – IRWD Irvine Lake Reservoir Management 2015-16
Exhibit "B" – IRWD Recycled Reservoir Management Plan 2015-16

EXHIBIT "A"

Irvine Lake Reservoir Management Plan 2015-2016

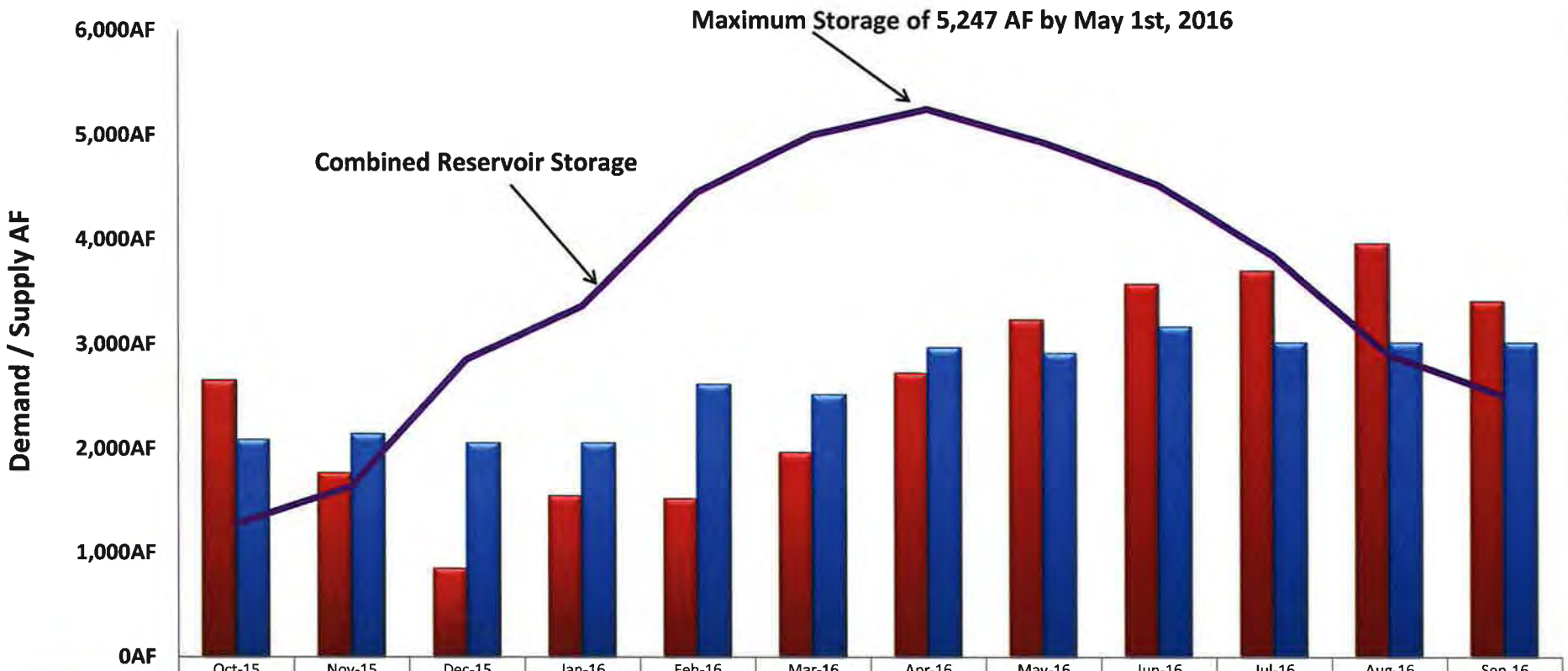


	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
Demand*	945AF	321AF	243AF	293AF	246AF	328AF	1,004AF	903AF	932AF	726AF	690AF	711AF
OC-13 IRWD	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF
OC-13 SWD	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF
Rainfall Runoff 7,000 AF	0AF	500AF	1,000AF	2,000AF	2,000AF	1,000AF	500AF	0AF	0AF	0AF	0AF	0AF
Rainfall Runoff 23,000 AF	0AF	2,250AF	3,350AF	5,850AF	5,850AF	3,500AF	2,250AF	0AF	0AF	0AF	0AF	0AF
Lake Storage with 7K AF of runoff	4,348AF	4,527AF	5,284AF	6,992AF	8,745AF	9,418AF	8,914AF	8,011AF	7,079AF	6,352AF	5,663AF	4,951AF
Storage with 20k AF of runoff	4,348AF	6,277AF	9,384AF	14,942AF	20,545AF	23,718AF	24,964AF	24,061AF	23,129AF	22,402AF	21,713AF	21,001AF

*Demand Projections Based on a 2 Year Average

EXHIBIT "B"

Recycled Reservoir Management Plan 2015-2016
San Joaquin, Rattlesnake, Syphon and Sand Canyon



	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
Demand*	2,658AF	1,776AF	850AF	1,555AF	1,528AF	1,969AF	2,725AF	3,235AF	3,576AF	3,704AF	3,965AF	3,412AF
Supply	2,095AF	2,145AF	2,060AF	2,060AF	2,620AF	2,520AF	2,970AF	2,920AF	3,170AF	3,020AF	3,020AF	3,020AF
Total Storage	1,275AF	1,644AF	2,854AF	3,359AF	4,451AF	5,002AF	5,247AF	4,932AF	4,526AF	3,842AF	2,897AF	2,505AF

*Demand Projections Based on a 2 Year Average

November 17, 2015
Prepared and
Submitted by: P. Sheilds
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

ENERGY STORAGE OPPORTUNITY

SUMMARY:

There have been significant recent positive developments in grid-scale energy storage technology capability and the availability of grant funding incentives to assist with cost project effective implementation. The California Public Utilities Commission (CPUC) authorized Southern California Edison (SCE) to develop new local electrical capacity resources including 50 megawatts (MW) of behind-the-meter energy storage (connected to host customer load). These storage projects would involve the charging of batteries from the grid during off-peak hours and then discharging them during on-peak times to shave demand peaks in order to reduce stress on the grid. IRWD has several sites where this type of technology could potentially be applied.

The Self-Generation Incentive Program (SGIP) is a grant-funding mechanism that provides financial incentives for renewable energy generation and energy storage projects. The SGIP funds are allocated on a first come, first served basis to successful applicants and reserving them as early as possible is an important first step to the financial viability of potential energy storage projects at IRWD. Applications have been submitted for thirteen potential sites to ensure that as much eligible funds at the highest value possible were reserved while project feasibility is fully evaluated. This non-binding action, in line with one of IRWD's strategic goal target activities to *"Pursue cost-effective and proven energy storage technologies"*, was taken at no cost, obligation, or risk to the District. The ultimate goal for IRWD is to reduce energy costs due to peak demand shaving and increase reliability through participation in the implementation of battery energy storage projects as a host customer.

BACKGROUND:

The retirement of the San Onofre Nuclear Generation Station (SONGS) and the pending retirement of once-through-cooling plants have created a gap in the generation of electrical power in the West Los Angeles Basin (Exhibit "A"). The CPUC requires utilities to demonstrate that they have purchased sufficient energy capacity to meet at least 115% of its peak load. In order to determine the amount of load needed, each year the California Independent System Operator (CAISO) performs a study to determine how much energy capacity local areas need to maintain reliability, which the CPUC uses as a basis to authorize procurement requirements for utilities.

South Orange County, where the key Johanna and Santiago Substations are located (within IRWD's service area), was identified as a targeted capacity constrained area (Exhibit "B"). SCE was authorized by CPUC to procure more than 2,000 MW of new Local Capacity Resources (LCR) with an emphasis on behind-the-meter energy storage, demand reduction, and renewable energy generation. To qualify as an LCR, a resource must be located in the targeted area and be available to run for up to four consecutive hours for three consecutive days.

SCE solicited eight distinct products in its Request for Offers (RFO) to meet the 2,000 MW LCR requirements. It then compared all resources as noted below for "least cost" and "best fit":

1. Gas Fired Generation
2. Combined Heat and Power
3. Demand Response
4. Energy Efficiency
5. Energy Storage
6. Renewable
7. Resource Adequacy
8. Distributed Generation

Advanced Microgrid Systems

As a result of the RFO process, Advanced Microgrid Systems (AMS) was awarded a contract in 2014 by SCE to develop 50 MW of behind-the-meter energy storage. AMS is a developer that designs, funds and operates large energy storage projects as "fleets" specifically for utility service (average system size 500 kW x 6-hour in 5 to 25 MW "fleets"). The projects use batteries and software to facilitate a new kind of "Demand Response" for SCE using energy storage to reduce demand from the grid when dispatched by the utility. The first 10 MW is required to be on-line in 2017 and will be installed in the Irvine area. The remaining 40 MW must be on-line no later than 2018 and can be installed anywhere in Orange County or in the West Los Angeles Basin.

AMS is currently working with the Irvine Company as the host customer to have 24 buildings in one "fleet" providing up to 10 MW of capacity to SCE using large energy storage systems primarily from Tesla Energy. AMS' software system is also designed to integrate battery systems with solar, fuel cells and other on-site resources. AMS has contracts with Tesla Energy, Black & Veatch (B&V) and a Joint Development Agreement with SunEdison (largest solar company in the world) for the SCE contract. Under the contract with SCE, AMS "Host Sites" agree to be available to reduce demand from the grid by shifting facility load to batteries when dispatched by SCE. Some of the key requirements of the program are:

Maximum Dispatch:	Once per day, up to 80 hours per month.
Duration of Dispatch:	Anywhere from 15 minutes to 4 hours.
Dispatch Window:	Must be available from 9 AM to 6 PM
Charging Restrictions:	Batteries may not charge from the grid between 9 AM and 6 PM (only charged at night or from non-grid sources).

Starting in April 2015 at the request of the District, AMS began conducting detailed load profile evaluations of energy bills from various IRWD facilities that have their own individual billing meters to determine potential for participation in the LCR program. The evaluation identified 13 sites whose profiles showed strong peak demand shaving potential (see Exhibit "C"). IRWD staff subsequently performed site visits with AMS and B&V staff to evaluate at a preliminary level the viability of each site in terms of footprint required, point of connection and access.

Self-Generation Incentive Program:

California's Self-Generation Incentive Program (SGIP), which was established in 2001, provides rebates for behind-the-meter generation including wind, fuel cells, and energy storage. The State of California recently reaffirmed its commitment to SGIP when Governor Brown extended the

program in 2014 maintaining funding at the annual level of $83 million through 2019 for a total of $415 million. Over $1.38 billion in SGIP incentives have been awarded or reserved over the life of the SGIP. The SGIP application process consists of three stages: 1) application reservation, 2) proof of milestone, and 3) incentive claim. It is crucial to submit the application as early as possible to ensure that the highest dollar per kW value out of the incentive program if accepted is reserved (funding levels are reduced by 10% each program year) and also to ensure that funds are not taken by other applicants. Project applications can precede project dates by up to two years. The table below indicates the SGIP incentive levels for storage:

	Base Incentive Amount	
Program Year	Non-CA Supplier ($/W)	CA Supplier ($/W)
2014	1.62	1.94
2015	1.46	1.75
2016	1.31	1.58
2017	1.18	1.42
2018	1.06	1.28
2019	0.96	1.15

In June 2015, on IRWD's behalf, AMS submitted approximately $11 million in SGIP applications for the 13 sites identified in the load profile review of which $8.4 million are currently reserved; i.e., $6.86 million with SCE and $1.57 million with SoCal Gas Company. There is $2.5 million proposed for a 3 MW installation at the Michelson Water Recycling Plant still waiting for room on either SCE or SoCal Gas (SCG) waitlist.

Both the SCE and SCG waitlists are at their limit (~$12 million for SCE, ~ $3 million for SCG) and neither are accepting further applications in 2015. However, SCE has over $25 million in administrative funds that can be moved at their discretion to clear their waitlist and SCG has just over $6 million. It is unlikely that SCE or SCG will clear their waitlist this year; there is a small chance that other projects could drop out, creating room for others. In the worst case scenario for the MWRP application, even if the waitlist is not cleared in 2015, the application will be filed in January 2016, with a 10% drop in the incentive level.

There is no obligation on IRWD's behalf to move forward with a project(s) or with AMS as the technology provider after submittal of the SGIP applications. At any time during the process, IRWD as the host customer, can cancel the project or select a different technology provider as noted in Section 4.1.1 of the SGIP Handbook:

> *The host customer [IRWD] is the exclusive incentive reservation holder and has the right to designate the Applicant, energy services provider, and/or system installer. The host customer also has the right to change these parties at any given time with prior written notice to the Program Administrator. The host customer may also be the Applicant and/or System Owner.*

The only penalty for not moving forward is loss of the SGIP deposit funds which is covered by AMS. The unclaimed SGIP funds would simply roll over to the next project on the waitlist.

Next Steps:

The SGIP review process is scheduled to be complete by SCE and SCG in early 2016 and the full amount of reserved funds will be known at that time. Staff will then present to the Committee options for going forward for any potential project implementation and the associated contractual arrangements.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Map of West Los Angeles Basin
Exhibit "B" – Johanna and Santiago Substation Locations
Exhibit "C" – Eligible SGIP Sites

Exhibit "A"

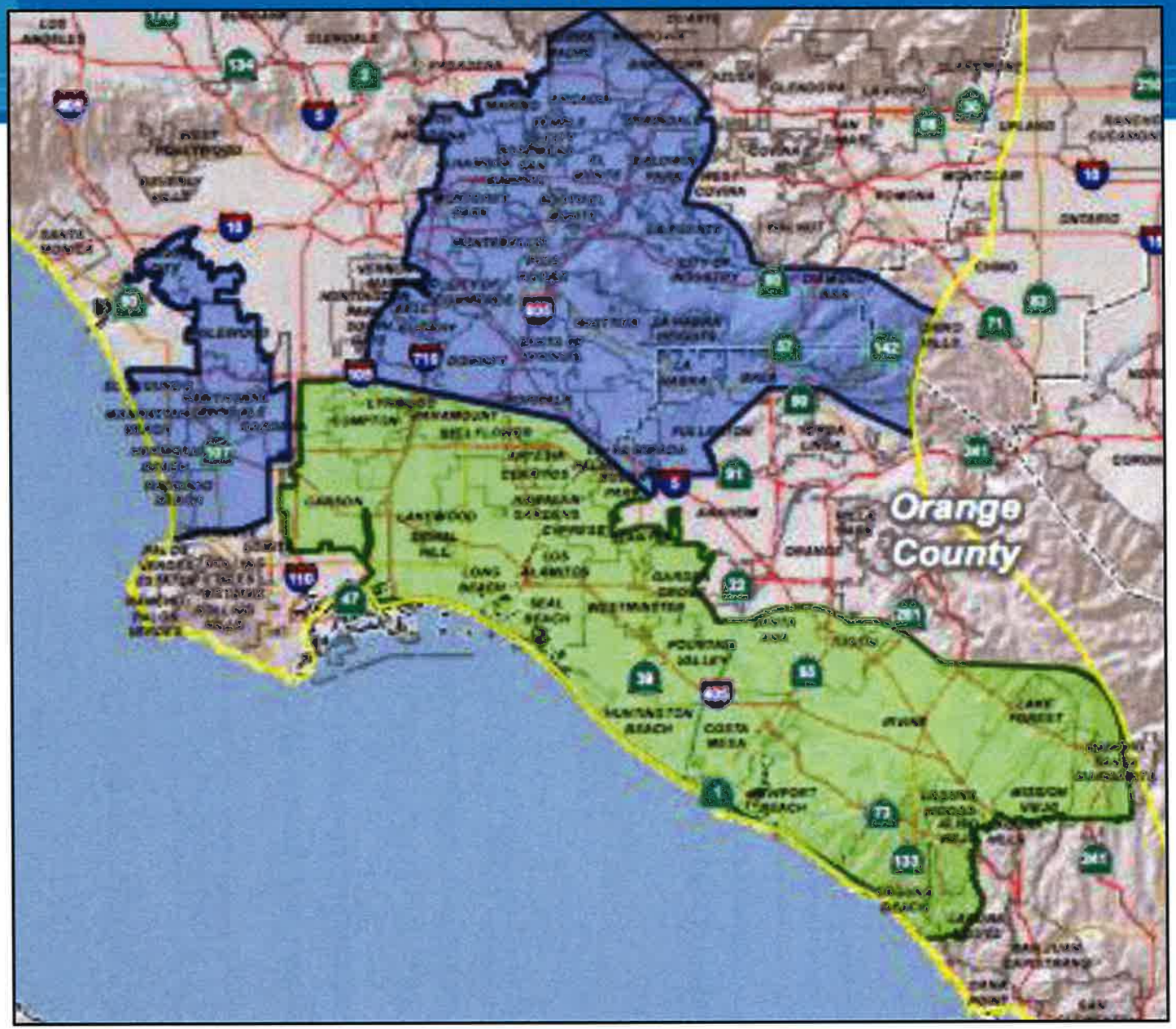
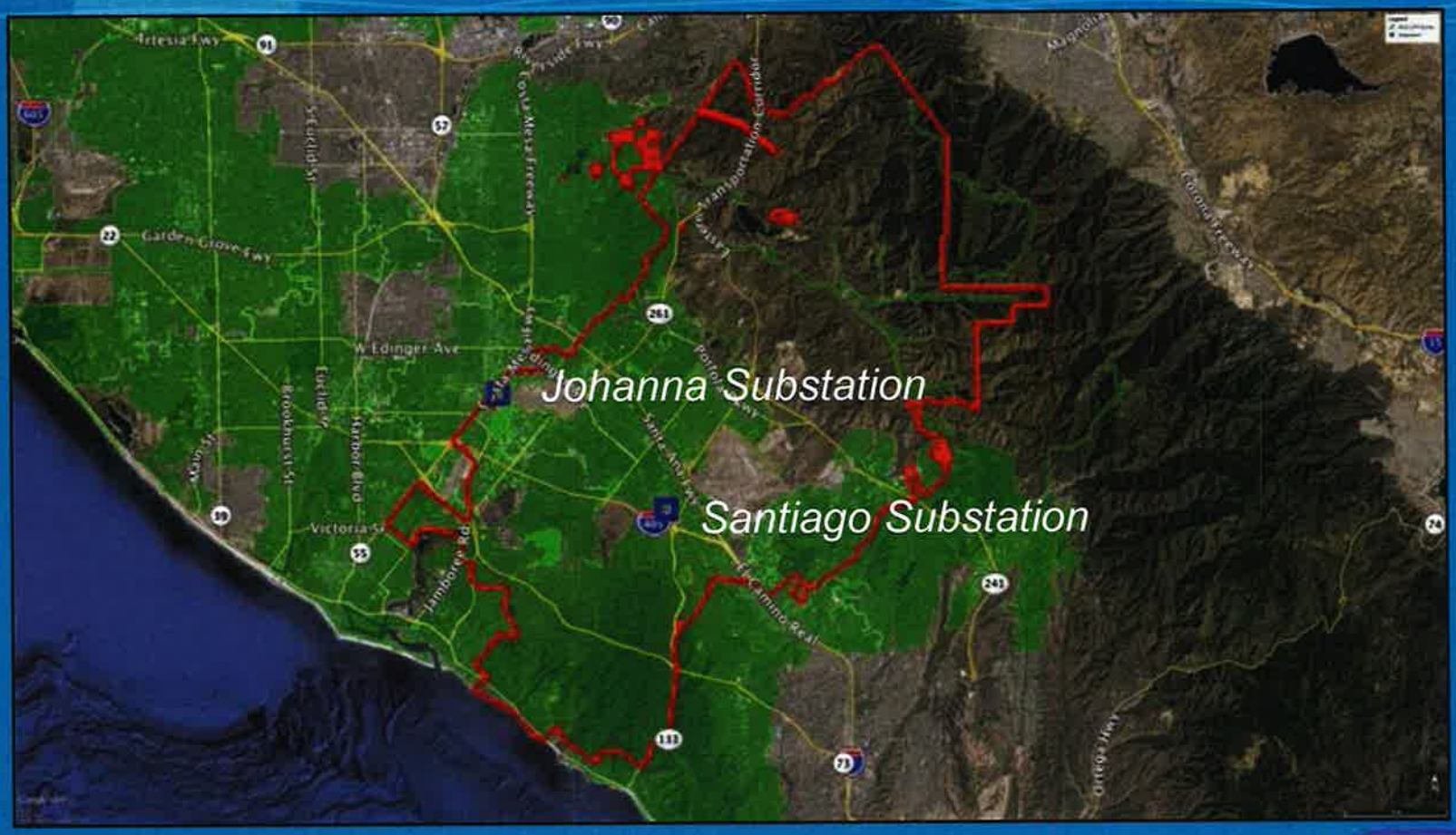


Exhibit "B"



IRVINE RANCH WATER DISTRICT

Exhibit "C"

Thirteen SGIP Eligible Sites						
	IOU	Status	Site	Size (kW)		SGIP Amount
1	SCG	RRF RECEIPT RECEIVED / Moved from Waitlist 10/22	**LAWRP** 22312 Murilands Blvd., Lake Forest	1,150	$	1,569,500
2	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**COASTAL ZONE D PUMP** 4975 Bonita Canyon-A, Irvine	600	$	876,000
3	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**COASTAL ZONE 4 PUMP** 4975 Bonita Canyon-B, Irvine	300	$	438,000
4	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**DYER ROAD WELL 10** 3302 W. Warner Ave., Santa Ana	300	$	438,000
5	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**PORTOLA 3-5 & A-C PUMP STATION** 4951 1/2 Portola, Irvine	300	$	438,000
6	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**FOOTHILL ZONE 6 P.S.** 21515 Magazine Rd., Irvine	300	$	438,000
7	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**DYER ROAD WELL 17** 2114 S Anne St., Santa Ana	300	$	438,000
8	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**DYER ROAD WELL 15** 2512 West Warner Ave., Santa Ana	300	$	438,000
9	SCE	RRF RECEIPT RECEIVED / Moved from Waitlist 9/23	**TUSTIN** 1221 Edinger Ave., Tustin	600	$	876,000
10	SCE	RRF RECEIPT RECEIVED / Waiting on SCE to Respond to the Last Set of Questions	**PTP** 26 Waterworks Way, Irvine	600	$	876,000
11	SCE	RRF RECEIPT RECEIVED / Waiting on SCE to Respond to the Last Set of Questions	**DATS** 1704 W Segerstrom, Santa Ana	1,200	$	1,606,000
12	SCE	SUBMITTED | No Response Yet	**EAST IRVINE ZONE 1-3 P.S.** 13826 Sand Canyon Ave., Irvine	300	$	438,000
13	SCG or SCE	TO BE SUBMITTED in 2016 Did not clear waitlist in 2015, will be resubmitted in 2016	**MWRP** 3512 Michelson Dr., Irvine	3,000	$	2,560,000
				9,250	**$**	**11,429,500**

November 17, 2015
Prepared by: K. Drake
Submitted by: P. Sheilds
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

OPERATIONS ENTERPRISE ASSET MANAGEMENT
PRE-IMPLEMENTATION UPDATE

SUMMARY:

This item is to provide the Committee with an update regarding the pre-implementation activities underway for the Operations Enterprise Asset Management (EAM) system.

