

Board of Directors
Robert Eranio, President
Daniel C. Naumann, Vice President
Michael W. Mobley, Secretary/Treasurer
Sheldon G. Berger
Bruce E. Dandy
Lynn E. Maulhardt
Edwin T. McFadden III

General Manager
Mauricio E. Guardado, Jr.

Legal Counsel
David D. Boyer



UNITED WATER CONSERVATION DISTRICT
“Conserving Water since 1927”

REGULAR BOARD MEETING
MINUTES

Tuesday, May 15, 2018, 12:00 P.M.

Board Room, UWCD G.I. “Irv” Wilde Headquarters
106 North 8th Street, Santa Paula, California

DIRECTORS PRESENT:

Robert Eranio, President, Division 3
Daniel C. Naumann, Vice President, Division 6
Michael W. Mobley, Secretary/Treasurer, Division 2
Bruce E. Dandy, Division 5
Lynn Maulhardt, Division 4
Edwin T. McFadden III, Division 1

DIRECTORS ABSENT:

Sheldon Berger, Division 7

STAFF PRESENT”

Mauricio E. Guardado, Jr., General Manager
David D. Boyer, Legal Counsel, AALRR
Anthony Emmert, Deputy General Manager
Tina Rivera, Chief Financial Officer
Mike Ellis, Chief Operations Officer
Jim Grisham, Engineering Manager
Christy Ramirez, Executive Coordinator
Clayton Strahan, Senior Park Services Officer
Brian Collins, Supervising Instrumentation and Electrical
Dan Detmer, Senior Hydrogeologist
Erin Gorospe, Senior Accountant
Beatriz Jimenez, Accountant
Linda Purpus, Senior Environmental Scientist
Kris Sofley, Executive Assistant/Clerk of the Board

PUBLIC PRESENT:

Clark Easter, Global Water Innovations
Ewelina Mutkowska, Ventura County Watershed Protection District
Jeanette Lombardo, Global Water Innovations
Tony Morgan, Groundwater Consultant
Jeff Savard, Kennedy/Jenks

President Eranio called the first open session to order.

1.1 PUBLIC COMMENTS

President Eranio asked if there were any public comments. None were offered.

District's Legal Counsel David D. Boyer announced the items to be discussed by the Board in Executive Session as outlined in Agenda Exhibit A.

President Eranio then adjourned the meeting to Executive session at 12:05p.m.

1.2 EXECUTIVE (CLOSED) SESSION 12:05 P.M.

The Board discussed matters outlined in the attached Executive (Closed) Session Agenda (Exhibit A).

President Eranio called the second open session to order at 2:10p.m.

2. SECOND OPEN SESSION AND CALL TO ORDER 2:10 P.M.

2.1 Pledge of Allegiance

Director Dandy led the Board in the Pledge of Allegiance

2.2 Public Comment

President Eranio asked if there were any public comments. None were offered.

2.3 Approval of Agenda

Motion to approve the agenda, as is, Director Dandy; Second, Director Naumann. Voice vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed. Motion carries 6/0/1.

2.4 Oral Report Regarding Executive (Closed) Session

District Legal Counsel David D. Boyer reported that no action was taken during Executive (Closed) Session.

2.5 Board Communication

Information Item

Director McFadden reported his participation at the Fillmore Piru Basins Groundwater Sustainability Agency's Board meeting on April 30; he also attended the District's Groundwater Committee meeting on April 25 and the Planning Committee meeting on the 30th.

Director Maulhardt reported that he met with Mr. Guardado, Director Naumann and Supervisor Bennett to discuss State Water practices prior to the County Board of Supervisors meeting.

May 15, 2018

MINUTES

Page 3

Director Mobley reported his attendance at the Finance Committee meeting on May 14, the Mound Basin GSA meeting on the 19th and both a prep meeting for the Fox Canyon GMA meeting as well as the meeting itself on the 25th.

Director Naumann reported his participation at the Executive Committee meeting on May 1, the Pleasant Valley County Water District Budget meeting with UWCD; attendance at the Spring ACWA Conference in Sacramento, and a meeting with Stacy Miller of Stacy Miller Public Affairs, all prior to today's Board meeting. He also plans to meet with Jurgen Gramckow, Director Maulhardt and Mr. Guardado tomorrow; as well as attend the Oxnard Chamber of Commerce Water Issues Committee meeting on May 21 and the AWA Waterwise Breakfast on May 17.

Director Dandy attended the Planning Committee meeting on the 30th and a PTP meeting in Camarillo on May 1. He and Director Naumann also attended a reception at the Simi Park and Rec Department; attended the ACWA Spring Conference in Sacramento for four days, during which time he attended the Federal Affairs Committee meeting, which was a very good discussion. He also attended the Finance Committee meeting yesterday and will also be attending the Oxnard Chamber Water Issues Committee meeting and AWA Waterwise Breakfast on May 17 and the District's Special Board Meeting-Budget Workshop on May 22.

President Eranio reported that he met with Mr. Guardado in preparation for today's Board meeting and also participated in a prep meeting for the Fox Canyon GMA meeting with the District GM and staff. He and Mr. Guardado attended the Metropolitan Water District's inspection trip of the Hoover Dam and other facilities along the Colorado River. He attended the County Board of Supervisors meeting on April 17 to comment on the State Water purchase transfers; had a meeting with Calleguas and Camrosa and the Fox Canyon GMA Operations Committee meeting.