BACKGROUND:

In January 2015, the pre-implementation phase of the EAM project schedule was initiated with the hiring of a consultant with expertise in pre-implementation activities, software procurement, and integration to coordinate these activities. Two experienced staff members representing the electrical and mechanical disciplines were also assigned to work full time with this effort. Tasks included completing the asset inventory database, documenting business processes, promoting user collaboration, building in-house asset management capability, and conducting due diligence prior to the procurement of the system software. The asset inventory database component is scheduled to be completed in January 2016.

Staff's primary focus has been to develop an asset inventory database that will be compatible with any asset management software. The current effort is concentrated exclusively on the District's vertical assets (above-ground facilities such as buildings, pump stations, reservoirs, and treatment facilities) as opposed to horizontal assets (underground facilities, mostly pipelines). To date, the asset inventory has been completed for approximately 74% of the vertical assets including the Deep Aquifer Treatment System, Manning Filtration Treatment, Tustin Wells 21 and 22 Treatment Plant, Irvine Desalter Project Potable Treatment Plant, and ten Natural Treatment System sites. Additionally, approximately 11,500 assets have been cataloged and 53,000 asset and facility photographs have been taken. Staff has provided asset inventory templates and training to the Baker Water Treatment Plant and the Michelson Water Recycling Plant (MWRP) Biosolids and Energy Recovery Facilities' construction management teams to ensure the new assets are inventoried in a consistent manner.

As part of pre-implementation, staff is collecting institutional knowledge and integrating it into the system, thereby insulating the District from the loss of knowledge when experienced staff are no longer at the District. Consequence of asset failure is calculated and criticality ratings are assigned to each one. As part of the rating process, environmental (regulatory compliance), social (disruption of service), and economic (repairs costs) impacts are taken into consideration. For example, analysis of the collections system lift stations considered wet well size and retention time, location (i.e., close to open water), pumping capacity, backup power generation, site access, and difficulty of repair (i.e. dry well versus wet well).

Horizontal assets are cataloged and mapped in the Geographic Information System (GIS). The EAM system will access GIS for the information required to conduct analysis such as failure

predictions. A meeting was held with staff to discuss horizontal assets and how the EAM system will complement the existing GIS. A gap analysis will be conducted to determine if GIS lacks any of the required data.

To maximize the system potential and to ensure sustainability of the program the maintenance organization structure will need to adapt. An established team headed by an Asset Management Coordinator will be necessary. The implementation of planners/schedulers will increase line staff productivity and ensure that the entry of new assets is accomplished in an orderly and accurate manner.

An inter-departmental EAM Advisory Committee was formed and is meeting quarterly to provide oversight and guidance through the pre-implementation and implementation phases. To sustain a high program awareness level, the team has been conducting a series of orientation meetings. Staff is introduced to asset management concepts, the role of EAM within the District, current progress, how they will be affected, and what they can do presently to assist the effort. Water Operations staff have cross trained with the team during inventory data collection at the treatment facilities. A similar opportunity will be extended to Recycling Operations when data collection takes place at the MWRP and Los Alisos Water Recycling Plant.

Software systems constantly evolve with the introduction of new features such as mobile solutions (e.g., tablets). The team has conducted benchmarking visits to a number of local cities and special districts to review their implementation strategy and experience with software packages that have been evaluated by staff. Staff will schedule an EAM Committee meeting to further evaluate and review software packages and consider industry changes.

FISCAL IMPACTS:

Sufficient funds are available in the FY 2015-16 Capital Budget.

ENVIRONMENTAL COMPLIANCE:

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

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Operations Enterprise Asset Management Pre-Implementation Roadmap and Progress PowerPoint Presentation

EXHIBIT "A"

Operations Enterprise Asset Management

Pre-Implementation Update

October 20, 2015

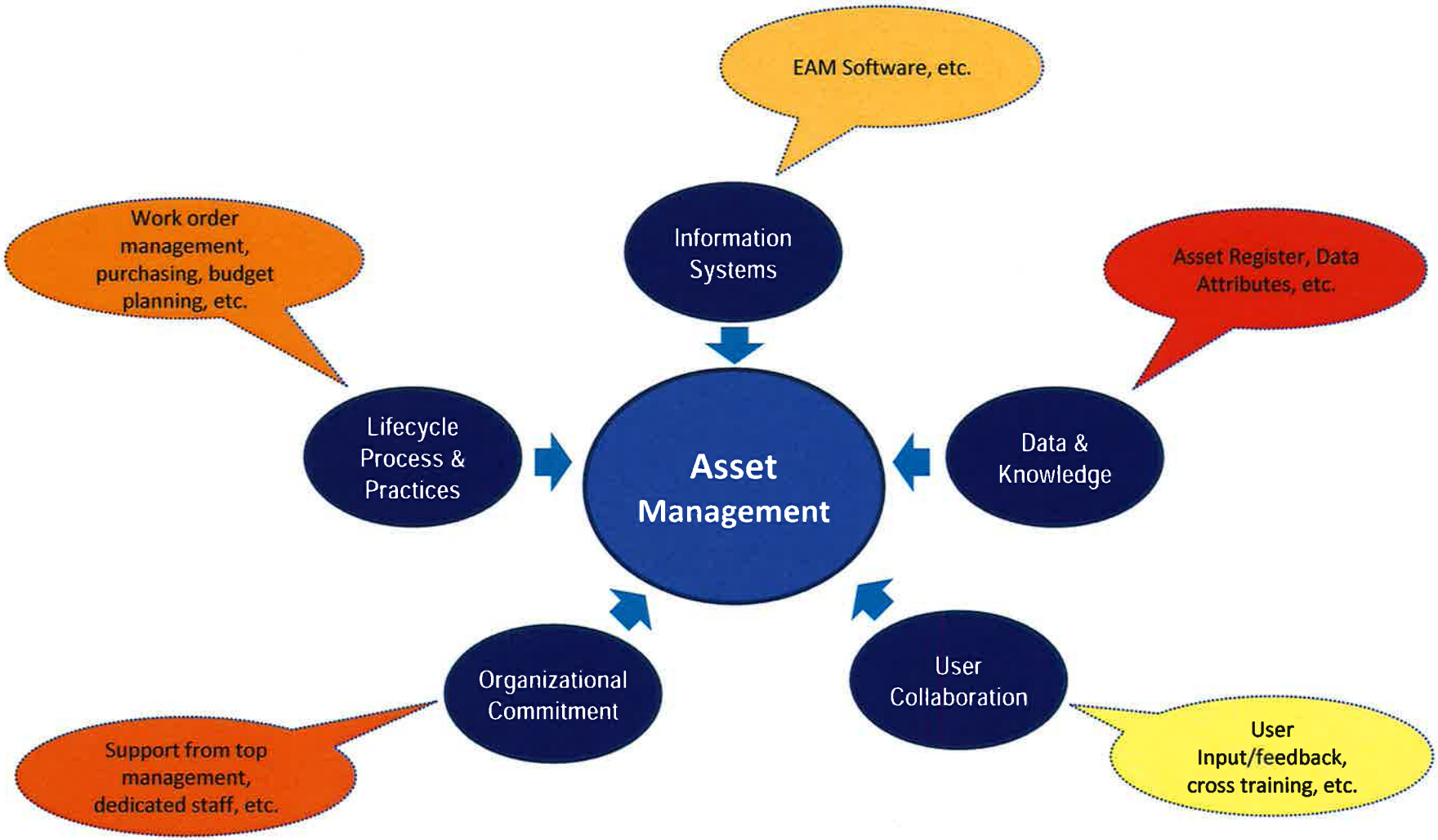
IRVINE RANCH WATER DISTRICT

What is Asset Management

Asset Management is a mechanism to answer the following questions:

1. What is the current state of my assets?
2. What are my required levels of service?
3. Which assets are critical?
4. What are my best O&M and future capital investment requirements?
5. What is my best long-term funding strategy?

Asset Management Quality Elements



Components of EAM System

Data & Structure	Management & Analytics Functionalities	Reporting	Knowledge Management
Asset Database (Asset List, Hierarchy and Data Attributes)	• Management Strategy • Risk/Criticality • Valuation • Life Cycle Cost Analysis • Budget • Capital Improvement Validation • Levels of Service • Key Performance Indicators	• Spatial (Maps) • Process • Data Record • Performance • Regulatory Compliance • Future Needs • Alerts • Trends	• Standard Operating Procedures • Drawings Repository • Training Materials • Equipment Manuals
Business Processes & Practices			
System Architecture (EAM Software, etc.)			
System Integration (GIS, Oracle, Map Library)			

Benefits of EAM System

Data & Structure	Management & Analytics Functionalities	Reporting	Knowledge Management
• Complete asset inventory & improve data • Improve efficiency & productivity of daily O&M • Provide connectivity with other information systems	• Provide financial projection for annual budgeting • Provide justification in decision making process (prioritization mechanism, KPI tracking , cost efficiency, reliability management, etc.)	• Ability to generate standard reports • Ability to maintain multiple report templates • Improve data accessibility	• Document repository system • Provide platform for "online" training

EAM Pre-Implementation Tasks

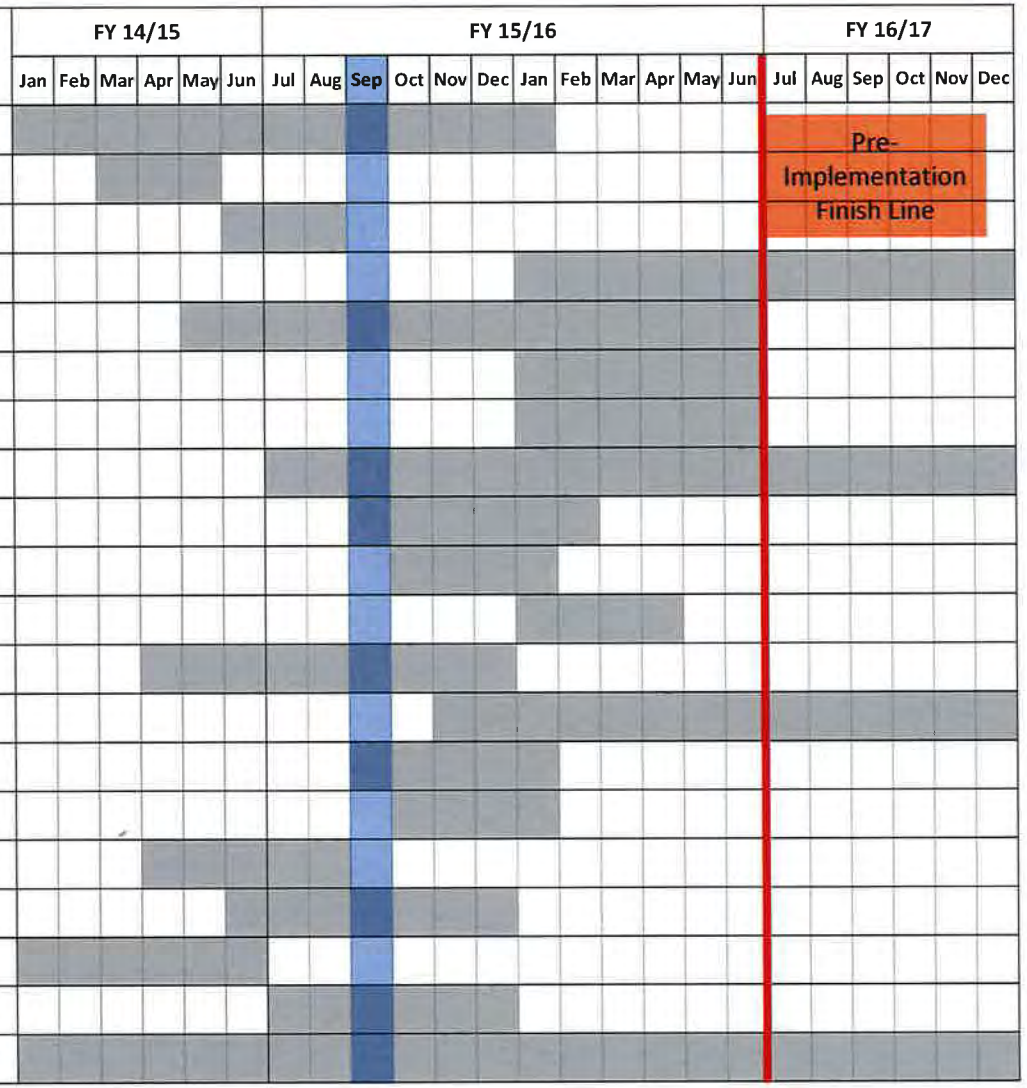
- Develop Asset Inventory Database
- Develop User Collaboration
- Maintenance Organizational Structure Impacts
- EAM Benchmarking
- Document Business Processes & Practices

Pre-Implementation Project Schedule

- Full data inventory is scheduled to be complete in January 2016
- Pre-implementation phase is scheduled to be completed by July 2016 at the release of the software RFP
- Domestic system data inventory was completed in September 2015
- Data inventory for the MWRP began October 2015 and is estimated to take 6 weeks
- Data inventory for the LAWRP will follow immediately thereafter

Pre-Implementation Project Schedule – Contd.

Tasks		Sub Tasks
A.	Develop Asset Inventory Database	A.1 Conduct asset inventory and develop asset register
		A.2 Develop asset hierarchy
		A.3 Develop asset numbering standard
		A.4 Document management strategy
		A.5 Risk assessment
		A.6 Asset Valuation (life cycle cost components)
		A.7 Remaining life and decay curve
		A.8 Incorporate horizontal assets (GIS database)
B.	Document Business Processes & Practices	B.1 Document the "As Is" Processes and Practices
		B.2 Get stake holder feedback
		B.3 Develop the "To Be" Processes and Practices
C.	Develop User Collaboration	C.1 Information session (AM awareness)
		C.2 User input/feedback sessions
D.	EAM Benchmarking	D.1 Identify EAM needs & integration to existing systems
		D.2 Collect data on potential EAM systems
		D.3 Visit other agencies to review their EAM implementation
		D.4 Review EAM RFPs from other agencies
E.	Organization Structure Impact	E.1 Establish AM Division and assign dedicated staff
		E.2 Develop staffing plan
		E.3 Staff training/mentoring program

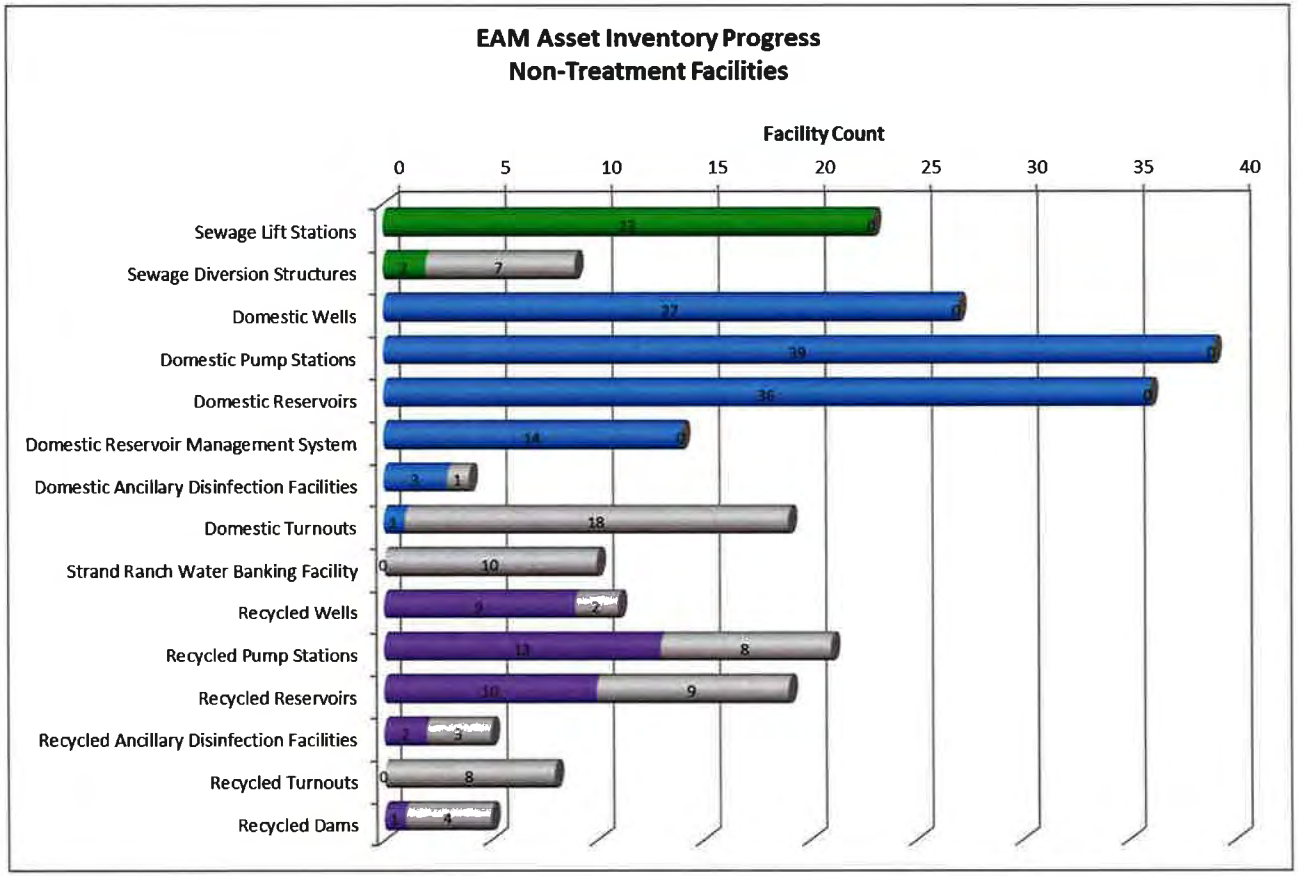


Asset Inventory Database Development

- Format of asset database will be "software agnostic"
- Over 9,800 assets have been inventoried to date
  - Over 45,000 asset/facility photos have been collected
- Asset inventory templates and training have been provided to the Baker Plant and MWRP Biosolids project teams
- Consequence of Failure assessment has been completed for Lift Station facilities
- Evaluated the GIS database as a resource for EAM system
- EAM team has initiated documentation of business processes and practices

Asset Inventory Database Development – Contd.

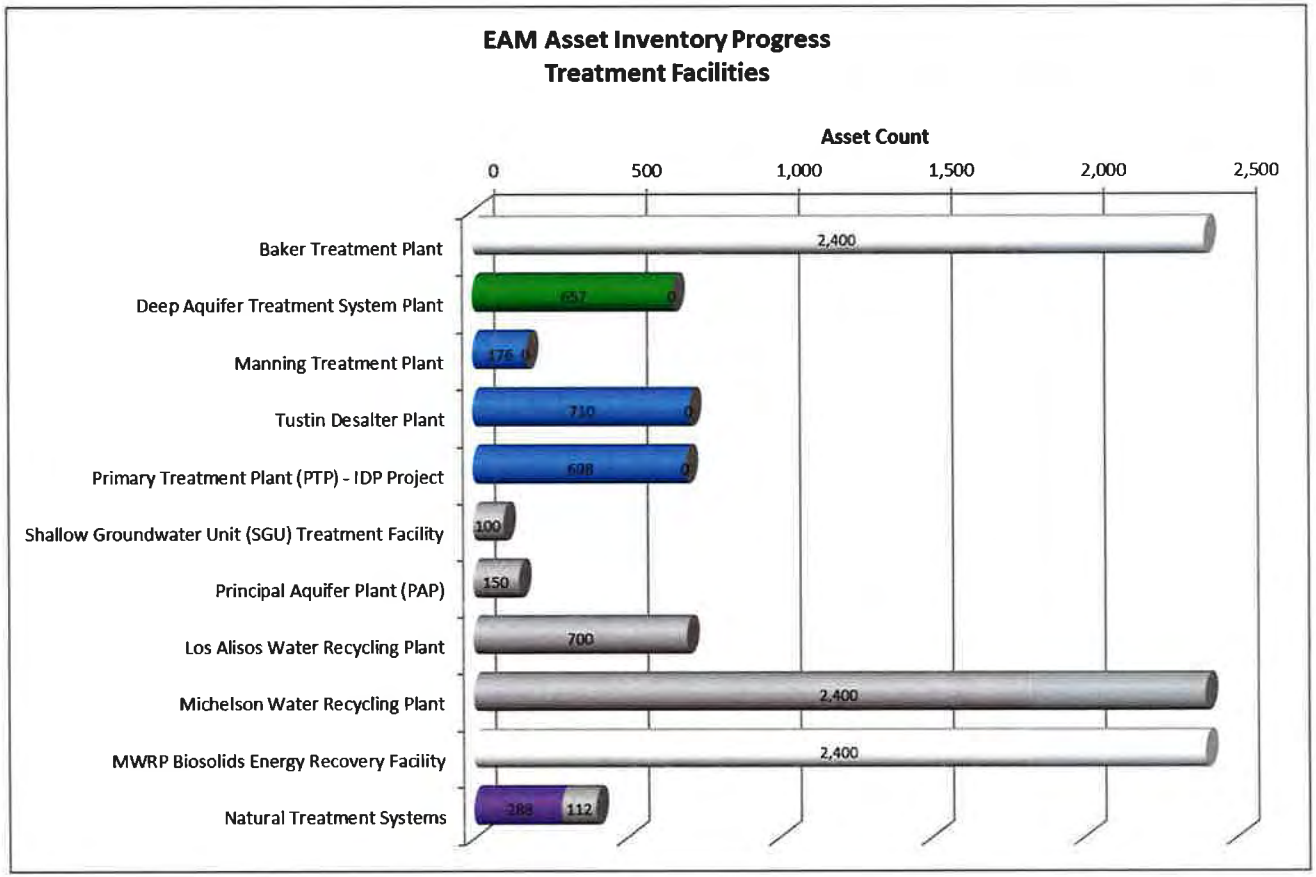
- Asset inventory has been completed for 180 non-treatment facility sites. This represents 72% of total non-treatment facilities (wells, pump stations, reservoirs, lift stations, etc.).



Note:
Color shaded portion represents completed sites

Asset Inventory Database Development – Contd.

- Asset inventory has been completed for four treatment facilities (DATS, Manning, Tustin Desalter, and PTP) and ten NTS sites.



Note:
Color shaded portion represents count of completed inventory

Develop Agency User Collaboration

- Initiated the first round of EAM presentations to introduce the pre-implementation program, our current progress, and how staff can contribute to the program
  - Maintenance, Water Ops, Recycling Ops, Engineering, etc.
- Developed procedure to report asset data changes during the transition period (until new EAM software is online)

Maintenance Organizational Structure Impacts

- Goals
  - Maximize EAM system potential
  - Ensure sustainability of asset management program
  - Seamlessly integrate new capital projects: Baker Treatment Plant, Biosolids and Energy Recovery Facility, MWRP Phase 2, etc.
  - Maximize staff wrench time
- Organizational Changes
  - Establish asset management coordinator position
  - Implement the use of planners/schedulers

EAM Benchmarking

- Staff has visited several agencies (IEUA, City of Carlsbad, OCSD, Santa Margarita Water District) to gain lessons learned from their implementation programs
  - Software
  - Implementation schedule
  - Budget
  - Staffing
  - Job description
  - Training
  - RFPs

EAM Software Selection

- Reconvene Enterprise Asset Management Committee to evaluate and review software packages in light of industry changes

- EAM software considerations
  - Detailed asset register
  - Work order management system
  - Integration with existing systems (e.g., Oracle, GIS)
  - Extensive tracking capability (maintenance history, warranty, etc.)

EAM Software Selection – Contd.

- Additional considerations
  - Mobile solutions
  - Key Performance Indicator tracking capability
  - Long term viability (future support, update, and upgrade)
  - Financial performance of the software company
  - Innovation in areas of importance to utility agencies

November 17, 2015
Prepared by: K. Drake
Submitted by: P. Sheilds
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

ENTERPRISE ASSET MANAGEMENT SYSTEM PROJECT SUPPORT VARIANCE

SUMMARY:

The pre-implementation phase of the Enterprise Asset Management System (EAMS) project including the asset inventory database of the District's operating facilities is scheduled for completion in mid-2016. This project will then proceed to the critical implementation phase with consulting support services required to augment staff efforts by providing oversight for the project. As the current professional services agreement with GHD expires December 31, 2015, staff recommends that the Board authorize the General Manager to execute Variance No. 1 for $310,200 to provide continued project management and coordination services for this project.

BACKGROUND:

The EAMS is designed to improve the District's ability to manage and derive maximum value from its assets from acquisition to retirement. This system will provide tools for tracking and scheduling preventive and predictive maintenance, regulatory compliance, budgeting and procurement analysis, and monitoring key performance indicators (KPIs). The first phase of the project, initiated in January 2015, includes pre-implementation activities such as completing the asset inventory database, asset identification, condition assessment protocols, and asset consequence of failure analysis. The second or implementation phase will include milestones such as recommending and seeking approval of a software package; initiating the software implementation process; finalizing maintenance organizational structure impacts; developing business processes and asset management strategies; and the continuation of asset consequence of failure analysis. These are important steps for completing the first major goal of utilizing the EAMS as a replacement of the Legacy Tabware's computerized maintenance management system program currently in use. Future phases will include the addition of piping systems (known as "horizontal assets"), integration of the geographic information system, development of mobile applications and the use of maintenance schedulers and planners.

During the planning stages for the EAMS project, project management for Phase One was anticipated to be performed by the Maintenance and Reliability Manager; however, as a result of various conditions, it was has been managed by a full-time Project Manager since January 2015. The Operations Department provides guidance as well as staff from the Electrical and Mechanical Service Departments for the asset data collection effort and other project support.

Professional Variance No. 1

Variance No. 1 provides for project management support services on a full-time basis through 2016 completing the pre-implementation phase and moving on to the first stages of the implementation phase. Staff recommends the execution of Variance No. 1 as provided in Exhibit "A" in the amount of $310,200 with GHD. This constitutes a variance of 100% over the original contract bringing the total contract amount to $620,400.

FISCAL IMPACTS:

Sufficient funds are available in the FY 2015-16 Capital Budget.

ENVIRONMENTAL COMPLIANCE:

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

RECOMMENDATION:

That the Board authorize the General Manager to execute Variance No. 1 to the Professional Services Agreement with GHD in the amount of $310,200 for project management support services for the Enterprise Asset Management System Project.

LIST OF EXHIBITS:

Exhibit "A" – Variance No. 1

EXHIBIT "A"
IRVINE RANCH WATER DISTRICT
PROFESSIONAL SERVICES VARIANCE

Project Title: Enterprise Asset Management System Project Support

Project No.: _____ Date: November 11,2015

Purchase Order No.: _____ Variance No.: 1

Originator: [x] IRWD [ ] ENGINEER/CONSULTANT [ ] Other (Explain)_____

Description of Variance (*attach any back-up material*):
Project Management Support Services to complete the pre-implementation phase and moving forward on the first stages of the implementation phase.

Engineering & Management Cost Impact:

Classification	Manhours	Billing Rate	Labor $	Direct Costs	Subcon. $	Total $
					Total $ =	

Schedule Impact:

Task No.	Task Description	Original Schedule	Schedule Variance	New Schedule

Required Approval Determination:

Total Original Contract $ 310,200 Previous Variances $ 0 This Variance $ 310,200 Total Sum of Variances $ 310,200 New Contract Amount $ 620,400 Percentage of Total Variances to Original Contract 100%	[ ] Director: Cumulative total of Variances less than or equal to $50,000. [ ] Executive Director: Cumulative total of Variances less than or equal to $75,000. [ ] General Manager: Cumulative total of Variances less than or equal to $100,000. [X] Board: Cumulative total of Variances greater than $100,000.

ENGINEER/CONSULTANT: GHD
Company Name

IRVINE RANCH WATER DISTRICT

Project Engineer/Manager	Date	Department Director	Date
Engineer's/Consultant's Management	Date	General Manager/Board	Date

November 17, 2015 RKM
Prepared by: J. Nash/R. Mori
Submitted by: K. Burton KLB
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

AUTOMATION SUPPORT CONSULTANT SERVICES

SUMMARY:

Since March 2014, Vertech Industrial Systems has provided automation support services including PLC programming, HMI Development, and commissioning services for multiple capital projects. With the majority of the initially scoped projects complete, staff recommends that the Board authorize the General Manager to execute a new Professional Services Agreement, in the amount of $200,000, with Vertech for additional automation support services for upcoming capital projects.

BACKGROUND:

Staff previously retained Vertech to provide automation support services for various projects including Well 115, Syphon Reservoir Interim Facilities, Well OPA-1, Michelson Lift Station, Hidden Canyon Zone 3-4 and Zone B-C Booster Pump Stations, Manning/Portola Emergency Generators, and Baker Raw Water Pump Station. Vertech has completed its work on all projects except for the Baker Raw Water Pump Station, which is scheduled to be complete in early 2016. Through the execution of these projects, individuals from Vertech have become proficient with the District's automation hardware and software systems, programming standards and requirements, and automation development processes. Additionally, Vertech has developed an unparalleled understanding of the District's facility startup and commissioning practices, which has improved the overall facility startup process with the District's contractors. Vertech has completed the work on time and on budget and has demonstrated an in-depth understanding of the District's automation practices throughout the execution of the work.

Professional Services Agreement with Vertech:

Based on the successful partnership with Vertech on the initially scoped projects, staff has evaluated upcoming projects and identified a need for additional automation support services associated with the ILP North Conversion, East Irvine Zone 1-3 BPS Pipe and Flow Meter Replacement, Newport Coast Lift Station Rehabilitation, Chloramine Booster Stations at Two Domestic Water Reservoirs, IDF Sodium Hypochlorite Storage and Feed, San Joaquin Marsh Modifications, and the Michelson FPS-2 Roof and Exhaust Fan Replacement projects.

Staff recommends that a Professional Services Agreement, in the amount of $200,000, be executed with Vertech to provide additional automation support services for the projects described above. A copy of Vertech's billing rate schedule, which remains unchanged from the previous agreement, is provided as Exhibit "A". The proposed billing rates are comparable with those of other automation consultants who previously performed work at the District.

FISCAL IMPACTS:

Automation support services will be provided for projects that are included in the FY 2015-16 Capital Budget. The available budgets and existing Expenditure Authorizations for those projects will be used to fund these services.

ENVIRONMENTAL COMPLIANCE:

Activities such as executing agreements for consulting services are exempt from the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15061 (b) (3). These types of activities are covered by the general rule that CEQA applies only to projects which have the potential for causing a significant direct effect on the environment or reasonably indirect effect on the environment. In addition, the specific projects identified herein, are subject to CEQA and have either already completed, or are currently undergoing, the CEQA review process.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement, in the amount of $200,000, with Vertech for automation support services.

LIST OF EXHIBITS:

Exhibit "A" – Vertech Billing Rate Schedule

EXHIBIT "A"

CONSULTING AND SERVICES RATES 2015-2016

Vertech Industrial Systems typically provides fixed price quotes for projects requiring our services. However, for clients who prefer to work on a time and materials basis or for clients requiring consulting or repair services, we provide the following hourly rates.

Service Descriptions and Rates

Scheduled Services
Control system consulting or repair services scheduled more than one week in advance are considered scheduled services.

High Priority / Emergency Services
Services offered per availability. Rates can also be negotiated depending on availability.

Scheduled Services – Normal Business Hours (M-F 7am-5pm):

Type	Rate
Project Manager/Senior Controls Integrator	$165.00/hour
Controls Integrator	$130.00/hour

Scheduled Services - After Business Hours:

Type	Rate
Project Manager/Senior Controls Integrator	$225.00/hour
Controls Integrator	$165.00/hour

Scheduled Services – Holidays:

Type	Rate
Project Manager/Senior Controls Integrator	$255.00/hour
Controls Integrator	$185.00/hour

Travel and Expenses
Travel time is charged round trip from our office to the job site. Travel expenses are charged as follows:

Cost	Charge
Mileage	GSA Mileage
Meals	GSA Per diem
Airfare, hotel, parking, car rental, etc.	Cost plus 15%

Vertech Industrial Systems, LLC
13844 Alton Pkwy, Suite 137
Irvine, CA 92618
Phone 949-596-7986 877-387-0277 Fax
www.vertech.com

November 17, 2015
Prepared by: H. Cho/M. Cortez
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

DYER ROAD WELL FIELD SURGE TANKS CONSULTANT SELECTION

SUMMARY:

The Dyer Road Well Field (DRWF) Surge Tanks project will replace the existing surge tanks at Well 11 and Well 15 that are corroding and will install new surge tanks at Well 5 and Well 7 to provide protection against pressure surges in the Zone 1 system. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement with Tetra Tech in the amount of $290,000 for the DRWF Surge Tanks, Project 11754.

BACKGROUND:

The DRWF was constructed in the 1990s as a domestic water source for IRWD and consists of 18 wells located in Santa Ana. The wells were constructed with surge tanks located underground at Well 11 and Well 15 and aboveground at Well 13 to protect against pressure surges. The surge tanks at Well 11 and Well 15 are mostly buried with one end located in a vault which includes a tank manway. Inspection of the surge tank walls in the vaults at Well 11 and Well 15 indicate that the walls of both surge tanks are thinning from corrosion and are near the end of their useful lives. As part of the investigation into their replacement, staff initiated a comprehensive surge analysis of the entire DRWF Zone 1 system including the Well 21/22 Treatment Plant with Flow Science. Since DRWF is served by three Southern California Edison substations, Flow Science analyzed individual scenarios where one, two, and all three substations failed. Based on this analysis, Flow Science recommended new surge tanks at Well 5, Well 7, and Well 16 that have room for the proposed surge tanks in addition to replacing the two existing surge tanks at Well 11 and Well 15.

The DRWF Surge Tanks project will replace the existing surge tanks at Well 11 and Well 15 and install new surge tanks at Well 5 and Well 7. These will be built aboveground where feasible to avoid corrosion. The surge tank at Well 16 will be built as part of the Initial Disinfection Facility (IDF) Sodium Hypochlorite Storage and Feed System project, which is currently being designed by Carollo Engineers since Well 16 and IDF are located on the same site.

Consultant Selection Process:

In August, staff issued a request for proposal for the design to four consultants: Carollo Engineers, Lee & Ro, Tetra Tech, and West Yost Associates. Staff evaluated the proposals and selected Tetra Tech based on their team's project understanding, extensive experience on similar projects, and proposal fee. Carollo Engineers, Tetra Tech, and West Yost Associates proposal costs are close together and represent the true cost of the design project. Of these proposals, Tetra Tech provides the best value as they provide the most design hours (1,672 preliminary and final design hours) at the overall second lowest fee. The consultant selection matrix is attached as Exhibit "B". Tetra Tech's proposal is in the amount of $290,000, and is included as Exhibit "C".

FISCAL IMPACTS:

Project 11754 (5473) is included in the FY 2015-16 capital budget. The existing budget is sufficient to fund the design.

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 preparation of a Notice of Exemption for the project.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with Tetra Tech in the amount of $290,000 for the Dyer Road Well Field Surge Tanks, Project 11754 (5473).

LIST OF EXHIBITS:

Exhibit "A" – Site Location Map
Exhibit "B" – Consultant Selection Matrix
Exhibit "C" – Tetra Tech Proposal

EXHIBIT "A"

DRWF Surge Tank Project

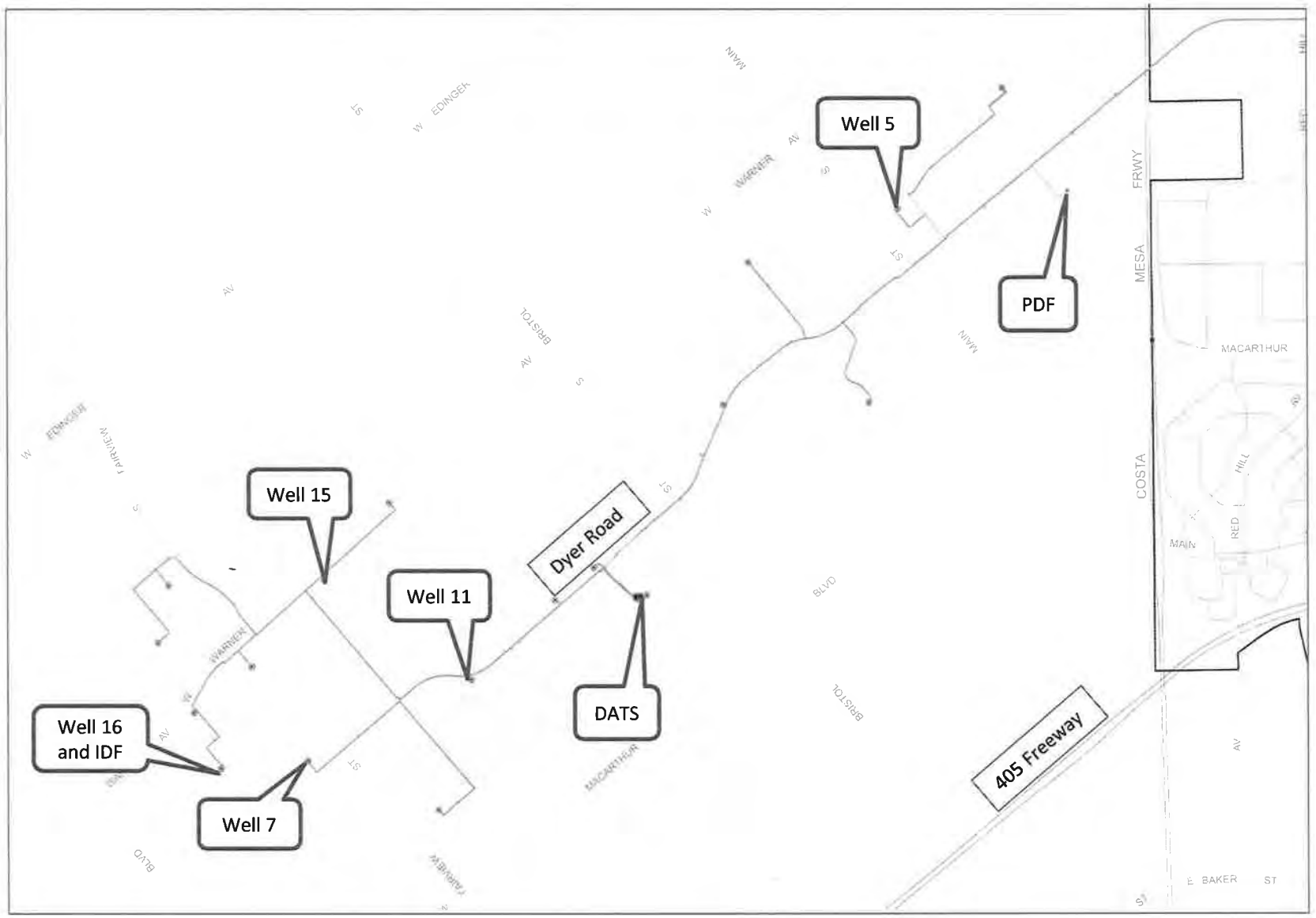


EXHIBIT "B"

Newport Coast Lift Station Rehabilitation
Consultant Selection Matrix

	Weights	Carollo	Lee & Ro	Tetra Tech	West Yost
TECHNICAL APPROACH	60%				
*Project Approach	50%	1	3	2	4
*Scope of Work	50%	2	3	1	4
Weighted Score (Technical Approach)		1.50	3.00	1.50	4.00
EXPERIENCE	40%				
*Firm/Team	30%	2	3	1	4
*Project Manager	40%	2	4	1	3
*Project Engineer	30%	1	3	2	4
Weighted Score (Experience)		1.70	3.40	1.30	3.60
		Yrs	Yrs	Yrs	Yrs
Project Manager		Jeff Weishaar	Dushyant Dave	Tom Epperson	Stephen Dopudja
Project Engineer		John Jearney	Charles Ro	Mike Tsoi	Kristen Whatley
QC/QA		Tim Taylor	Eric Lovering		Momo Savovic
Structural		James Doering		David Kuang	*Kleinfelder*
Electrical/Instrumentation		Troy Hedlund	Michael Assadourian	Mazen Kassar	*SPEC Services*
Surveying		*Borchard*	*Calvada*		*Guida*
Geotechnical		*Converse*	*Associated Soils*	*Leighton*	*NMG*
Potholing		*Borchard*	*Saf-R-Dig*	*C Below*	*SAF-r-DIG*
Cathodic Protection		*V&A Consultants*	*Corrpro*		*JDH Corrosion*
COMBINED WEIGHTED SCORE		1.58	3.16	1.42	3.84
		Man-hours	Man-hours	Man-hours	Man-hours
Task 1 Preliminary Design Report		400	358	535	222
Task 2 Final Design		922	586	1,112	596
Task 3 Optional Design Hours		26	0	25	12
TOTAL HOURS		1,348	944	1,672	830
Sheet Count					
General		8	6	3	Not stated
Civil		7	16	9	Not stated
Mechanical		7	1	9	Not stated
Structural		8	5	6	Not stated
Electrical		13	14	6	Not stated
Instrumentation		21	5	6	Not stated
Demolition		4	4	3	Not stated
Subtotal		68	51	42	Not stated
Optional Design		0	3	0	Not stated
TOTAL SHEETS		68	54	42	Not stated
FD HRS/SHT		14	11	26	Not stated
FEE					
PDR		$98,678	$78,497	$108,780	$100,574
Final Design		$165,222	$72,467	$161,000	$165,735
Optional Design		$53,918	$34,035	$20,220	$33,526
Total		**$317,818**	**$184,999**	**$290,000**	**$299,835**
Final Design Costs per hour		$179	$124	$145	$278
Number of Drawings		68 dwgs	54 dwgs	42 dwgs	Not stated dwgs
Final Design Unit Prices ($/dwg)		$3,223	$1,972	$4,315	Not stated
Professional Liability Insurance		YES	YES	YES	YES
General Liability Insurance		YES	YES	YES	YES
FORCED RANKINGS:		Second	Third	First	Fourth
1 - First					
2 - Second					
3 - Third					
4 - Fourth					

EXHIBIT "C"

TETRA TECH

September 29, 2015

Mr. Malcolm A. Cortez, P.E., Principal Engineer
Engineering Operations Support
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612

Reference: Proposal for Engineering Design Services for Dyer Road Well Field Surge Tank Project

Dear Mr. Cortez:

Tetra Tech is pleased to submit our proposal for engineering design services for the Dyer Road Well Field Surge Tank Project. We value the relationship that has been built with Irvine Ranch Water District (IRWD) during our past projects and look forward to continuing and expanding this association in the future. Our project team is the ***"right"*** team to provide these services for the following reasons:

- ***Extensive IRWD Surge Tank Experience*** – Members of the project team have designed and completed numerous successful pump station projects which included the construction of surge tanks. These include the following: Zone 1-3 Booster Pump Station; Shady Canyon Zone B Booster Pump Station; Coastal Booster Pump Station Modifications; Tustin Zone 5 Booster Pump Station; and Well 77 (bladder tank). Therefore, our project team knows IRWD's surge tank design, electrical and P&ID standards, preferred materials, and operational preferences which will allow us to deliver a complete design in the most cost-effective manner.
- ***Extensive Pump Station/Wells Design Experience with IRWD*** – Our project team has previously designed over six (6) pump station, and ten (10) well facilities projects for IRWD. We know IRWD.
- ***Local In-House Survey, Structural, Electrical and Control Capabilities*** – Tetra Tech has our own in-house local, registered surveyor, structural, electrical and control engineers with extensive experience with IRWD facilities.
- ***Dedication to IRWD*** – Tetra Tech believes that IRWD is an important client. Our approach will include a "teaming and partnering" relationship. We will strive to exceed your expectations through hard work, attention to detail, close communication, schedule and budget management.

Our team is looking forward to working with you and your staff. We are committed to providing IRWD with high quality service. If you have any questions regarding our proposal, please feel free to contact me.

Sincerely,

Tom Epperson, P.E.
Project Manager

TLE/bm
M:\Marketing\Proposals\WTRS\FY2015\WT\110_IRWD-DyerRd-WellFieldSurgeTank\drafts
Attachment

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500 Irvine, CA 92614-6213
Tel 949.809.5000 Fax 949.809.5010 www.tetratech.com

TABLE OF CONTENTS

WHY TETRA TECH

Tetra Tech is the ***"right"*** team to provide the engineering design services for the Dyer Road Well Field Surge Tank Project for the following reasons:

- ***Extensive IRWD Surge Tank Experience*** – Members of the project team have designed and completed numerous successful pump station projects which included the construction of surge tanks. These include the following: Zone 1-3 Booster Pump Station; Shady Canyon Zone B Booster Pump Station; Coastal Booster Pump Station Modifications; Tustin Zone 5 Booster Pump Station; and Well 77 (bladder tank). Therefore, our project team knows IRWD's surge tank design, electrical and P&ID standards, preferred materials, and operational preferences which will allow us to deliver a complete design in the most cost-effective manner.
- ***Extensive Pump Station/Wells Design Experience with IRWD*** – Our project team has previously designed over six (6) pump station, and ten (10) well facilities projects for IRWD. We know IRWD.
- ***Local In-House Survey, Structural, Electrical and Control Capabilities*** – Tetra Tech has our own in-house local, registered surveyor, structural, electrical and control engineers with extensive experience with IRWD facilities.
- ***Dedication to IRWD*** – Tetra Tech believes that IRWD is an important client. Our approach will include a "teaming and partnering" relationship. We will strive to exceed your expectations through hard work, attention to detail, close communication, schedule and budget management.

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

This is a challenging project, and it should be managed by a well tenured team of professionals who have a history of successfully completing similar projects within schedule and under budget. We have that team with **Tom Epperson, P.E., Project Manager,** and **Mike Tsoi, P.E., Task Leader**. Tom and Mike have worked together for over 15 years on pipeline and well/pump station projects for IRWD.

No two projects are the same, although many are similar. The key is to utilize elements of work that have been successful and can be appropriately applied to this project, continue to improve construction efficiencies without lowering quality based on contractor feedback, and maximize the overall operational flexibility.

We feel the previous work that Tetra Tech has done on the Zone 1-3 Booster Pump Station as well as the several IDP Well Projects are examples of our quality product which has resulted in a low overall cost for IRWD. We want to utilize the experience gained from working on the previous projects, and to continue providing IRWD with exceptional services to assure that another project is successfully completed to the satisfaction of IRWD.

PROJECT UNDERSTANDING

The Dyer Road Well Field (DRWF) was constructed in the 1990s as a domestic water source for IRWD. DRWF consists of 18 wells located in the City of Santa Ana. Several of the wells, Well 11, Well 13, and Well 15, were originally constructed with surge tanks. The surge tank at Well 11 is 22,300 gallons in size and buried underground with one end of the tank exposed in a vault. The surge tank at Well 13 is 2,400 gallons in size and located aboveground. The surge tank at Well 15 is 10,500 gallons in size and buried underground with one end of the tank exposed in a vault.

Well 11 and Well 15 sites are located in areas with shallow groundwater. Inspection of the surge tanks indicates that the tanks are corroding and the tank wall thickness is thinning. Due to the decreasing wall thicknesses, these tanks need to be replaced.

With the need to replace the Well 11 and Well 15 surge tanks, IRWD retained Flow Science to perform a comprehensive surge analysis to determine the required surge protection for IRWD's DRWF and the Zone 1 Distribution System. Based on the 2015 Flow Science Report, IRWD is proposing to install new surge tanks at Well 5 and Well 7 and replace the existing surge tanks at Well 11 and Well 15. It is IRWD's desire to construct all four surge tanks aboveground to avoid groundwater and corrosion. There is room for the aboveground surge tanks at Well 5 and Well 7. Well 11 and Well 15 are located in residential neighborhoods, and Well 15 shares a parking lot with a Sikh Temple. One possible aboveground installation alternative is to recess the concrete foundation of the surge tank several feet into the ground so the aboveground tank does not have a tall profile. Access to the well and the well building must be maintained at all four of the well sites. IRWD prefers bladderless surge tanks. The existing air compressors at Well 11 and Well 15 will need to be replaced as part of the project.

The design scope will include:

- Design a new 603 cubic foot surge tank at Well 5, including an air compressor, piping, valves, and other appurtenances;
- Design a new 1,206 cubic foot surge tank at Well 7, including an air compressor, piping, valves, and other appurtenances;
- Determine the area available at Well 11 and Well 15 for construction of a larger replacement surge tanks;
- Design a larger 3,454 cubic foot surge tank at Well 11 to replace the existing 2,985 cubic foot tank, if the site can accommodate a larger tank; and
- Design a larger 1,570 cubic foot surge tank at Well 15 to replace the existing 1,400 cubic foot tank, if the site can accommodate a larger tank.

PROJECT APPROACH

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

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

We value the relationship that has been established with IRWD, and look forward to continuing and further developing this association in the future. We are committed to providing IRWD with the same high quality service you expect and deserve. Our strength lies in our proven track record that has led to successful completion of multi-projects for IRWD, as well as, other project participants or nearby agencies. The following is a summary of the distinct advantages that the Tetra Tech team brings to IRWD.

IRWD Design Experience

Members of our project team, Tom Epperson, Mike Tsoi, and our structural/electrical/controls staff, have completed the following pump station/well building projects for IRWD during the last ten years:

Pump Station/Well Projects:

- Well 78, Well 107, and Well 115 Replacements
- IDP Wellhead Facilities – Wells 76, 77, 110, and 107 (Well 77 included a 700 gallon bladder tank)
- IDP Principal Aquifer Plant, SGU Treatment Site, and Wells ET-2 and 78
- South County Zone 1-3 Booster Pump Station (included a 15,000 gallon surge tank)
- Shady Canyon Zone B (included a 11,750 gallon surge tank)
- Coastal RW Pump Station Modifications (included a 3,000 gallon and a 4,500 gallon surge tanks)
- Tustin Zone 5 Booster Pump Station (included a 2,500 gallon and 3,800 gallon surge tanks)

Therefore, our project team knows the IRWD's design procedures and standards, electrical and P&ID standards, preferred materials, and operational preferences which will allow us to deliver a complete design in the most cost-effective manner.

Key Issues

Successful implementation of the project will involve resolution of several key issues. We believe Tetra Tech has an unparalleled grasp of these issues based on our overall experience, capabilities, and familiarity with other IRWD projects, personnel and policies. Our approach to resolving project issues is summarized in the table below:

SUMMARY OF KEY ISSUES

Issues	Tetra Tech Approach
Well 5 and Well 7	• Location of new surge tank and air compressor enclosures. Minimize impacts to well maintenance and clearance from existing piping. • Identify the existing power available at each site and determine if it is sufficient or if improvements are required. • Ensure ease of future maintenance of surge tank, surge tank controls, and air compressor.
Well 11 and Well 15	• Determine limits of excavation for removal of existing surge tanks. • Determine required shoring to protect existing building, perimeter walls, and existing transformers. • Verify largest size for each of the replacement surge tanks. • Evaluate alternatives to minimize the tank profile – recess the concrete foundation several feet into the ground. Design appropriate retaining wall for the recessed concrete foundation or panel precast vaults. • Confirm existing air compressor and conduits – size, capacity, and features. • Evaluate options for drainage disposal of the recessed vault/pad sump area.
Controls and Operation	• Determine if additional electrical improvements are required at any site. • Review controls and operation of the surge tank controls and compressors. • Confirm location of conduit runs, conduit penetration and power conduits.

Project Management

Over the years, Tetra Tech has established well defined, rigorous procedures for project management. These techniques have been developed and refined and have contributed to our success and reputation. The keys to our project management system are communications, project planning, monitoring, and quality assurance. The Tetra Tech team's goal is to keep IRWD staff "in the loop" from day one of the project. Communication tools include the formal progress reports afforded through our project management system and an informal give-and-take approach starting with Tom Epperson, our Project Manager, and extending to every member of the Tetra Tech team. We will conduct formal meetings with agenda and typewritten notes, and we will use informal meetings with notes to file. We also will have documentation of telephone communications, with notes to file or letters of understanding as appropriate follow-up. Another important communication link will be our e-mail system.

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

SCOPE OF SERVICES

Members of the project team have performed an in-depth review of the project description and scope of work within the Request for Proposal (RFP). We propose to provide the following scope of work for the Preliminary Design and Final Design Phase Services. All work will be completed in accordance with the requirements identified in IRWD's Design Process Manual.

Task 1 – Preliminary Design Report (PDR)

Tetra Tech will prepare a PDR including and addressing the following items:

1. Site Survey – Tetra Tech will conduct site survey work to design the new surge tanks, new air compressors, and any other required facilities, and provide topographic maps of the entire property of each of the four (4) project sites. The survey will be tied to the Orange County Public Works Survey Control network for horizontal and vertical control. Tetra Tech will set two (2) on site control temporary monuments at each project site that can be used during the construction phase of the project.

2. Utility Review – Tetra Tech will perform utility research necessary to locate utilities or other physical features including all IRWD utilities and any other utilities owned by other agencies. Tetra Tech has included budget for potholing of up to three (3) utilities as necessary at each of the four (4) sites for a total of twelve (12) potholes.

3. Geotechnical Review – Tetra Tech and Leighton Consulting will conduct a review of geotechnical reports and investigations for each site. Tetra Tech along with Leighton Consulting will determine if additional geotechnical investigations are required for each site.

4. Optional Geotechnical Investigation – If necessary, Leighton Consulting will conduct a geotechnical investigation at up to four (4) sites. This additional geotechnical/soils investigation work will include drilling of up to a total of four (4) borings (one soil boring per site) to determine the geotechnical conditions at the well sites. The borings will be advanced to a depth of 20 to 25 feet below the existing grade or auger refusal, whichever is shallower. Leighton will provide soils analysis for use in the design of the proposed improvements.

5. Conceptual Layout – Tetra Tech will provide a conceptual site layout for each well site. The site layouts shall include the location of the existing well building, proposed surge tank, any piping and valves, proposed air compressor, and conduit runs from the building to the surge tank and air compressor. The site layouts shall include the existing reservoirs, piping, and any other utility locations. The site layouts shall also include locations of existing or additional electrical transformers/panels and electrical conduits. The conceptual layout shall identify the property lines, and any other easement locations. The layout will include a location of any temporary tanks required during construction.

6. Optional Cathodic Protection – If any of the new surge tanks are buried, Tetra Tech will evaluate and design a cathodic protection system to protect the buried surge tank(s) including using sacrificial anodes. Any buried surge tank will also be coated. Any aboveground surge tanks will also be painted.

7. Electrical – Tetra Tech will identify the existing power available at each site and determine if it is sufficient or make recommendations for any required improvements for the installation of the surge tanks and air compressor. Tetra Tech will design additional electrical improvements necessary if additional

power is required at any of the sites. Tetra Tech will contact Southern California Edison if a larger Edison service is required.

8. Instrumentation – Tetra Tech will review the existing PLC at the well sites and provide an instrumentation design that will incorporate the new equipment. Tetra Tech will evaluate the existing PLCs to confirm the existing PLCs capability to incorporate any additional input and output points or whether PLC upgrades are needed. SCADA programming for the PLC will be provided by a third party programmer hired by IRWD.

9. Right-of-Way – Existing property lines are shown on the record drawings. Tetra Tech will identify all existing property lines, permanent easements and temporary construction easements required for the construction project, if required. IRWD will generate any legal descriptions, if required. Tetra Tech will provide the CAD files to prepare the legal description.

10. Permits – Tetra Tech will work with IRWD to identify and obtain the required permits for the proposed project including the City of Santa Ana Encroachment Permit and any others. Copies of the completed permits shall be inserted in the Project Manual's Appendix.

11. CEQA Documentation - Tetra Tech will provide IRWD with a summary of construction activities related to environmental impacts in support of CEQA documentation. We have budgeted $4,000 for this task.

12. Project Schedule – Tetra Tech will submit one project schedule for the construction project that reflects coordination items, long lead items, critical path issues and IRWD review times.

13. Estimate of Probable Construction Costs – Tetra Tech will provide preliminary estimate of probable construction costs for the construction project.

14. Meetings – Tetra Tech has budgeted for four (4) meetings: project kick-off and information gathering including a site visit to each site; review meeting to discuss the conceptual layout; a draft PDR review meeting; and a final PDR meeting with IRWD.

15. Deliverables – Tetra Tech will provide ten (10) copies of handouts and minutes for each meeting, ten (10) copies of the "Draft PDR", ten (10) copies of the "Final PDR", and electronic copies of all documents.

Task 2 – Final Design

Tetra Tech will address the following items in final design.

1. Construction Drawings – Tetra Tech will prepare civil, mechanical, structural, electrical and other drawings as needed for all scope of work items at the four (4) sites, including but not limited to: site plans; civil plans; mechanical plans; structural plans; electrical plans; instrumentation plans; and detail drawings.

   A Preliminary Drawing list is provided at the end of the Scope of Services.

   Tetra Tech will prepare detailed construction drawings in the latest version of AutoCAD using IRWD's title block. Each plan sheet shall be on IRWD's 24-inch x 36-inch sheet. The final AutoCAD electronic files shall be submitted to IRWD on compact disc. The final construction drawings shall be submitted as a single full-sized PDF (portable document format) file on a separate compact disc.

2. Project Manual – Tetra Tech will prepare a Project Manual in standard IRWD format, with an original set of bidding documents in 8-1/2-inch x 11-inch format. Computer files of the Project Manual shall be submitted to IRWD in the latest version of Microsoft Word on compact disc. The Project Manual shall also be submitted to IRWD as a single PDF file on a separate compact disc.

3. Final Design Deliverables – Deliverables shall be made as follows:

   a. Submit ten (10) copies of the first (50%) submittal. This submittal shall include a draft set of plans for the entire project. Plans for the first submittal shall clearly show layouts of each component of the design such as civil, mechanical, structural, electrical/instrumentation, and detail sheets. The first submittal shall include all sections of the Project Manual including draft technical specification sections. The General Provisions do not need to be included. An engineer's estimate of probable construction cost shall be submitted with this submittal.

   b. Submit ten (10) copies of the second (90%) submittal. Plans for the pre-final submittal shall clearly show layouts of each component of the design such as civil, mechanical, structural, electrical/instrumentation, and detail sheets. The pre-final submittal shall incorporate IRWD staff comments on the first submittal, as well as, any comments received in the 50% plan preview meeting. The General Provisions do not need to be included. An engineer's estimate of probable construction cost shall be updated for this submittal.

   c. Submit ten (10) copies of the final (100%) submittal. This submittal shall include a final set of plans for the entire project. Plans for the final submittal shall clearly show layouts of each component of the design such as civil, mechanical, structural, electrical/instrumentation, and detail sheets. The final submittal shall incorporate IRWD staff comments on the 90% submittal, as well as, any comments received in the 90% plan preview meeting, if any. The General Provisions do not need to be included. An engineer's estimate of probable construction cost shall be updated for this submittal.

   d. Submit stamped and signed reproducible plans (mylars), bond paper set of final plans and original signed Project Manual for IRWD signatures. Attend the meeting with IRWD signatures to explain the project and answer questions. An updated Engineer's estimate shall be submitted with the final plans and Project Manual.

4. Project Meetings – Conduct and attend project review meetings, including meeting minutes, with IRWD and other project team members. There will be a kick-off meeting, one meeting to preview the 50% plan, one meeting to preview the 90% plan, and one meeting to review the final 100% plan submittal, with IRWD. We have assumed a total of four (4) meetings.

5. Project Schedule – Tetra Tech will submit a project schedule with the draft design submittals and final design submittal for the construction project that reflects coordination items, date of completed plans, critical path issues, IRWD review times, and shop drawing approval, manufacturing and delivery times for long lead items.

6. Right-of-Way Legal Descriptions – IRWD will generate any legal descriptions, if required. Tetra Tech will provide the CAD files to prepare the legal description.

7. Permits – Tetra Tech will identify and obtain the required permits for the proposed project including City of Santa Ana encroachment permits and any others. Copies of completed permits shall be inserted in the Project Manual's Appendix.

8. Liquidated Damages Calculations – Tetra Tech will assist in calculating liquidated damages value for each construction project, should the contract time be exceeded. IRWD's standard liquidated damage calculation form will be used.

9. Estimate of Probable Construction Cost – Tetra Tech will provide an itemized construction cost estimate at each design deliverable submittal.

10. Bid Period Assistance – During the bidding period, Tetra Tech will assist with providing information and clarifications of bid documents to prospective bidders. We have assumed Tetra Tech will be required to prepare one (1) addendum for all prospective bidders.

LIST OF CONSTRUCTION DRAWINGS

- Title Sheet
- Site Vicinity and Location Maps
- Drawing Index with General Notes, Abbreviations, Legends
- Well 11 Demolition Site Plan and Sections
- Well 15 Demolition Site Plan and Sections
- Well 11 and Well 15 Mechanical Demolition Plan and Sections (within buildings)
- Well 5 Site, Grading and Piping Plan
- Well 7 Site, Grading and Piping Plan
- Well 5 and Well 7 Piping Profiles
- Well 11 Site, Grading and Wall Plan and Sections
- Well 15 Site, Grading and Wall Plan and Sections
- Well 11 Piping Plan and Profiles
- Well 15 Piping Plan and Profiles
- Site Details (2 sheets)
- Well 5 Surge Tank Mechanical Plan and Section
- Well 7 Surge Tank Mechanical Plan and Section
- Well 5 and Well 7 Air Compressor Enclosure Plan, Section and Details
- Well 11 Surge Tank Mechanical Plan and Section
- Well 15 Surge Tank Mechanical Plan and Section
- Well 11 Mechanical Plan and Sections (within building)
- Well 15 Mechanical Plan and Sections (within building)
- Well 11 and Well 15 Sump Details and Piping Details
- Miscellaneous Mechanical Details
- General Structural Notes
- Structural Observation and Special Inspection
- Foundation Plans and Sections – Well 5 and Well 7
- Foundation Plans and Sections – Well 11 and Well 15
- Retaining Wall Sections and Details
- Structural Details
- General Electrical Notes and Electrical Standard Symbols and Abbreviations
- Electrical Site Plans and Conduit Plans (4 sheets – one sheet per site)
- Electrical Details
- Instrumentation Notes and Standard Symbols and Abbreviations
- P&ID Plans (4 sheets – one sheet per site)
- Instrumentation Details

Total Number of Sheets = 42 sheets

PROJECT TEAM

The key for success on this project is the project team we have assigned and their relationship with IRWD as they have designed the last ten pump stations/wells for IRWD.

As with past assignments for IRWD, we propose to approach this assignment with a spirit of partnership with IRWD. This will enable us to combine the knowledge, ideas, and talents of IRWD's staff with our planning, design and construction experience to provide extraordinary results.

The following presentation introduces key members of our project team, all of whom have the knowledge, experience, and enthusiasm necessary to successfully complete your project. ***It will be our collective goal to not only meet, but to exceed, your expectations.*** The following paragraphs summarize the qualifications of our key project staff.

Project Manager: **Tom Epperson, P.E.** will be the Project Manager and will provide project oversight and ensure that the necessary resources are committed to Mike Tsoi in order to get the job done. Tom has over 32 years of experience and will provide his technical expertise to assist the design team in the areas of constructability, specifications, review and as-needed project management support. Tom and Mike have been working together for 15 years on similar pump station/wells and pipeline projects for IRWD.

Task Manager: **Mike Tsoi, P.E.** will provide the overall project direction and coordination, technical oversight, quality management and provide all day-to-day contact with IRWD staff. Mike has over 20 years of experience working on similar projects. He has previously worked with IRWD on the following past projects: IDP Pipeline, Irvine Desalter Wells, Shady Canyon Pump Station, and Tustin Zone 5 Pump Station and Transmission Main.

Project Engineer: **Laurence Esguerra, P.E.** will work directly with Tom and Mike and has over 10 years of experience. Laurence has previously worked with IRWD on the following past projects: Zone 1-3 Booster Pump Station, IDP Wells, Well 78 and Well 107, and IDP Conveyance Pipelines.

The above key team members are seasoned and have designed over 13 wells and 10 booster pump stations during the last ten years.

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

Geotechnical Investigation:	**Leighton Consulting (DIR Registration #: 1000007443)**
Potholing:	**C-Below**

We have included resumes of all of the staff in the Appendix.

Tetra Tech Summary of Staff Experience

Staff	Position and Location	Education	No. Years Exp.	California Registration	Availability/ Commitment	No. of Wells/BPS	Projects	Project Duty
Tom Epperson	Senior Project Manager Irvine Office	B.S. Environmental Engineering	32	RCE No. 36399	25% / 15%	15/36	Well 78 and Well 107 IDP Wells South County Booster Pump Station Shady Canyon Zone B Coastal Booster Pump Station Modifications Tustin Zone 5 Booster Pump Station OCWD Burris Pump Station Orange New Santiago Pump Station	PM PM PM PM PM PM PM PM
Mike Tsoi	Project Engineer Irvine Office	B.S. Civil Engineering	19	RCE No. 53715	33% / 25%	13/8	Well 78 and Well 107 IDP Wells South County Booster Pump Station Shady Canyon Zone Booster Pump Station Coastal Booster Pump Station Modifications Tustin Zone 5 Booster Pump Station	PE PE PE PE PE PE
Laurence Esguerra	Project Engineer Irvine Office	B.S. Civil Engineering	10	RCE No. 73803	33% / 25%	6/12	IDP Wells Well 78 and Well 107 South County Booster Pump Station OCWD Burris Pump Station WBMWD Dominguez Booster Pump Station	PE PE PE PE PE
Mazen Kassar	Electrical Engineer Irvine Office	B.S. Electrical Engineering	22	EE No. 15809	20% / 15%	4/12	Recent IRWD Pump Stations/Wells	EE
David Kuang	Structural Engineer San Dimas Office	B.S. Architectural Engineering	23	RCE No. 47499 SE No. 3945	15% / 15%	N/A	Recent IRWD Buildings	SE

PREVIOUS SIMILAR PROJECTS

IRWD Design Experience

Members of our project team, Tom Epperson, Mike Tsoi and our structural/electrical/controls staff, have completed the following pump station/well building projects for IRWD during the last ten years:

Pump Station/Well Projects – Well 78, Well 107, and Well 115 Replacements; IDP Wellhead Facilities – Wells 76, 77, 110, and 107; IDP Principal Aquifer Plant, SGU Treatment Site and Wells ET-2 and 78; South County Zone 1-3 Booster Pump Station; Shady Canyon Zone B and Coastal RW Pump Station Modifications; and Tustin Zone 5 Booster Pump Station.

Therefore, our project team knows IRWD's design procedures and standards, electrical and P&ID standards, preferred materials, and operational preferences which will allow us to deliver a complete design in the most cost-effective manner.

Surge Tank Facilities

During the last 10 years, our project team has been involved in the design of the following surge tank facilities:

South County (Zone 1-3) Booster Pump Station a 15,000 gallon surge tank with air compressor and controls in enclosure.

Shady Canyon Zone B Booster Pump Station an 11,750 gallon surge tank with air compressor and controls outside.

Coastal Booster Pump Station Modifications Zone A 3,000 gallon and Zone B 4,500 gallon surge tanks with compressor in pump station building.

Tustin Zone 5 Booster Pump Station suction 2,500 gallon and discharge 3,800 gallon surge tanks with compressor in pump station building.

Well 77 a 700 gallon bladder surge tank.

Burris Pump Station for Orange County Water District: three (3) 36,000 gallon surge tanks with air compressor within pump station building. Contact: Orange County Water District: Chris Olsen, Assistant Director of Engineering, 714/378-3232

New Santiago Booster Pump Station for the City of Orange: two (2) 2,500 surge tanks with air compressor within pump station building. Contact: City of Orange: Sonny Tran, Senior Civil Engineer, 714/288-2497

Dominguez Booster Pump Station for West Basin Municipal Water District: 500 gallon bladder surge tank. Contact: West Basin Municipal Water District, 310/217-2411

SUMMARY

Client satisfaction is a major objective for Tetra Tech. This commitment to our clients has earned us the privilege of providing continuous services to all of our above listed references. We believe that our clients will attest to our technical excellence and responsive staff. We encourage you to contact our references to verify our past performance firsthand. However, we believe our best reference is IRWD. We are confident that our past projects with IRWD will attest to our technical excellence, responsive staff, and our complete understanding of every aspect of this project.

SCHEDULE

Tetra Tech thoroughly understands that meeting the proposed project schedule is one of the keys of making this project a success. The approach we have formulated and the team we have assembled are specifically geared toward this goal.

The time schedule presented below identifies a planning and design schedule that provides more than ample time to complete the tasks identified in our Scope of Services. In addition, our proposed timetable is flexible and can be easily modified to accommodate IRWD needs. Tetra Tech has reviewed the current and planned workload for our project team. They are available to immediately begin the work on this project. The following is a summary of our significant milestones:

Milestone	Dates (assuming October 27, 2015 Award)
Submit Draft PDR	December 15, 2015
Submit Final PDR	January 12, 2016
Submit 50% Plan Submittal	February 9, 2016
Return of IRWD Review Comments	February 23, 2016
Submit 90% Plan Submittal	March 22, 2016
Return of IRWD Review Comments	April 5, 2016
Submit Final 100% Plan Submittal	May 3, 2016

BUDGET

As requested in the RFP, Tetra Tech has included our budget proposal in a separate sealed envelope. Our budget proposal includes estimated hours per task, subconsultant costs, reproduction, and other direct costs.

MISCELLANEOUS

Joint Venture – No joint venture will be used on the project.

Conflict of Interest – Tetra Tech has no Conflicts of Interest on this project.

Insurance – Tetra Tech has insurance coverage in the limits required in the request for proposal. A copy of our insurance documentation is attached on the following page.

Contract – Tetra Tech has reviewed the sample IRWD contract and we have no proposed changes.

Irvine Ranch Water District
Dyer Road Well Field Surge Tank Project

Fee Summary

Task Description		Project Manager	Task Manager	Project Engineer	Design Engineer	CADD	Work Processor	Total Hours	Fees: Labor	Fees: Sub-Contractors Re-imbursables	TOTALS
Project Management											
A Bi-weekly E-mails (14)		0	14	0	0	0	0	14	$2,240	$0	$2,240
B Monthly Reports (7)		2	6	0	0	0	0	8	$1,560	$0	$1,560
C QA/QC		38	0	0	0	0	0	38	$11,400	$0	$11,400
Reproduction/Mileage		0	0	0	0	0	0	0	$0	$0	$0
	Subtotal	40	20	0	0	0	0	60	$15,200	$0	$15,200
1 Preliminary Design											
1 Site Surveys		0	0	36	48	0	0	84	$12,000	$0	$12,000
2 Utility Review		0	2	0	12	16	0	30	$3,960	$13,200	$17,160
3 Geotechnical Review		0	4	0	0	0	1	5	$740	$2,200	$2,940
4 Geotechnical Investigation (Optional)		0	2	0	0	0	1	3	$420	$19,800	$20,220
5 Conceptual Layout		0	8	0	16	32	0	56	$7,520	$0	$7,520
Structural Support		4	0	16	24	16	4	64	$9,360	$0	$9,360
6 Optional Cathodic Protection		0	4	4	8	4	2	22	$3,040	$5,500	$8,540
7,8 Electrical/Instrumentation		6	0	16	48	32	2	104	$14,960	$0	$14,960
9 Right-of-Way		0	2	0	4	2	0	8	$1,100	$0	$1,100
10 Permits		0	4	0	4	2	2	12	$1,620	$0	$1,620
11 CEQA Documentation		0	4	8	8	8	0	28	$4,000	$0	$4,000
12 Project Schedule		0	4	0	4	0	0	8	$1,160	$0	$1,160
13 Estimate of Construction Costs		2	6	0	8	0	0	16	$2,600	$0	$2,600
14 Meetings		4	8	0	0	0	2	14	$2,680	$0	$2,680
15 Deliverables/ Draft & Final PDR		4	24	0	6	8	4	46	$7,260	$0	$7,260
Reproduction/Mileage		0	0	0	0	0	0	0	$0	$680	$680
	Subtotal	20	72	80	190	120	18	500	$72,420	$41,380	$113,800
2 Final Design											
1 Construction Drawings											
General Sheets (3 sheets)		0	2	4	16	20	0	42	$5,640	$0	$5,640
Well 11 and 15 Demolition Plans (3 sheets)		0	4	6	12	24	0	46	$6,280	$0	$6,280
Well 5&7 Site, Grading, Piping Plan (2 shts)		0	4	8	12	16	0	40	$5,560	$0	$5,560
Well 5 & 7 Piping Profiles		0	2	2	6	12	0	22	$2,980	$0	$2,980
Well 11&15 Site, Grading & Wall Plans (2 shts)		2	6	10	16	28	0	62	$8,880	$0	$8,880
Well 11&15 Piping Plan and Profiles (2 shts)		0	2	4	8	16	0	30	$4,080	$0	$4,080
Miscellaneous Civil Details (2 sheets)		0	2	4	8	20	0	34	$4,600	$0	$4,600
Surge Tank Mech Plan & Sections (4 shts)		0	4	8	16	32	0	60	$8,160	$0	$8,160
Well 5&7 Compressor Enclosure		0	4	2	8	12	0	26	$3,560	$0	$3,560
Well 11&15 Building Mech Plans (2 shts)		0	2	4	8	16	0	30	$4,080	$0	$4,080
Misc Mechanical Details (2 shts)		0	2	4	8	16	0	30	$4,080	$0	$4,080
Structural Sheets (6 sheets)		8	0	32	60	60	0	160	$23,120	$0	$23,120
Electrical Plans (6 sheets)		8	0	18	80	100	0	206	$28,680	$0	$28,680
Instrumentation Plans (6 sheets)		8	0	18	80	100	0	206	$28,680	$0	$28,680
2 Project Manual		4	24	0	0	0	8	36	$5,840	$0	$5,840
3 Design Deliverables		0	2	0	4	8	2	16	$2,080	$0	$2,080
4 Project Meetings (4)		4	8	0	0	0	2	14	$2,680	$0	$2,680
5 Project Schedule		0	2	2	0	0	0	4	$640	$0	$640
6 Right-of-Way Legal Description		0	0	0	2	6	0	8	$1,040	$0	$1,040
7 Permits		0	2	0	6	0	1	9	$1,200	$0	$1,200
8 Liquidated Damages Calculations		0	2	0	0	0	0	2	$320	$0	$320
9 Estimate of Construction Costs		2	6	0	0	0	0	8	$1,560	$0	$1,560
10 Bid Assistance		4	8	4	0	4	1	21	$3,740	$0	$3,740
Reproduction/Mileage		0	0	0	0	0	0	0	$0	$3,520	$3,520
	Subtotal	40	88	130	350	490	14	1112	$157,480	$3,520	$161,000
	Total	**100**	**180**	**210**	**540**	**610**	**32**	**1672**	**$245,100**	**$44,900**	**$290,000**

November 17, 2015 CK KNL
Prepared by: C. Kessler/K. Lew
Submitted by: K. Burton KLB
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

LAGUNA CANYON ROAD AND TECHNOLOGY DRIVE
CAPITAL RECYCLED WATER FACILITIES

SUMMARY:

Irvine Community Development Company (ICDC) is proceeding with development of the Technology Drive Extension. As part of the Technology Drive Extension, ICDC will construct approximately 6,000 feet of 24-inch recycled water pipeline within Laguna Canyon Road and Technology Drive. Project 30366 is included in the FY 2015-2016 Capital Budget in the amount of $3,223,500. Staff recommends that the Board authorize the General Manager to accept ICDC's construction contract with Sukut in the amount of $2,344,000 for the Laguna Canyon Road and Technology Drive Capital Recycled Water Facilities, Project 30366.

BACKGROUND:

ICDC is moving forward with the extension of Technology Drive. As part of the Technology Drive Extension Project, ICDC will construct capital recycled water facilities within Laguna Canyon Road and Technology Drive as shown in the Location Map, attached as Exhibit "A". The required IRWD capital facilities are documented within the 2011 PA 40 Sub-Area Master Plan, and subsequent addendums and updates as prepared by Stantec.

The design and construction of the IRWD facilities will be performed under the terms of the Master Reimbursement Agreement and Supplemental Reimbursement Agreement between ICDC and IRWD approved by the Board in May 1997 and December 2014, respectively.

The Project consists of installing approximately 6,000 feet of 24-inch recycled water pipeline within Laguna Canyon Road between Irvine Center Drive and the new segment of Technology Drive, the new segment of Technology Drive between Laguna Canyon Road and the existing segment of Technology Drive, and within the utility easement between the new segment of Technology Drive up to the Heritage Fields El Toro LLC property. ICDC retained Michael Baker International to prepare the plans and they received bids from four contractors. ICDC recommends awarding the construction contract to the lowest bidder, Sukut, for a bid amount of $2,344,000 as shown in Exhibit "B". In addition, ICDC received consultant proposals for geotechnical observation and testing, surveying, construction support services and field archeological/paleontological monitoring. Staff has reviewed the consultant proposals and the construction bids and found the amounts to be acceptable. A summary of the Project costs is shown in the following list.

Design (Michael Baker Int'l)	$ 288,680.00
Design Change Order #1	$ 40,777.00
Construction (Sukut)	$2,344,000.00
Civil Engineering Services (Michael Baker Int'l)	$ 59,680.00
Geotechnical Services (GMU)	$ 62,075.00
Geotechnical Services - 3rd Party (Geopentech)	$ 19,510.00
Survey/Staking (Michael Baker Int'l)	$ 10,000.19
Field Archeo/Paleo Monitoring (LSA)	$ 7,850.00
Heritage Fields Administration Fee (1%)	$ 23,440.00
	$2,856,012.19

FISCAL IMPACTS:

Project 30366 (1015) is included in the FY 2015-16 Capital Budget. The existing budget is sufficient to fund design and construction.

ENVIRONMENTAL COMPLIANCE:

Construction of capital recycled water facilities as a part of the Technology Drive Extension Project is subject to CEQA. In conformance with the California Code of Regulations Title 14, Chapter 3, Article 7, an Environmental Impact Report was certified by the County of Orange on August 11, 1992 (920-31007).

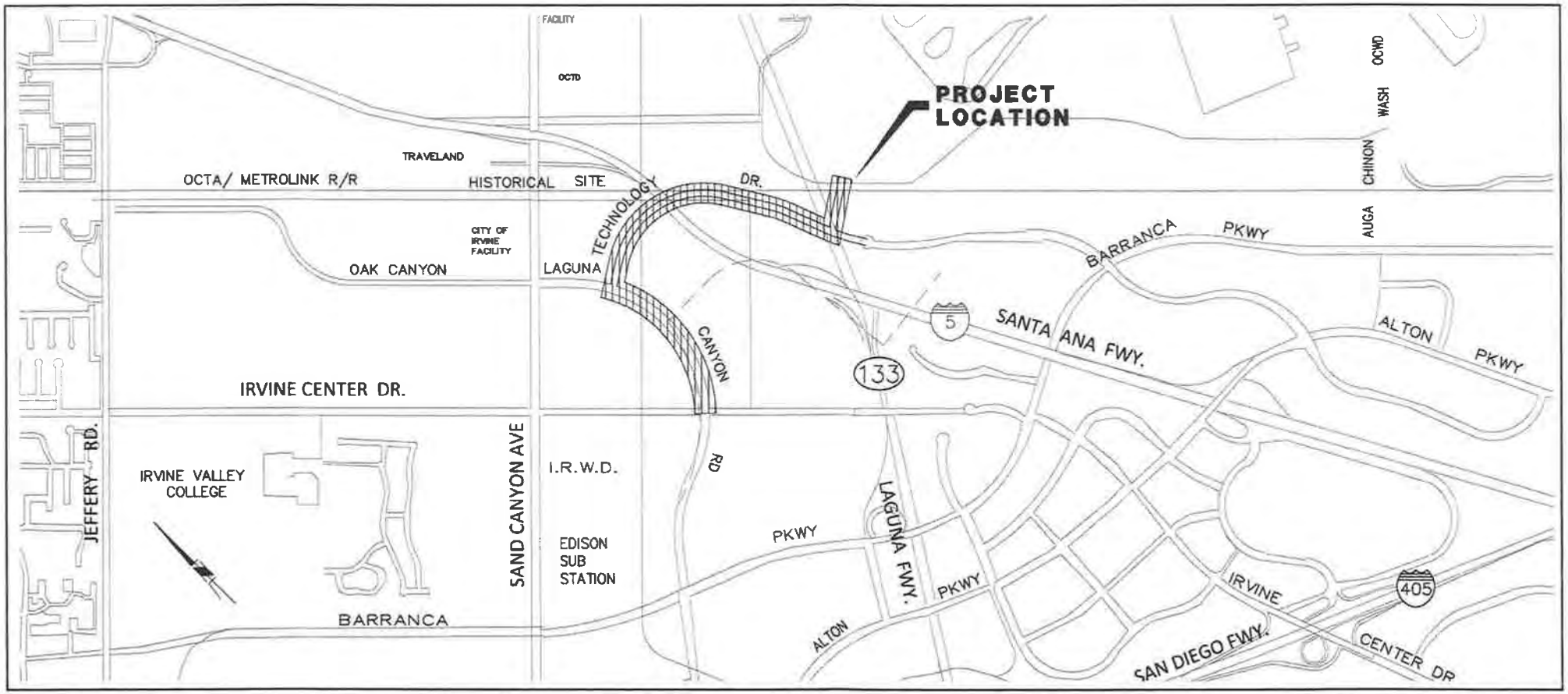
RECOMMENDATION:

That the Board authorize the General Manager to accept Irvine Community Deveopment Company's construction contract with Sukut in the amount of $2,344,000 for the Laguna Canyon Road and Technology Drive Capital Recycled Water Facilities, Project 30366.

LIST OF EXHIBITS:

Exhibit "A" – Location Map
Exhibit "B" – Bid Summary

EXHIBIT "A"



LOCATION MAP

EXHIBIT "B"

BID SUMMARY
SPECTRUM 6 - TECHNOLOGY DRIVE EXTENSION PROJECTS
ASSESSMENT DISTRICT, NON ASSESSMENT DISTRICT, IRWD CAPITAL AND NON CAPITAL IMPROVEMENTS
ALL PREVAILING WAGE
BID PACKAGE: B00237

TASK PC/ID: LD-5030.EG.01.cn01

			ENGINEER'S ESTIMATE RBF		IRWD 3rd Bid LOW BIDDER HILLCREST		IRWD Lowest Bid 2ND BIDDER SUKUT		IRWD 2nd Bid 3RD BIDDER SANTA ANA CREEK		IRWD 4th Bid 4TH BIDDER KEC		
O2	**OWNER'S OPTION -IRWD CAPITAL IMPROVEMENTS NOTE 1 (SECTION O2)**												
	(OWNER MAY OR MAY NOT INCLUDE THE FOLLOWING ITEMS IN THE CONTRACT)												
165A	OWNER'S OPTION ALTERNATE 1A - 24" RECYCLED WATER PIPELINE SLURRY SEAL AND RESTRIPE- (SEE PROJECT APPENDIX H-2 FOR LIMITS)	75,650 SF	$1.00	$75,650.00	$0.35	$26,477.50	$0.40	$30,260.00	$0.21	$15,886.50	$0.65	$49,172.50	ALTERNATE 1A
165B	OWNER'S OPTION ALTERNATE 1B - 24" RECYCLED WATER PIPELINE 2.0 INCH COLD PLANE - (SEE PROJECT APPENDIX H-2 FOR LIMITS)	51,570 SF	$0.50	$25,785.00	$0.26	$13,408.20	$0.40	$20,628.00	$0.32	$16,502.40	$0.55	$28,363.50	ALTERNATE 1B
166B	CONSTRUCT HMA-A OVERLAY (2.0 INCH DEPTH) AND RESTRIPE- (SEE APPENDIX H-2 FOR LIMITS)	51,570 SF	$1.25	$64,462.50	$1.29	$66,525.30	$1.25	$64,462.50	$1.08	$55,695.60	$1.40	$72,198.00	ALTERNATE 1B
	TOTAL IRWD OWNER'S OPTION ALTERNATE 1A BID PRICE (SECTION M-O2.)			$75,650.00		$26,477.50		$30,260.00		$15,886.50		$49,172.50	ALTERNATE 1A
	TOTAL IRWD OWNER'S OPTION ALTERNATE 1B BID PRICE (SECTION M-O2.)			$90,247.50		$79,933.50		$85,090.50		$72,198.00		$100,561.50	ALTERNATE 1B
	GRAND IRWD TOTAL BASE CONTRACT BID PRICE AND OWNER'S OPTION (SECTIONS A -S.) (ALTERNATE 1A)			$2,954,850.00		$2,962,042.50		$2,258,910.00		$2,554,545.50		$4,000,000.00	ALTERNATE 1A
	GRAND TOTAL IRWD BASE CONTRACT BID PRICE AND OWNER'S OPTION (SECTIONS A,-S.) (ALTERNATE 1B)			$2,969,447.50		$3,015,498.50		$2,313,740.50		$2,610,857.00		$4,051,389.00	ALTERNATE 1B
	GRAND TOTAL IRWD BASE CONTRACT BID PRICE AND OWNER'S OPTION (SECTIONS A -S) (ALTERNATE 1A AND ALTERNATE 1B)							$2,344,000.50					

E: ___Dave Conley
___Mike Morse
___Jason Knudson
___File with Bid Key Map
___Mary Oshima - Cost Matrix

PRE-BID MEETING DATE: June 30, 2015
BID OPENING DATE: August 13, 2015
WITNESSED BY: Tina Bachelder
Mike Morse

DECLINED PRIOR TO PRE-BID:
NO SHOW AT PREBID:
DID NOT SUBMIT: RJ NOBLE, ALL AMERICAN, LEATHERWOOD

BID SUMMARY
SPECTRUM 6 - TECHNOLOGY DRIVE EXTENSION PROJECTS
ASSESSMENT DISTRICT, NON ASSESSMENT DISTRICT, IRWD CAPITAL AND NON CAPITAL IMPROVEMENTS
ALL PREVAILING WAGE
BID PACKAGE: B00237

TASK PCRD: LD-6030.EG.01.cn01

				ENGINEER'S ESTIMATE RBF		IRWD 3rd Bid LOW BIDDER HILLCREST		IRWD Lowest Bid 2ND BIDDER SUKUT		IRWD 2nd Bid 3RD BIDDER SANTA ANA CREEK		IRWD 4th Bid 4TH BIDDER KEC	
ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL	UNIT PRICE	TOTAL
	IRWD CAPITAL												
II.	**IRVINE RANCH WATER DISTRICT (CAPITAL) (SECTION M.-O.)**												
M.	**GENERAL**												
1	MOBILIZATION (NOT TO EXCEED 2% OF CONTRACT PRICE FOR SECTIONS M -O)	1	LS	$56,500.00	$56,500.00	$58,000.00	$58,000.00	$40,000.00	$40,000.00	$21,630.00	$21,630.00	$61,867.50	$61,867.50
2	PAYMENT AND PERFORMANCE BONDS (SECTIONS M -O)	1	LS	$79,000.00	$79,000.00	$34,000.00	$34,000.00	$17,000.00	$17,000.00	$21,897.00	$21,897.00	$32,000.00	$32,000.00
3	DEVELOP CONSTRUCTION WATER (SECTIONS M -O)	1	LS	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$12,000.00	$12,000.00	$14,940.00	$14,940.00	$2,700.00	$2,700.00
4	TRAFFIC CONTROL (SECTIONS M -O)	1	LS	$80,000.00	$80,000.00	$125,000.00	$125,000.00	$89,000.00	$89,000.00	$72,362.00	$72,362.00	$85,000.00	$85,000.00
5	PRESSURE TESTING	1	LS	$50,000.00	$50,000.00	$14,000.00	$14,000.00	$36,000.00	$36,000.00	$50,500.00	$50,500.00	$13,500.00	$13,500.00
6	RAILROAD FLAGMAN	15	DAY	$1,200.00	$18,000.00	$1,400.00	$21,000.00	$1,200.00	$18,000.00	$1,360.00	$20,700.00	$1,650.00	$24,750.00
N.	**INSTALL 24" RECYCLED WATER PIPELINE**												
7	INSTALL 24" CML&C WELDED STEEL PIPE, MINIMUM STL CYL THK 0 1345"	5770	LF	$300.00	$1,731,000.00	$300.00	$1,731,000.00	$190.00	$1,096,300.00	$229.00	$1,321,330.00	$448.00	$2,584,960.00
8	INSTALL 42" STEEL CASING (JACK AND BORE), 0.625" MINIMUM THK	323	LF	$1,100.00	$355,300.00	$1,295.00	$418,285.00	$1,050.00	$339,150.00	$1,190.00	$384,370.00	$1,350.00	$436,050.00
9	INSTALL 42" STEEL CASING (OPEN CUT), 0.5" MINIMUM WALL THK	40	LF	$650.00	$26,000.00	$440.00	$17,600.00	$350.00	$14,000.00	$1,205.00	$48,200.00	$500.00	$20,000.00
10	INSTALL 24" FLANGED BUTTERFLY VALVE CL-150	6	EA	$18,100.00	$108,600.00	$19,800.00	$118,800.00	$17,000.00	$102,000.00	$14,740.00	$88,440.00	$25,750.00	$154,500.00
11	INSTALL 6" BLOWOFF ASSEMBLY	4	EA	$12,000.00	$48,000.00	$26,950.00	$107,800.00	$20,000.00	$80,000.00	$10,200.00	$40,800.00	$27,000.00	$108,000.00
12	INSTALL 6" COMBINATION AIR VALVE ASSEMBLY	0	EA	$12,000.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	INSTALL 2" COMBINATION AIR VALVE ASSEMBLY	8	EA	$4,100.00	$32,800.00	$4,620.00	$36,960.00	$9,600.00	$76,800.00	$3,762.00	$30,096.00	$3,400.00	$27,200.00
14	INSTALL 6" SEWER LATERAL	4	EA	$7,500.00	$30,000.00	$3,960.00	$15,840.00	$2,800.00	$11,200.00	$26.00	$104.00	$11,000.00	$44,000.00
O1	**OTHER ITEMS**												
15	PAVEMENT REMOVAL	17,000	SF	$4.00	$68,000.00	$5.50	$93,500.00	$1.00	$17,000.00	$3.85	$65,450.00	$5.40	$91,800.00
16	4" HMA OVER 6" AB	17,000	SF	$8.00	$136,000.00	$3.34	$56,780.00	$3.60	$61,200.00	$5.62	$95,540.00	$13.50	$229,500.00
17	SHEETING, SHORING, AND BRACING OF TRENCHES AND UNDERGROUND UTILITIES	1	LS	$25,000.00	$25,000.00	$22,000.00	$22,000.00	$79,000.00	$79,000.00	$262,300.00	$262,300.00	$25,000.00	$25,000.00
18	ALL ELSE REQUIRED TO COMPLETE IRVINE RANCH WATER DISTRICT (CAPITAL) IMPROVEMENTS AS SHOWN ON PLANS, SPECIFICATIONS & AGENCY STANDARD, BUT NOT SHOWN ON SCHEDULE OF VALUES	1	LS	$10,000.00	$10,000.00	$40,000.00	$40,000.00	$140,000.00	$140,000.00	$0.00	$0.00	$10,000.00	$10,000.00
	TOTAL IRWD CAPITAL IMPROVEMENTS (SECTION M.-O.)				$2,879,200.00		$2,935,565.00		$2,228,650.00		$2,538,659.00		$3,950,827.50

November 17, 2015
Prepared by: K. Lew
Submitted by: K. Burton (KLB)
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

400 AND 450 SPECTRUM CENTER DRIVE
CAPITAL SEWER RELOCATION

SUMMARY:

Irvine Community Development Company (ICDC) is proceeding with construction of a new office tower at 400 and 450 Spectrum Center Drive. IRWD owns a 30-inch diameter trunk sewer crossing through the site that is required to be relocated to avoid conflict with the proposed office building and parking structure. As part of ICDC's site construction, they will abandon the existing trunk sewer and construct a new 36-inch diameter trunk sewer through the site. Staff requests that the Board:

- Authorize the addition of Project 21304 (6479) to the FY 2015-16 Capital Budget in the amount of $596,200;
- Authorize the General Manager to execute a Supplemental Reimbursement Agreement with ICDC; and
- Authorize the General Manager to accept ICDC's construction contract with KEC Engineering in the amount of $1,490,825 for the 400 and 450 Spectrum Center Drive Sewer Relocation Project.

BACKGROUND:

The Project consists of the abandonment of approximately 650 feet of 30-inch diameter sewer and installation of 650 feet of a 36-inch diameter sewer across 400 and 450 Spectrum Center Drive commercial property. The project location map is shown as Exhibit "A". ICDC is responsible for the replacement cost of the existing 30-inch diameter pipeline. Staff recently performed a sewer hydraulic modeling analysis that recommended that this pipeline be upsized to 36-inch diameter to accommodate future anticipated flows. IRWD will be responsible for the upsizing cost from 30-inch to 36-inch diameter pipe. IRWD's portion of the cost was determined to be 24.6% of the total construction cost.

IRWD and ICDC have had a Reimbursement Agreement (RA) for design and construction of IRWD capital facilities in place since May 1997. Under this RA, a Supplemental Reimbursement Agreement (SRA) serves to define the improvements to be designed and constructed within a specific planning area as well as the estimated reimbursable costs. Staff requests approval of an SRA for the construction of the 400 and 450 Spectrum Center Drive Sewer Relocation. The SRA is shown as Exhibit "B".

ICDC retained Psomas to prepare the design plans and they received construction bids from four contractors. ICDC recommends awarding the construction contract to the lowest bidder, KEC Engineering, for a bid amount of $1,490,825 as shown in Exhibit "C". IRWD's cost responsibility is $366,742.95. In addition, ICDC received consultant proposals for geotechnical observation and testing, surveying, construction support services and field archeological/

paleontological monitoring. Staff has reviewed the consultant proposals and the construction bids and found the amounts to be acceptable. A summary of the Project costs is shown below.

	Total Cost	IRWD Portion (24.6%)	ICDC Portion (75.4%)
Construction (KEC Engineering)	$1,490,825.00	$366,742.95	$1,124,082.05
Civil Engineering Services (Psomas)	$ 17,400.00	$ 4,280.40	$ 13,119.60
Geotechnical Services (GMU)	$ 35,275.00	$ 8,677.65	$ 26,597.35
Survey/Staking (Guida)	$ 5,000.00	$ 1,230.00	$ 3,770.00
Field Archeo/Paleo Monitoring (LSA)	$ 13,680.00	$ 3,365.28	$ 10,314.72
ICDC Administration Fee (1%)	$ 3,667.43	$ 3,667.43	$ -0-
Total	$1,565,847.43	$387,963.71	$1,177,883.72

FISCAL IMPACTS:

Project 21304 (6479) is not included in the FY 2015-16 Capital Budget. Staff requests that the project be added as shown in the table below.

Project No.	Current Budget	Addition <Reduction>	Total Budget
21304 (6479)	$ -0-	$596,200	$596,200

ENVIRONMENTAL COMPLIANCE:

Activities such as executing reimbursement agreements is not subject to the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Section 15061 (b) (3), in that CEQA applies only to projects which have the potential for causing a significant effect on the environment.

Construction of the sewer relocation as a part of the 400 and 450 Spectrum Center Drive Project is subject to CEQA. As the lead agency, ICDC is responsible for CEQA compliance.

RECOMMENDATION:

That the Board authorize the addition of Project 21304 (6479) to the FY 2015-16 Capital Budget in the amount of $596,200; authorize the General Manager to execute a Supplemental Reimbursement Agreement with Irvine Community Development Company; and authorize the General Manager to accept Irvine Community Development Company's construction contract with KEC Engineering in the amount of $1,490,825 for the 400 and 450 Spectrum Center Drive Sewer Relocation, Project 21304 (6479).

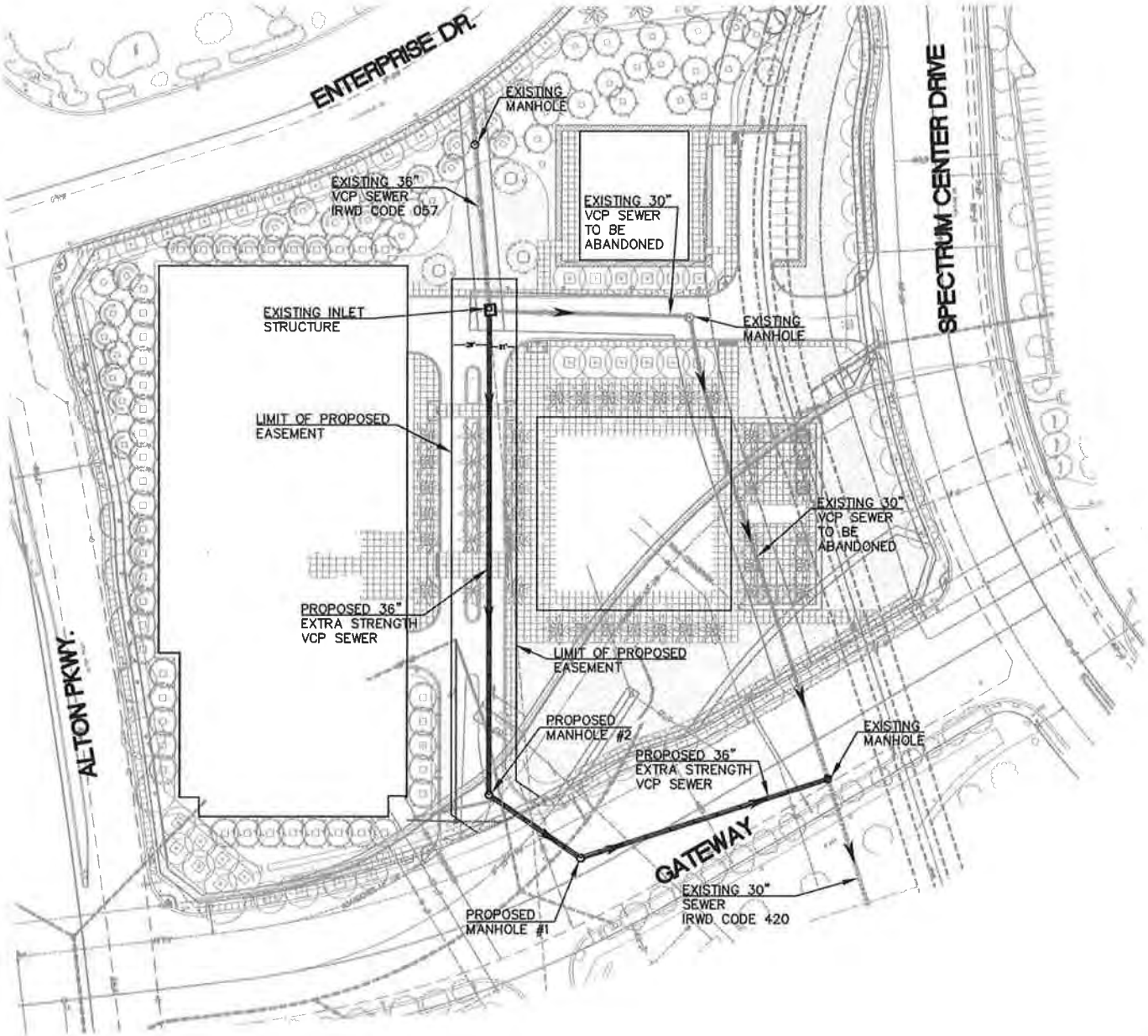
LIST OF EXHIBITS:

Exhibit "A" – Location Map
Exhibit "B" – Supplemental Reimbursement Agreement
Exhibit "C" – Bid Summary

EXHIBIT "A"

LEGEND

- SANITARY SEWER LINE
- EX SANITARY SEWER LINE
- EX PIPE TO BE DEMOLISHED
- EX STORM DRAIN PIPE
- DW — EX DOMESTIC WATER LINE
- FW — EX FIRE WATER LINE
- RW — EX RECLAIMED WATER LINE
- G — EX GAS LINE
- E — EX ELECTRIC LINE
- CATV — EX CABLE TV LINE
- T — EX TELECOMMUNICATION LINE
- PROPERTY LINE
- PROPOSED EASEMENT LIMIT



120' 60' 0' 120' 240'

GRAPHIC SCALE

Note: For reduced sized prints, original scale is in inches

SCALE: 1"=120'

400 SPECTRUM CENTER DRIVE 30-INCH SEWER RELOCATION EXHIBIT 1

PSOMAS

DATE: 10/01/15 REVISED ON: 11/03/15

JOB No: 2PEI010300

EXHIBIT "B"

Exhibit "A"
to
Reimbursement Agreement

SUPPLEMENTAL REIMBURSEMENT AGREEMENT

BY AND BETWEEN

IRVINE RANCH WATER DISTRICT

AND

THE IRVINE COMPANY

This SUPPLEMENTAL REIMBURSEMENT AGREEMENT ("Agreement") is entered into as of this _____ day of _____, 20____, by and between Irvine Ranch Water District, a California water district formed and existing pursuant to the California Water District Law of the state of California ("IRWD"), and The Irvine Company ("TIC"). All capitalized terms used herein and not otherwise defined shall have the meanings given such terms in the Reimbursement Agreement.

WHEREAS, IRWD and TIC have previously entered into that certain Reimbursement Agreement dated May 21, 1997 ("Reimbursement Agreement") respecting construction of Capital Facilities; and

WHEREAS, said Reimbursement Agreement made reference to the fact that certain supplemental agreements would be entered into by the parties regarding construction of Capital Facilities and reimbursement therefor consistent with the provisions of said Reimbursement Agreement; and

WHEREAS, the parties now wish to enter this Agreement regarding the construction of Capital Facilities described below, subject to all of the terms of the Reimbursement Agreement, except as provided herein.

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

1. Except as provided herein, the parties hereby incorporate by reference all of the terms and conditions of the Reimbursement Agreement into this Agreement.

2. The name of the Project to which this Agreement pertains is:
400 and 450 Spectrum Center Drive 30-inch Sewer Relocation.
The Project is depicted on Exhibit 1 attached to this Agreement.

3. The Capital Facilities to be constructed pursuant to this Agreement are as follows: [describe type, diameter, approximate linear footage, etc; include any detailed drawing as Exhibit 3 if needed]
Approximately 650 linear feet of 36-inch diameter trunk sewer of which TIC is responsible for 75.4% of the cost and IRWD is responsible for 24.6% of the cost. The Capital Facilities ☐ **do** /☒ **do not** [check appropriate box] include any facilities that are a part of the Michelson/ Los Alisos Reclamation Plants Upgrades and Distribution System Expansion Project identified in the Agreement No. 61719 2003 LRP Local Resources Program Agreement, entered into as of June 13, 2005, by and between IRWD and the Metropolitan Water District of Southern California (the "MWD Local Project").

4. The total costs for the Capital Facilities shall include, but not be limited to, the actual costs for construction, surveying, compaction testing, permits, construction bonds, legal fees and an administration fee equal to one percent (1%) of the actual cost of construction (all such actual costs are collectively referred to as the "Costs"). The estimated amount of the Costs is $1,400,000.

5. The following special terms apply to the construction of the Capital Facilities under this Agreement and supersede the provisions of the original Reimbursement Agreement referenced above: "The "Costs" shall also include consultant design and consultant construction administration assistance of which TIC is responsible for 75.4% of the cost and IRWD is responsible for 24.6% of the cost.

6. In accordance with Section 10 of the Reimbursement Agreement, TIC is executing concurrently herewith an Assignment Agreement in the form of Exhibit 2, to be effective upon the Effective Date specified in the Assignment Agreement.

7. If the box in Section 3 above has been checked to indicate that any of the Capital Facilities are a part of the MWD Local Project, then TIC shall include the following language in its agreements with any consultant or contractor retained by TIC to work on the Capital Facilities:

> "[Contractor / Consultant] agrees at its sole cost and expense to protect, indemnify, defend, and hold harmless Metropolitan Water District of Southern California, Municipal Water District of Orange County, and each of their respective Boards of Directors, officers, representatives, agents and employees from and against any and all claims and liability of any kind (including, but not limited to, any claims or liability for injury or death to any person, damage to property, natural resources or the environment, or water quality problems) that arise out of or relate to any act or omission of [Contractor / Consultant] in the performance of this agreement. Such indemnity shall include all damages and losses related to any claim made, whether or not a court action is filed, and shall include attorney fees, administrative and overhead costs, engineering and consulting fees and all other costs related to or arising out of such claim of liability."

IN WITNESS WHEREOF, the parties have entered this Agreement as of the date set forth above.

IRVINE RANCH WATER DISTRICT

By: _____
General Manager

THE IRVINE COMPANY

By: _____

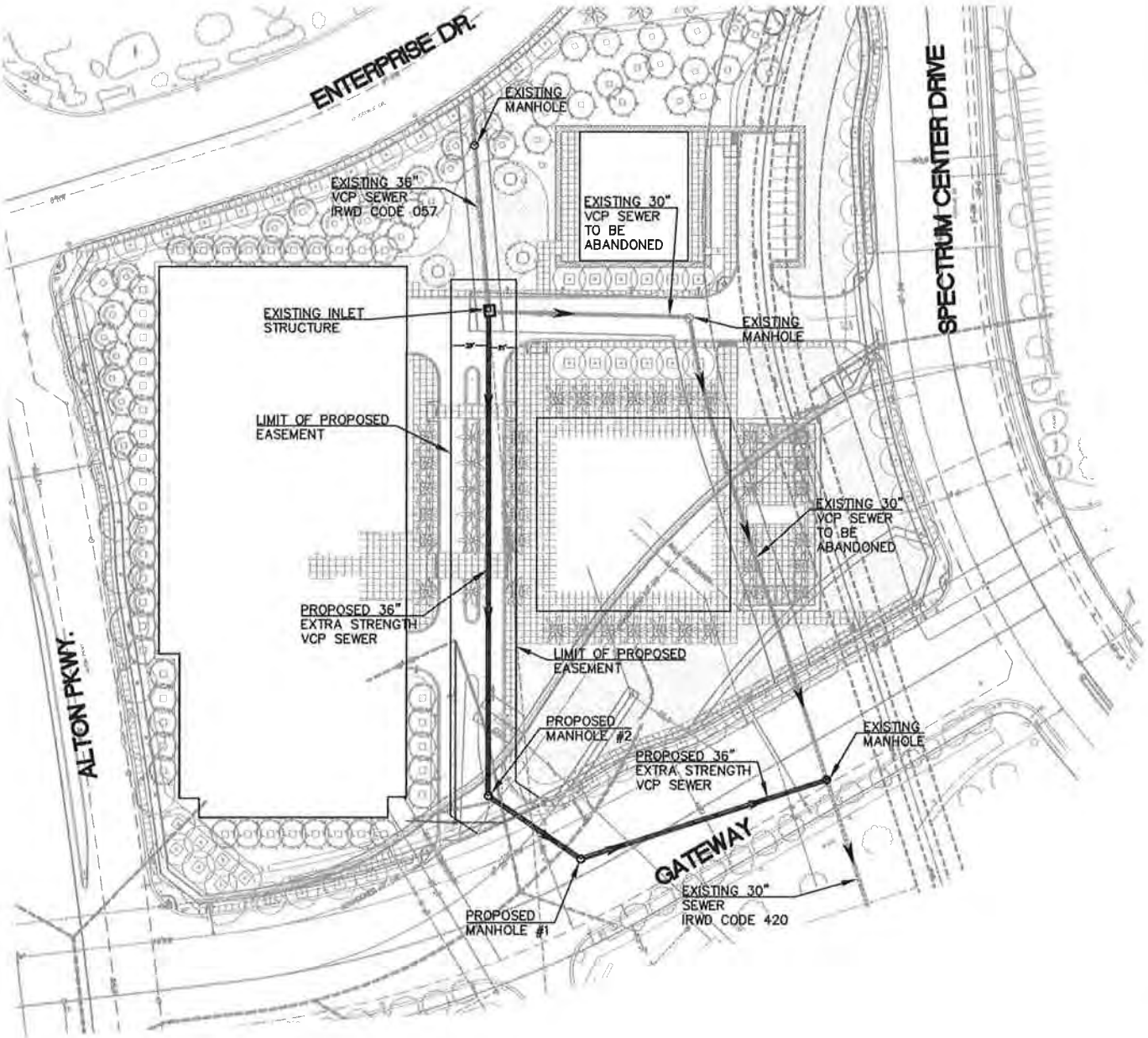
Title: _____

By: _____

Title: _____

LEGEND

- SANITARY SEWER LINE
- EX SANITARY SEWER LINE
- EX PIPE TO BE DEMOLISHED
- EX STORM DRAIN PIPE
- DW — EX DOMESTIC WATER LINE
- FW — EX FIRE WATER LINE
- RW — EX RECLAIMED WATER LINE
- G — EX GAS LINE
- E — EX ELECTRIC LINE
- CATV — EX CABLE TV LINE
- T — EX TELECOMMUNICATION LINE
- PROPERTY LINE
- PROPOSED EASEMENT LIMIT



120' 60' 0' 120' 240'

GRAPHIC SCALE

Note: For reduced sized prints, original scale is in inches

SCALE: 1"=120'

400 SPECTRUM CENTER DRIVE 30-INCH SEWER RELOCATION EXHIBIT 1

PSOMAS

DATE: 10/01/15 REVISED ON: 11/03/15

JOB No: 2PEI010300

Exhibit "2"
to
Supplemental Reimbursement Agreement

Assignment Agreement

This ASSIGNMENT AGREEMENT is made as of _____, 20____, by and between THE IRVINE COMPANY, a corporation, dba Irvine Industrial Company ("Assignor"), to IRVINE RANCH WATER DISTRICT, a California water district formed and existing pursuant to the California Water District Law of the State of California ("Assignee") based upon the following recitals:

A. Assignor has previously (or will, prior to the Effective Date hereof, have) entered into that certain Construction Contract relating to the Project and Capital Facilities identified in Schedule A hereto (the "Construction Contract").

B. Assignee desires to acquire (I) Assignor's right, title and interest in and to the Capital Facilities constructed under the Construction Contract, and (II) the warranty rights of Assignor as to the Capital Facilities under the Construction Contract, and Assignor desires to assign such rights to Assignee.

NOW, THEREFORE, in consideration of the foregoing, the covenants and agreements contained herein and other valuable consideration, receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. ASSIGNMENT. Effective upon the date specified in Section 2 hereof (the "Effective Date"), Assignor assigns and transfers to Assignee all of Assignor's right, title, claim and interest in and to (a) the Capital Facilities constructed pursuant to the Construction Contract, and (b) the warranties and guarantees of contractor as to the Capital Facilities constructed pursuant to the Construction Contract. This Assignment is made by Assignor pursuant to the provisions of Section 10, entitled "Assignment of Interest)", contained in that certain Reimbursement Agreement between Assignor and Assignee dated as of May 21, 1997.

2. EFFECTIVE DATE. The Effective Date shall be the date of the filing of the Notice of Completion for the Construction Contract unless a different date is inserted in the following space:_____
_____

3. TRANSFER OF DOCUMENTATION. On or prior to the Effective Date, Assignor shall provide Assignee with a copy of the Construction Contract.

IN WITNESS WHEREOF, Assignor has executed this Assignment Agreement as of the date first above written.

ASSIGNOR:
THE IRVINE COMPANY, a corporation,
dba Irvine Industrial Company

By: _____

Title: _____

By: _____

Title: _____

Schedule A
to
Assignment Agreement

This Schedule A to Assignment Agreement relates to the assignment of certain matters pursuant to the Supplemental Reimbursement Agreement between Assignor and Assignee dated _____ ("Supplemental Reimbursement Agreement").

Insert name of Project from Section 2 of Supplemental Reimbursement Agreement: 400 and 450 Spectrum Center Drive 30-inch Sewer Relocation

Insert description of Capital Facilities from Section 3 of Supplemental Reimbursement Agreement: Replacement of an existing 30-inch diameter trunk sewer with approximately 650 linear feet of 36-inch diameter trunk sewer.

Contractor's Name: _____

License No. _____

Address: _____

_____

Phone #: _____ Fax #: _____

Contact Person: _____

Exhibits to Supplemental Reimbursement Agreement:

Exhibit 1 - Depiction of Project

Exhibit 2 - Assignment Agreement

Exhibit 3 - Description of Capital Facilities (not used)

EXHIBIT "C"

DocuSign Envelope ID: D8EC86C4-0874-4C5E-B1EF-B26BE080157C

____Dave Conley
____Mike Morse
____Jason Knudson
____File with Bid Key Map
____Mary Oshima - Cost Matrix

PRE-BID MEETING DATE: June 11, 2015
BID OPENING DATE: July 3, 2015
WITNESSED BY: Tina Bachelder
Erica Marioneaux

DECLINED PRIOR TO PRE-BID: Irvine Pipeline Co, Inc
NO SHOW AT PREBID:
DID NOT SUBMIT:

BID SUMMARY
SPECTRUM OFFICE - SEWER RELOCATION
400/450 SPECTRUM CENTER DRIVE
CONTRACT "B"
BID PACKAGE: B00232

TASK PC/ID: LD-5040 ST.01 cm01

CHECK LIST
Required items to be included in bid package:

1. Signed Addendum Nos 1-4
2. Corporate Seal (if applicable)
3. Correct Signatures (Page V-3)
4. Bid Totals Correctly
5. List of SubContractors
6. Equipment/Material Source Information
7. Contractors Rates Reviewed
8. 10% Bid Bond
9. Construction Schedule
10. Non-Collusion Certificate
11. Contractor Prequalified

CODING*	ITEM	DESCRIPTION	QTY	UNIT	ENGINEER'S ESTIMATE PSOMAS UNIT PRICE	ENGINEER'S ESTIMATE PSOMAS TOTAL	LOW BIDDER KEC UNIT PRICE	LOW BIDDER KEC TOTAL	2ND BIDDER LEATHERWOOD UNIT PRICE	2ND BIDDER LEATHERWOOD TOTAL	3RD BIDDER SHOFEITT UNIT PRICE	3RD BIDDER SHOFEITT TOTAL	4TH BIDDER FYDAQ UNIT PRICE	4TH BIDDER FYDAQ TOTAL
		BASE CONTRACT - CONSTRUCTION SCHEDULE OPTION #1 & MAINTAINING TRAFFIC												
	I.	**OPEN ON GATEWAY (SECTIONS A-D)**												
	A.	**GENERAL**												
	1	MOBILIZATION (NOT TO EXCEED 2% OF CONTRACT PRICE)	1	LS	$8,000.00	$8,000.00	$30,000.00	$30,000.00	$35,000.00	$35,000.00	$40,000.00	$40,000.00	$10,000.00	$10,000.00
	2	PAYMENT AND PERFORMANCE BONDS	1	LS	$8,000.00	$8,000.00	$15,000.00	$15,000.00	$22,000.00	$22,000.00	$33,500.00	$33,500.00	$30,000.00	$30,000.00
	3	DEVELOP CONSTRUCTION WATER	1	LS	$3,000.00	$3,000.00	$12,000.00	$12,000.00	$12,000.00	$12,000.00	$2,500.00	$2,500.00	$5,000.00	$5,000.00
	4	TRAFFIC AND PEDESTRIAN CONTROL	1	LS	$15,000.00	$15,000.00	$20,000.00	$20,000.00	$5,000.00	$5,000.00	$5,500.00	$5,500.00	$25,000.00	$25,000.00
	5	TEMPORARY CONSTRUCTION FENCE	1,200	LF	$7.00	$8,400.00	$8.00	$9,600.00	$6.00	$7,200.00	$21.00	$25,200.00	$15.00	$18,000.00
	6	TEMPORARY CONSTRUCTION GATE	1	EA	$200.00	$200.00	$700.00	$700.00	$100.00	$100.00	$1,250.00	$1,250.00	$3,500.00	$3,500.00
	7	INTERIM EROSION AND SEDIMENT CONTROL	1	LS	$5,000.00	$5,000.00	$9,800.00	$9,800.00	$5,000.00	$5,000.00	$1,800.00	$1,800.00	$5,000.00	$5,000.00
	B.	**DEMOLITION**												
	8	CUT AND CAP 30" VCP SS 5' FROM MH	4	EA	$1,500.00	$6,000.00	$4,000.00	$16,000.00	$14,400.00	$57,600.00	$3,900.00	$15,600.00	$10,000.00	$40,000.00
	9	REMOVE, DISCARD, BACKFILL AND COMPACT EX SS MH	1	EA	$7,500.00	$7,500.00	$6,700.00	$6,700.00	$12,800.00	$12,800.00	$5,500.00	$5,500.00	$10,000.00	$10,000.00
	10	2 SACK SLURRY FILL EX 30" VCP SS	1	LS	$30,000.00	$30,000.00	$22,800.00	$22,800.00	$16,100.00	$16,100.00	$16,575.00	$16,575.00	$35,000.00	$35,000.00
	11	REMOVE PORTION OF 36" VCP SS IN CONFLICT WITH PROPOSED LINE	90	LF	$60.00	$5,400.00	$72.00	$6,480.00	$100.00	$9,000.00	$225.00	$20,250.00	$1,000.00	$90,000.00
	12	REMOVE, DISCARD, BACKFILL, AND COMPACT EX RCP SD	1	LS	$13,800.00	$13,800.00	$7,000.00	$7,000.00	$12,800.00	$12,800.00	$10,500.00	$10,500.00	$25,000.00	$25,000.00
	13	REMOVE, DISCARD, BACKFILL AND COMPACT EX CB	1	EA	$2,000.00	$2,000.00	$3,600.00	$3,600.00	$4,650.00	$4,650.00	$2,800.00	$2,800.00	$5,000.00	$5,000.00
	14	REMOVE, DISCARD, BACKFILL AND COMPACT EX SD MH	1	EA	$4,000.00	$4,000.00	$3,800.00	$3,600.00	$3,700.00	$3,700.00	$3,500.00	$3,500.00	$5,000.00	$5,000.00
	15	REMOVE AND DISCARD EXISTING ONSITE SURFACE FEATURES WITHIN SAWCUT LIMITS	1	LS	$15,000.00	$15,000.00	$52,300.00	$52,300.00	$57,000.00	$57,000.00	$8,800.00	$8,800.00	$30,000.00	$30,000.00
	16	REMOVE, DISCARD, BACKFILL AND COMPACT EXISTING ELECTRICAL VAULT	1	EA	$9,000.00	$9,000.00	$7,100.00	$7,100.00	$6,500.00	$6,500.00	$3,500.00	$3,500.00	$8,000.00	$8,000.00
	17	REMOVE, DISCARD, BACKFILL AND COMPACT EXISTING ELECTRICAL CONDUITS	1	LS	$1,680.00	$1,680.00	$9,100.00	$9,100.00	$2,600.00	$2,600.00	$3,500.00	$3,500.00	$10,000.00	$10,000.00
	C.	**PIPING AND STRUCTURES**												
	18	CONTRUCT 36" PVC, C-905, SDR-18 SEWER WITHIN GATEWAY	255	LF	$880.00	$224,400.00	$1,760.00	$448,800.00	$3,230.00	$823,650.00	$2,600.00	$663,000.00	$3,600.00	$918,000.00
	19	CONTRUCT 36" PVC, C-905, SDR-18 SEWER ONSITE	395	LF	$880.00	$347,600.00	$450.00	$177,750.00	$1,220.00	$481,900.00	$2,575.00	$1,017,125.00	$1,600.00	$632,000.00
	20	CONSTRUCT 72" DIA MANHOLE PER IRWD STD DWG S-1	2	EA	$25,000.00	$50,000.00	$27,200.00	$54,400.00	$21,200.00	$42,400.00	$21,000.00	$42,000.00	$30,000.00	$60,000.00
	21	MODIFY EX 72" MANHOLE - CORE DRILL INTO MH, RE-CHANNEL, AND CONNECT	1	EA	$15,000.00	$15,000.00	$14,700.00	$14,700.00	$21,750.00	$21,750.00	$7,900.00	$7,900.00	$10,000.00	$10,000.00
	22	MODIFY EX. SEWER INLET STRUCUTRE/MH AND REPAIR MANHOLE WALL (REPAIR T-LOCK W/ SPRAY-ON EPOXY COATING PER IRWD SPECIFICATIONS)	1	EA	$15,000.00	$15,000.00	$7,100.00	$7,100.00	$15,900.00	$15,900.00	$8,300.00	$8,300.00	$15,000.00	$15,000.00
	D.	**MISCELLANEOUS ITEMS**												
	23	SAWCUT AND REPAIR EXISTING PAVING PER CITY OF IRVINE STD PLAN 223 ALTERNATIVE B	275	LF	$50.00	$13,750.00	$225.00	$61,875.00	$200.00	$55,000.00	$185.00	$50,875.00	$75.00	$20,625.00
	24	TRENCH SHORING	1	LS	$75,000.00	$75,000.00	$477,000.00	$477,000.00	$34,300.00	$34,300.00	$17,500.00	$17,500.00	$25,000.00	$25,000.00
	25	DESIGN & PROCESS TEMPORARY BYPASS PLAN THROUGH APPROVAL	1	LS	$5,000.00	$5,000.00	$3,000.00	$3,000.00	$1,500.00	$1,500.00	$6,900.00	$6,900.00	$10,000.00	$10,000.00
	26	TEMPORARY SEWER BYPASS	1	LS	$35,000.00	$35,000.00	$29,500.00	$29,500.00	$42,350.00	$42,350.00	$4,500.00	$4,500.00	$50,000.00	$50,000.00
	27	TESTING OF SEWER SYSTEM	1	LS	$5,000.00	$5,000.00	$8,000.00	$8,000.00	$14,900.00	$14,900.00	$5,500.00	$5,500.00	$10,000.00	$10,000.00
		TOTAL BASE CONTRACT BID PRICE (SECTIONS I)				**$927,730.00**		**$1,513,905.00**		**$1,502,700.00**		**$2,023,875.00**		**$2,105,125.00**
		PREVAILING WAGE SURCHARGE (12%)				**$111,300.00**		**INCLUDED ABOVE**		**INCLUDED ABOVE**		**INCLUDED ABOVE**		**INCLUDED ABOVE**

Comments

- ENGINEER'S ESTIMATE: NOT INCLUDED
- LOW BIDDER KEC: NOT INCLUDED
- 2ND BIDDER LEATHERWOOD: NOT INCLUDED; NOT INCLUDED; NOT INCLUDED
- 3RD BIDDER SHOFEITT: NOT INCLUDED; INCORRECT SIG; WRONG SIG; NOT INCLUDED; WRONG SIG
- 4TH BIDDER FYDAQ:

BID SUMMARY
SPECTRUM OFFICE - SEWER RELOCATION
400/450 SPECTRUM CENTER DRIVE
CONTRACT "B"
BID PACKAGE: B00232

TASK PC/ID: LD-5040.ST.01 cn01

			ENGINEER'S ESTIMATE PSOMAS		LOW BIDDER KEC		2ND BIDDER LEATHERWOOD		3RD BIDDER SHOFEITT		4TH BIDDER FYDAQ	
II.	**OWNER OPTIONS - OWNER MAY OR MAY NOT INCLUDE THE FOLLOWING ITEMS IN THE BASE CONTRACT**											
28	PARKING LOT LIGHTING RETROFIT (SOLE SOURCE POWER PLUS)	1 LS	$19,000.00	$19,000.00	$19,000.00	$19,000.00	$19,000.00	$19,000.00	$19,000.00	$19,000.00	$19,000.00	$19,000.00
29	SLURRY AND RESTRIPE STREET	41,000 SF	$1.00	$41,000.00	$0.80	$32,800.00	$0.70	$28,700.00	$2.05	$84,050.00	$10.00	$410,000.00
30	TEMPORARY STORM DRAIN IMPROVEMENTS TO MAINTAIN FLOW	1 LS	$10,000.00	$10,000.00	$25,000.00	$25,000.00	$25,200.00	$25,200.00	$7,500.00	$7,500.00	$10,000.00	$10,000.00
	TOTAL OWNER'S OPTIONS BID PRICE (SECTION II)			**$70,000.00**		**$76,800.00**		**$72,900.00**		**$110,550.00**		**$439,000.00**
	PREVAILING WAGE SURCHARGE (12%)			**$8,400.00**		**INCLUDED ABOVE**		**INCLUDED ABOVE**		**INCLUDED ABOVE**		**INCLUDED ABOVE**
	GRAND TOTAL BID PRICE (SECTIONS I & II)			**$997,730.00**		**$1,590,705.00**		**$1,875,600.00**		**$2,134,425.00**		**$2,544,125.00**
III.	**MISCELLANEOUS OWNER'S OPTION CREDITS**											
31	CREDIT TO ENTIRE CONTRACT IF GATEWAY IS CLOSED BETWEEN OFFICE DRIVEWAY & SPECTRUM CENTER DRIVE FOR MILESTONE 2 WORK	1 LS		$0.00	($35,000.00)	($35,000.00)	($125,000.00)	($125,000.00)	$0.00	$0.00	$0.00	$0.00
32	CREDIT TO ENTIRE CONTRACT TO CONSTRUCT PER MILESTONE SCHEDULE OPTION #2	1 LS		$0.00	($20,000.00)	($20,000.00)	($15,000.00)	($15,000.00)	$0.00	$0.00	$0.00	$0.00
	TOTAL OWNER'S OPTIONS BID PRICE (SECTION III)			**$0.00**		**($55,000.00)**		**($140,000.00)**		**$0.00**		**$0.00**
IV.	**MISCELLANEOUS OWNER'S OPTION CREDITS - POST BID OPENING**											
33	CREDIT TO LINE ITEM 18 FOR CITY ALLOWANCE OF ALT B BACKFILL*	255 LF		$ -	$ (176.00)	$ (44,880.00)	$ (390.00)	$ (99,450.00)	$ (490.20)	$ (125,000.00)	$ (150.00)	$ (38,250.00)
34	CREDIT TO LINE ITEM 19 FOR CITY ALLOWANCE OF ALT B BACKFILL*	395 LF		$ -	$ -	$ -	$ -	$ -	$ (278.50)	$ (110,000.00)	$ (150.00)	$ (59,250.00)
	TOTAL OWNER OPTION BID PRICE (SECTIONS IV)			**$ -**		**$ (44,880.00)**		**$ (99,450.00)**		**$ (235,000.00)**		**$ (97,500.00)**
	GRAND TOTAL BID PRICE (SECTIONS I-IV)			**$ 1,117,430.00**		**$ 1,490,825.00**		**$ 1,636,150.00**		**$ 1,899,425.00**		**$ 2,446,625.00**
	CONTRACTOR'S BID REQUIRES GATEWAY TO BE CLOSED IF USING ALT B BACKFILL (CIRCLE ONE)	YES NO				NO		YES		YES		YES

* May still require some slurry backfill (example: at existing utility crossings) Contractor to include costs for any additional slurry backfill that is required in their credit price such that the credit prices is net credit amount

*Psomas added a 12% surcharge in the amount of $119,700 00 which is not included in the total above

November 17, 2015
Prepared by: J. Smyth/M. Cortez
Submitted by: K. Burton
Approved by: Paul Cook

ENGINEERING AND OPERATIONS COMMITTEE

THREE-YEAR DAM MONITORING AND SURVEILLANCE CONSULTANT SELECTION

SUMMARY:

The District maintains a dam monitoring and surveillance program where operational data and performance reports are submitted annually to the California Division of Safety of Dams (DSOD) for each District owned dam. Geotechnical engineering firms are utilized to prepare the DSOD reports. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement with Genterra Consultants, Inc. in the amount of $144,900 for three years of dam monitoring and surveillance services.

BACKGROUND:

The DSOD oversees dam safety in California. In accordance with DSOD requirements, as provided for in the statutes and regulations pertaining to supervision of dams and reservoirs, the District maintains a Dam Monitoring and Surveillance program. Operational data and performance reports are submitted annually to the DSOD for the five District owned dams: Santiago Creek, San Joaquin, Rattlesnake Canyon, Sand Canyon, and Syphon Canyon. Geotechnical engineering firms are utilized to ensure the most accurate interpretation of the operational data and to prepare the DSOD report verifying the stability of each dam. The District's current three-year contract with AECOM (formerly URS) expires on December 31, 2015.

Consultant Selection:

Staff requested proposals from four geotechnical engineering firms to provide dam monitoring and surveillance services for the five District owned dams for a period of three calendar years from 2016 through 2018. Two geotechnical firms, AMEC Foster Wheeler and Kleinfelder, declined to submit proposals citing current workload and no locally trained staff. Two geotechnical firms, AECOM and Genterra, submitted proposals. Staff reviewed and ranked the proposals based on the consultants' team, project approach and relevant experience. As co-owner of Santiago Creek Dam, Serrano Water District also provided input into the consultant selection process and they agree with the recommended consultant. The results of the consultant evaluation process are shown in the Evaluation Matrix, attached as Exhibit "A". Staff recommends that a three-year contract for dam monitoring and surveillance services for the five dams be awarded to Genterra. A copy of Genterra's proposal is attached as Exhibit "B". Genterra previously provided this service for the District from 1998 to 2006 and 2010 to 2012 with good performance.

FISCAL IMPACTS:

Dam Monitoring and Surveillance is included in the Operating Budget approved annually by the Board.

ENVIRONMENTAL COMPLIANCE:

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

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with Genterra Consultant, Inc. in the amount of $144,990 for three years of dam monitoring and surveillance services.

LIST OF EXHIBITS:

Exhibit "A" – Consultant Selection Evaluation Matrix
Exhibit "B" – Genterra Consultant, Inc.'s Proposal

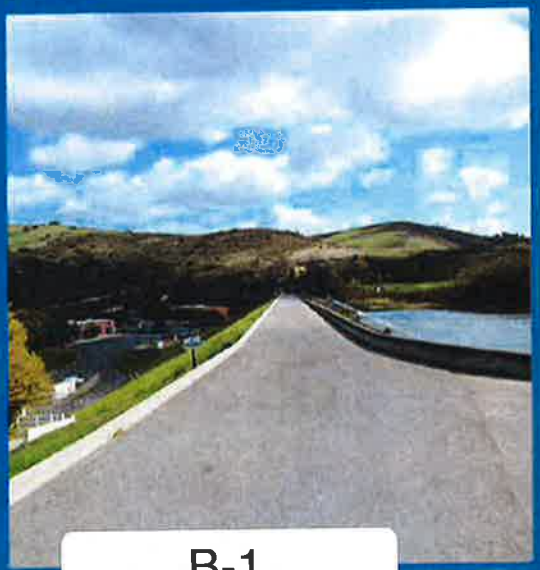
EXHIBIT "A"
DAM MONITORING CONSULTANT SELECTION MATRIX

Item	Description	Weights	AECOM	GENTERRA CONSULTANTS
A	TECHNICAL APPROACH	**50%**		
1	Project Understanding	40%	2	1
2	Scope of Work/Responsiveness to RFP	30%	2	1
3	Proposal Approach	30%	1	2
	Weighted Score (Technical Approach)		1.7	1.3
B	QUALIFICATION AND EXPERIENCE	**50%**		
1	Project Manager	35%	2	1
2	Project Engineer /Team	35%	2	1
3	Similar Projects	30%	1	2
	Weighted Score (Experience)		1.7	1.3
	COMBINED WEIGHTED SCORE		**1.7**	**1.3**
C	SCOPE OF WORK			
	TASK 1.			
	Data Review and Analysis			
	Task Hours		270	240
	Cost		$ 30,936	$ 48,600
	TASK 2.			
	Field Inspections			
	Task Hours		366	144
	Cost		$ 47,292	$ 26,640
	TASK 3.			
	Reports			
	Task Hours		477	285
	Cost		$ 64,407	$ 53,100
	TASK 4.			
	As-needed Engineering Assistance			
	Task Hours		90	90
	Cost		$ 12,439	$ 16,650
D	OTHER			
	Joint Venture		None	None
	DIR Registriation		Yes	Yes
	Insurance (Professional & General Liability)		Yes	Yes
	Exceptions taken to IRWD Sts. Contract		None	None
	Total Hours		*1,203*	*759*
	TOTAL FEE AMOUNT		**$ 155,074**	**$ 144,990**
	Ranking of consultants		**2**	**1**
	FORCED RANKINGS:			
	1 - Excellent			
	2 - Very Good			

Proposal for

Three-Year Monitoring and Surveillance Program for Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon, and Santiago Creek (Irvine Lake) Dams for Calendar Years 2016 Through 2018

Submitted By:
GEOTERRA Consultants, Inc.
15375 Barranca Pkwy., Bldg L
Irvine, CA 92618



Submitted To:

Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612

October 14, 2015

GENTERRA
CONSULTANTS, INC.
ENGINEERING & GEOTECHNICAL SERVICES

Proposal for Three-Year Monitoring & Surveillance Program for Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon, and Santiago Creek (Irvine Lake) Dams for Calendar Years 2016 Through 2018

Submitted To:

Irvine Ranch Water District
3512 Michelson Drive
Irvine, California 92612

Submitted By:

GENTERRA CONSULTANTS, INC.
15375 Barranca Pkwy., Bldg. L
Irvine, California 92618

October 14, 2015

GENTERRA
CONSULTANTS, INC.
ENGINEERING & GEOTECHNICAL SERVICES

October 14, 2015

P2203

Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612-1799

Attention: Mr. Jeffrey Smyth, P.E.

Subject: Proposal for Three-Year Monitoring and Surveillance Program for Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon, and Santiago Creek (Irvine Lake) Dams for Calendar Years 2016 Through 2018

Dear Mr. Smyth:

In response to the Irvine Ranch Water District's (District) Request For Proposal (RFP), GENTERRA Consultants, Inc. (GENTERRA) is pleased to submit this proposal for Monitoring and Surveillance for Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon, and Santiago Creek Dams for the three-year period from January 1, 2016 to December 31, 2018. Four copies of this proposal, along with one copy of the separately sealed cost estimate sheets, are being submitted the Purchasing Department per the instructions set forth in an email message from Jeffrey Smyth on October 6, 2015.

GENTERRA is very interested in providing our services for the District's dams. We are especially qualified for these services for the following reasons:

1. This is our main area of expertise. More than 85% of our projects since the firm was founded in 1995 have been related to dams and reservoirs. Our proposed project personnel have worked on hundreds of dams in their careers.

2. GENTERRA has provided dam safety monitoring and surveillance services to the District for many years in the past, and we are very familiar with the design and condition of the dams. This past experience and familiarity will enable effective interaction with the District and the State Division of Safety of Dams (DSOD), and will apply a high level of expertise and experience needed to credibly identify potential problems and their resolution before they develop into major problems at the dams.

3. GENTERRA has a good approval track record on work reviewed by the DSOD.

4. We are a local firm within several miles of each dam, and will be available on an on-call 24/7 basis in the event of emergencies or to answer questions.

5. Joseph J. Kulikowski, Douglas A. Harriman and Nicholas M. Josten of GENTERRA presented a Dam Safety Seminar to the District and other attendees on June 20, 2012, in which we used examples of conditions to be observed and data to be monitored at the District's dams.

We appreciate this opportunity to provide the District with our services. Please contact me at (949) 753-8766 or at joekul@genterra.com with any questions or if you require additional information.

Sincerely,
GENTERRA CONSULTANTS, INC.

Joseph J. Kulikowski, P.E., G.E.
President & Senior Principal Engineer

Enclosures:
Proposal
Company Dam and Reservoir Project Experience List
Resumes
Certificate of Liability Insurance
Cost Estimate (In Separate Sealed Envelope)

Proposal for Three-Year Monitoring & Surveillance Program for Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon, and Santiago Creek (Irvine Lake) Dams for Calendar Years 2016 Through 2018

TABLE OF CONTENTS

1. SCOPE

In response to the Request for Proposal (RFP) from the Irvine Ranch Water District (District) for Monitoring and Surveillance for the Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon, and Santiago Creek Dams for the period beginning January 1, 2016 through December 31, 2018, GENTERRA Consultants, Inc. (GENTERRA) proposes to perform the following services.

1. The District will collect water surface elevations at Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon and Santiago Creek Dams daily. The District will collect measurements from all piezometers, monitoring wells and seepage monitoring stations monthly for Rattlesnake Canyon, Sand Canyon, Syphon Canyon, and San Joaquin Dams; and twice per month for Santiago Creek Dam. All data collected will be transmitted to GENTERRA monthly and upon GENTERRA's request.

2. GENTERRA will evaluate the data within five working days following receipt of the data and will maintain graphical plots of the water surface elevation, piezometer levels and seepage flow rates for Rattlesnake Canyon, Sand Canyon, San Joaquin, Syphon Canyon, and Santiago Creek Dams.

3. The District will obtain annual measurements of the surface crest monuments on each dam. These measurements will be transmitted to GENTERRA annually for graphing and analysis.

4. Black sediment, identified as Organic Silt (OH), has been collecting in the East and West drain weir boxes at San Joaquin Dam. The sediment is being monitored monthly with a pictorial history. The District will take monthly pictures of the sediment in the weir boxes and transmit them to GENTERRA for evaluation and identification of any significant changes in appearance or quantity of the sediment.

5. GENTERRA will conduct a semi-annual field inspection of Rattlesnake Canyon, Sand Canyon, Syphon Canyon, and San Joaquin Dams; and quarterly field inspections of Santiago Creek Dam. District personnel will be available to accompany GENTERRA personnel on the field inspections. At least one inspection during the contract period will be performed while accompanied by an inspector from the State Division of Safety of Dams (DSOD) for Rattlesnake Canyon, Sand Canyon, and Syphon Canyon Dams. At least two inspections during the contract period will be performed while accompanied by an inspector from the DSOD for San Joaquin and Santiago Creek Dams. GENTERRA

will conduct additional field inspections as requested by the District or the DSOD. Any detailed inspection, exploration, or investigation of the safety and stability of each dam is beyond the Scope of Work and must be authorized separately by the District.

6. GENTERRA will prepare all annual reports summarizing the surveillance and monitoring of each dam. The report will include location plans and sections of each dam showing major features, including piezometers, surface crest monuments and seepage monitoring points. It will incorporate the graphical plots of water surface elevations, piezometer levels and seepage flow rates prepared by GENTERRA. GENTERRA will present an analysis of this data and the results of the field inspection observations. GENTERRA will present conclusions and recommendations for corrective actions relative to the safety and stability of each dam. The report will be prepared by GENTERRA in a form acceptable to both the District and the DSOD as well as meeting the requirements of the "Statutes and Regulations Pertaining to Supervision of Dams and Reservoirs" and any other applicable federal, state and local codes. Six (6) hard copies of the draft report along with the electronic files (Microsoft Word and Adobe Acrobat) will be submitted to the District for review within six (6) weeks following the end of the twelve (12) month period. Eight (8) hard copies of the final report along with the electronic files (Microsoft Word and Adobe Acrobat) will be submitted to the District following comment incorporation. The District will submit two (2) hard copies of the final report to the DSOD.

7. GENTERRA will also review the data described above in Paragraphs 1 through 6 at a six-month interval between the annual report due date and provide comments to the District relative to the safety of each dam and any corrective measures requiring attention by the District. This report will be submitted within six (6) weeks following the end of the six (6) month period.

8. GENTERRA's proposal includes 30 hours per year for engineering assistance on an as-needed basis.

9. All electronic data files, including but not limited to, documents, drawings, charts and spreadsheets created and/or maintained by GENTERRA for the District during the course of this scope of work are the property of the District and will be provided to the District at the end of the contract period or upon request.

4. SCHEDULE

GENTERRA hereby confirms our firm's ability to complete all work, considering our firm's current and planned workload, based on the proposed schedule.

5. BUDGET

A Cost Estimate Summary Sheet provides the Not-To-Exceed fee for performing all services in the contract. The breakdown of the estimated hours that each project team member will contribute per task, along with reproduction expenses for each of the five (5) dams for each of the three years from 2016 through 2018 are provided in five (5) Cost Estimate Sheets. For this project, GENTERRA will apply its 2015 Professional Fee Schedule for all three years. There will be no escalation of fee for the duration of the contract. The Cost Estimate Summary Sheet, the five (5) detailed Cost Estimate Sheets, and the 2015 Professional Fee Schedule are provided in a separate sealed envelope.

Cost Estimate Summary Sheet

Proposal for Three-Year Monitoring and Surveillance Program
for Rattlesnake Cyn, Sand Cyn, San Joaquin, Syphon Cyn, and Santiago Creek Dams
for Calendar Years 2016 Through 2018
Irvine Ranch Water District

	Total Labor	Total Expenses	Total Cost Per Year	TOTAL COST FOR 3 YEARS
Rattlesnake Canyon Dam	$8,260	$0	$8,260	$24,780
Sand Canyon Dam	$8,260	$0	$8,260	$24,780
San Joaquin Dam	$8,260	$0	$8,260	$24,780
Syphon Canyon Dam	$8,260	$0	$8,260	$24,780
Santiago Creek Dam	$9,740	$0	$9,740	$29,220
30 Hrs Engineering Assistance As-Needed	$5,550	$0	$5,550	$16,650
	$48,330	$0	$48,330	$144,990
				Not-To-Exceed Fee

Cost Estimate Sheet

Proposal for Three-Year Monitoring and Surveillance Program
for Rattlesnake Canyon Dam
Calendar Years 2016 Through 2018
Irvine Ranch Water District

Classification	Sr. Principal Eng / Proj. Manager	Principal Engineer	Principal Engineer	Project Engineer	Supv. Technician	Office Assistant	Total Hours	Total Labor Cost	Expenses			Total Expenses	TOTAL COST
Personnel Inititals	JJK	DAH	SB	NMJ/JDD	JWK	TC/MAF			Travel	Computer Usage	Reproduction / Misc.		
Task Description Hourly Rate (2015 Fee Schedule)	$270	$250	$250	$185	$140	$60							
1. Data Review and Analysis	1	3	0	12	0	0	16	$3,240	$0.00	$0.00	$0.00	$0	$3,240
2. Field Evaluations (2 per year)	0	0	0	8	0	0	8	$1,480	$0.00	$0.00	$0.00	$0	$1,480
3. Report Preparation	1	2	0	8	2	1	14	$2,590	$0.00	$0.00	$0.00	$0	$2,590
4. Coordination and Discussions	1	1	0	2	0	1	5	$950	$0.00	$0.00	$0.00	$0	$950
Subtotal Hours =	3	6	0	30	2	2	43					$0	$8,260
Subtotal Cost =	$810	$1,500	$0	$5,550	$280	$120		$8,260					

TOTAL COST PER YEAR = $8,260

TOTAL COST FOR 3 YEARS = $24,780

Personnel Initials and Names

JJK	Joseph J. Kulikowski, P.E., G.E.
DAH	Douglas A. Harriman, P.E., CGWP
SB	Soma Balachandran, Ph.D., P.E., G.E.
NMJ	Nicholas M. Josten, P.E.
JDD	Joseph D. Dluzak, P.E.
JWK	J. William Kulikowski
TC	Tanya Cason
MAF	Mary Frembling

Cost Estimate Sheet
Proposal for Three-Year Monitoring and Surveillance Program
for Sand Canyon Dam
Calendar Years 2016 Through 2018
Irvine Ranch Water District

Classification	Sr. Principal Eng / Proj. Manager	Principal Engineer	Principal Engineer	Project Engineer	Supv. Technician	Office Assistant	Total Hours	Total Labor Cost	Expenses			Total Expenses	TOTAL COST
Personnel Initials	JJK	DAH	SB	NMJ/JDD	JWK	TC/MAF			Travel	Computer Usage	Reproduction / Misc.		
Task Description — Hourly Rate (2015 Fee Schedule)	$270	$250	$250	$185	$140	$60							
1. Data Review and Analysis	1	3	0	12	0	0	16	$3,240	$0.00	$0.00	$0.00	$0	$3,240
2. Field Evaluations (2 per year)	0	0	0	8	0	0	8	$1,480	$0.00	$0.00	$0.00	$0	$1,480
3. Report Preparation	1	2	0	8	2	1	14	$2,590	$0.00	$0.00	$0.00	$0	$2,590
4. Coordination and Discussions	1	1	0	2	0	1	5	$950	$0.00	$0.00	$0.00	$0	$950
Subtotal Hours =	3	6	0	30	2	2	43					$0	$8,260
Subtotal Cost =	$810	$1,500	$0	$5,550	$280	$120		$8,260					

TOTAL COST PER YEAR = $8,260

TOTAL COST FOR 3 YEARS = $24,780

Personnel Initials and Names

JJK	Joseph J. Kulikowski, P.E., G.E.
DAH	Douglas A. Harriman, P.E., CGWP
SB	Soma Balachandran, Ph.D., P.E., G.E.
NMJ	Nicholas M. Josten, P.E.
JDD	Joseph D. Dluzak, P.E.
JWK	J. William Kulikowski
TC	Tanya Cason
MAF	Mary Frembling

Cost Estimate Sheet

Proposal for Three-Year Monitoring and Surveillance Program
for San Joaquin Dam
Calendar Years 2016 Through 2018
Irvine Ranch Water District

Classification	Sr. Principal Eng / Proj. Manager	Principal Engineer	Principal Engineer	Project Engineer	Supv. Technician	Office Assistant	Total Hours	Total Labor Cost	Expenses			Total Expenses	TOTAL COST
Personnel Inititals	JJK	DAH	SB	NMJ/JDD	JWK	TC/MAF			Travel	Computer Usage	Reproduction / Misc.		
Task Description — Hourly Rate (2015 Fee Schedule)	$270	$250	$250	$185	$140	$60							
1. Data Review and Analysis (including review of black sediments)	1	3	0	12	0	0	16	$3,240	$0.00	$0.00	$0.00	$0	$3,240
2. Field Evaluations (2 per year)	0	0	0	8	0	0	8	$1,480	$0.00	$0.00	$0.00	$0	$1,480
3. Report Preparation	1	2	0	8	2	1	14	$2,590	$0.00	$0.00	$0.00	$0	$2,590
4. Coordination and Discussions	1	1	0	2	0	1	5	$950	$0.00	$0.00	$0.00	$0	$950
Subtotal Hours =	3	6	0	30	2	2	43					$0	$8,260
Subtotal Cost =	$810	$1,500	$0	$5,550	$280	$120		$8,260					

TOTAL COST PER YEAR = $8,260

TOTAL COST FOR 3 YEARS = $24,780

Personnel Initials and Names

JJK Joseph J. Kulikowski, P.E., G.E.
DAH Douglas A. Harriman, P.E., CGWP
SB Soma Balachandran, Ph.D., P.E., G.E.
NMJ Nicholas M. Josten, P.E.
JDD Joseph D. Dluzak, P.E.
JWK J. William Kulikowski
TC Tanya Cason
MAF Mary Frembling

Cost Estimate Sheet
Proposal for Three-Year Monitoring and Surveillance Program
for Syphon Canyon Dam
Calendar Years 2016 Through 2018
Irvine Ranch Water District

Classification	Sr. Principal Eng / Proj. Manager	Principal Engineer	Principal Engineer	Project Engineer	Supv. Technician	Office Assistant	Total Hours	Total Labor Cost	Expenses			Total Expenses	TOTAL COST
									Travel	Computer Usage	Reproduction / Misc.		
Personnel Initials	JJK	DAH	SB	NMJ/JDD	JWK	TC/MAF							
Task Description — Hourly Rate (2015 Fee Schedule)	$270	$250	$250	$185	$140	$60							
1. Data Review and Analysis	1	3	0	12	0	0	16	$3,240	$0.00	$0.00	$0.00	$0	$3,240
2. Field Evaluations (2 per year)	0	0	0	8	0	0	8	$1,480	$0.00	$0.00	$0.00	$0	$1,480
3. Report Preparation	1	2	0	8	2	1	14	$2,590	$0.00	$0.00	$0.00	$0	$2,590
4. Coordination and Discussions	1	1	0	2	0	1	5	$950	$0.00	$0.00	$0.00	$0	$950
Subtotal Hours =	3	6	0	30	2	2	43					$0	$8,260
Subtotal Cost =	$810	$1,500	$0	$5,550	$280	$120		$8,260					

TOTAL COST PER YEAR = $8,260

TOTAL COST FOR 3 YEARS = $24,780

Personnel Initials and Names

JJK	Joseph J. Kulikowski, P.E., G.E.
DAH	Douglas A. Harriman, P.E., CGWP
SB	Soma Balachandran, Ph.D., P.E., G.E.
NMJ	Nicholas M. Josten, P.E.
JDD	Joseph D. Dluzak, P.E.
JWK	J. William Kulikowski
TC	Tanya Cason
MAF	Mary Frembling

Cost Estimate Sheet
Proposal for Three-Year Monitoring and Surveillance Program
for Santiago Creek Dam
Calendar Years 2016 Through 2018
Irvine Ranch Water District

Classification	Sr. Principal Eng / Proj. Manager	Principal Engineer	Principal Engineer	Project Engineer	Supv. Technician	Office Assistant	Total Hours	Total Labor Cost	Expenses			Total Expenses	TOTAL COST
									Travel	Computer Usage	Reproduction / Misc.		
Personnel Initials	JJK	DAH	SB	NMJ/JDD	JWK	TC/MAF							
Task Description — Hourly Rate (2015 Fee Schedule)	$270	$250	$250	$185	$140	$60							
1. Data Review and Analysis	1	3	0	12	0	0	16	$3,240	$0.00	$0.00	$0.00	$0	$3,240
2. Field Evaluations (4 per year)	0	0	0	16	0	0	16	$2,960	$0.00	$0.00	$0.00	$0	$2,960
3. Report Preparation	1	2	0	8	2	1	14	$2,590	$0.00	$0.00	$0.00	$0	$2,590
4. Coordination and Discussions	1	1	0	2	0	1	5	$950	$0.00	$0.00	$0.00	$0	$950
Subtotal Hours =	3	6	0	38	2	2	51					$0	$9,740
Subtotal Cost =	$810	$1,500	$0	$7,030	$280	$120		$9,740					

TOTAL COST PER YEAR = $9,740

TOTAL COST FOR 3 YEARS = $29,220

Personnel Initials and Names

JJK	Joseph J. Kulikowski, P.E., G.E.
DAH	Douglas A. Harriman, P.E., CGWP
SB	Soma Balachandran, Ph.D., P.E., G.E.
NMJ	Nicholas M. Josten, P.E.
JDD	Joseph D. Dluzak, P.E.
JWK	J. William Kulikowski
TC	Tanya Cason
MAF	Mary Frembling

GENTERRA CONSULTANTS, INC.
ENGINEERING & GEOTECHNICAL SERVICES

GENTERRA CONSULTANTS, INC. Proposal P2203
2015 PROFESSIONAL FEE SCHEDULE
ENGINEERING AND GEOTECHNICAL CONSULTING SERVICES

FEES FOR PROFESSIONAL, TECHNICAL AND SUPPORT STAFF

GENTERRA Consultants, Inc. charges our clients for professional, technical and support services for time directly related to a project. Charges are not made for ordinary secretarial services, office management, accounting, maintenance or other activities not directly related to a project. Current personnel classifications and rates are summarized below:

PERSONNEL CLASSIFICATION	RATE ($ PER HOUR)
Office Assistant (1) (OFC ASST)	60
Word Processor/Typist (1) (WORD PROC)	80
Draftsperson/Technical Illustrator (1) (TI)	85
Field/Laboratory Technician (1) (TECH)	95
Senior Field/Laboratory Technician (1) and CAD Designer (1) (SR TECH/CAD)	120
Supervisory Technician/Field Operations Manager (1) (SUPV TECH)	140
Staff Engineer/Geologist/Scientist (1) (STAFF)	150
Senior Staff Engineer/Geologist/Scientist (1) (SR STAFF)	165
Project Engineer/Geologist/Scientist (PROJECT)	185
Senior Project Engineer/Geologist/Scientist (SR PROJECT)	195
Associate (ASSOC)	215
Senior Associate (SR ASSOC)	225
Principal (PRINC)	250
Senior Principal (SR PRINC)	270

(1) Overtime will be charged at 1.25 times the above listed rates for these personnel classifications. Prevailing wage rates will be applied for field personnel when required based on published rates for the project location. Overtime is defined as time charged to a project in excess of 8 hours per day and time worked on weekends and holidays.

Contract personnel, if used on a project, may be charged at the hourly rates listed above. Travel time will be charged at regular hourly rates.

Charges for services related to court appearances and for expert witness testimony will be 175% of regular hourly rates, with a minimum daily charge of 4 hours, plus expenses. Preparation for testimony for all expert and support personnel will be charged at regular hourly rates.

PROJECT-RELATED EXPENSES

Expenses directly related to a project will be billed as follows:

Subcontractors (drilling, trenching, surveying, testing, etc.), travel-related expenses (hotels, meals, vehicle rentals, air travel, etc.) and other project expenses (e.g., aerial photographs, outside reprographics, equipment rental, overnight shipping, project-related expendable supplies, etc.) will be charged at cost plus 15 percent.

Nuclear density gauges used on projects will each be charged at the rate of $80.00 per day. A water level indicator used for wells and piezometers will be charged at the rate of $45.00 per day. Rates for other special field equipment will be provided in advance of use on each project. ~~In-house photocopy/reproduction will be billed at $0.15 per page for black-and-white copies and $1.50 per page for color copies and color digital photographs.~~ ***Waived for This Proposal***

~~Mileage for project-related travel will be billed at Federal-Approved Mileage Rate of $0.575 per mile. Field vehicles used for site investigations and during construction are billed at $15.00 per hour plus mileage charges.~~ ***Waived for This Proposal***

Charges for laboratory soils testing are shown on a separate fee schedule.

-Continued on Reverse-

CHANGES TO FEE SCHEDULE

This fee schedule applies to services rendered in the current year and/or until a new fee schedule is issued. GENTERRA Consultants, Inc. (GENTERRA) reviews and revises our fee schedule periodically. Unless other arrangements have been made, charges for services (including continuing projects initiated in the prior year) will be based on the most recently published fee schedule.

INVOICES

Invoices will be issued monthly, or at other specified intervals for some projects, and will be payable upon receipt unless other arrangements have been agreed upon. Interest of one percent per month (but not exceeding the maximum rate allowed by law) will be payable on accounts not paid within 30 days, unless prior agreement is made for other terms. Any attorney's fees or other costs incurred in collecting any delinquent account shall be paid by the client.

A retainer of 50 percent of the total fee is required for projects with total fees of $5,000 or less, or for projects for which the cost of field studies and/or equipment account for more than 50 percent of the total fee. For projects with total fees of less than $5,000, the balance of payment must be paid at the time the report is released to the client.

CONDITIONS

GENTERRA warrants that its services are performed, within the limits prescribed by our clients, in accordance with generally accepted standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. No other warranty, either express or implied, is included or intended in GENTERRA's proposals, contracts or reports.

DISCLOSURE

Client agrees to provide all information in Client's possession pertinent to actual or possible presence of hazardous materials on the site, and agrees to compensate GENTERRA for all costs associated with the unanticipated discovery of hazardous materials or damage to utilities not previously identified.