2.6 General Manager's Report

Information Item

General Manager Mauricio E. Guardado, Jr. reported that in addition to ACWA Spring Conference he participated in a number of good and beneficial meetings with elected officials and agency representatives while in Sacramento. He also wanted to remind the Board that on May 22, in addition to the Budget Workshop Special Board Meeting from 10am to 2pm, there would also be a press conference at PTP Well #4 at 3:30pm, which he would be participating in with Assemblywoman Jacqui Irwin and possibly Governor Edmund G. Brown to announce the funding for the Rice Avenue/5th Street Separation project in Oxnard. He would also be making a presentation to the Ventura Water Commission at 6pm that same night, with President Eranio and there is an Environmental Committee meeting on May 24.

2.7 Consider Amending the General Manager's Total Compensation Package Including Any Step Increase, Performance Merit Pay, and Other Compensation

Motion

President Eranio reported that after Board discussion during Executive Session, the Board was in agreement that Mr. Guardado would be given a step increase to step five, the top tier of the salary chart for his position as General Manager, as well as a performance merit pay of the full five percent of his FY 2017-18 salary, totaling \$263,224 per year.

Motion to approve an amendment to the General Manager's compensation package, including 1) a performance merit pay of five percent of his FY 2017-18 salary and 2) a step increase to the fifth step within the current salary range; Director Dandy; Second, Director Naumann. Roll call vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously, 6/0/1.

2.8 District Outreach and Public Relations presentation from Stacy Miller Public Affairs

Stacy Miller Public Affairs' Stacy Miller delivered an overview presentation to the Board on the District's ongoing Outreach and Public Relations efforts. She also shared documents that her firm had created in support of the District's legislative and outreach efforts. She reported that crafting a messaging platform and talking points for the Board, as well as providing meeting training, would be the next step in telling the District's story to external stakeholders.

President Eranio thanked Ms. Miller stating that her efforts have paid great dividends for the Board and the District, helping to change his mind about the importance of getting the right message out to the public.

Mr. Guardado added that Stacy Miller and her team have been instrumental in making communication, outreach and public support part of the culture of the District.

2.9 Recognition of the Retirement of Lourie Schaffer

The Board, led by President Eranio, recognized the many contributions of Lourie Schaffer Hyde, who is retiring after nearly 16 years with the District's Finance department staff. President Eranio described Ms. Schaffer Hyde as the District's "key go to person" for assistance and thanked her for her service as well as "mentorship advice."

3. **CONSENT CALENDAR: All matters listed under the Consent Calendar are considered routine by the Board and will be enacted by one motion. There will be no separate discussion of these items unless a Board member pulls an item from the Calendar. Pulled items will be discussed and acted on separately by the Board. Members of the public who want to comment on a Consent Calendar item should do so under Public Comments. (ROLL CALL VOTE REQUIRED)**

Motion to approve the Consent Calendar, Director Naumann; Second, Director Mobley. Roll call vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

A. **Approval of Minutes**

Motion

Approval of the Minutes for the Regular Board meeting of April 11, 2018.

B. **Groundwater Basin Status Reports**

Information Item

Receive and file Monthly Hydrologic Conditions Report for the District.

C. **Third Quarter FY 2017-18 Financial Report & Budget Amendments**

Information Item

Receive and review the FY 2016-17 Third Quarter Financial Report for the period of July 1, 2016 through March 31, 2017 and approve the proposed modifications to the FY 2016-17 Budget.

D. **Resolution No. 2018-02 Requesting Consolidation of the United Water Conservation District General Election with the Statewide General Election**

Motion

Adoption of Resolution 2018-02, consolidating the District's November 6, 2018 election with the county and thereby substantially reducing District election costs.

4. **MOTION ITEMS (By Department)**

Administration Services – Tina Rivera and Christy Ramirez

4.1 **Consideration of Property Purchase and Sale Agreement**

Motion

Mr. Ellis reported that if the Board approves the Purchase and Sale Agreement, there will be a 30 day due diligence period during which time the District's consultants can prepare space planning, minor architectural adjustments, resulting in a move at this time next year if all goes as planned.

Director Maulhardt asked if the District was planning to sell its Santa Paula offices to offset the costs of the new building purchase. Mr. Ellis said that was the plan. Director Maulhardt asked if legal counsel had reviewed the agreement. Mr. Ellis replied that legal counsel had reviewed the terms of the sale and had no objections.

Motion to approve the Purchase and Sale Agreement (PSA) relative to the property at 1701 Lombard Street in Oxnard CA, and authorize the General Manager to sign the PSA on behalf of the District, and approves Finance Plan Option 2 as presented; Director Naumann; Second, Director McFadden. Roll call vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

Engineering Department – Jim Grisham

4.2 El Rio Asphalt Remove and Replace Slurry Project Award of Contract to Pavement Coatings Company

Motion

Motion to authorize the General Manager to execute a contract with Pavement Coatings Company, Inc. in the amount of \$78,392.50 for the El Rio Asphalt Remove and Replace Slurry Project (Specification 18-01), Director Dandy; Second, Director McFadden. Roll call vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

4.3 Award Design Contract for the Iron and Manganese Treatment for Deep Wells of the El Rio Water Treatment Plant and Oxnard Hueneme (OH) Pipeline System

Motion

After Robert Richardson, Associate Engineer and Project Manager for the Iron and Manganese Treatment for Deep Wells at the El Rio Water Treatment Plant, provided an overview presentation to the Board, Clark Easter, CEO of Global Water Innovations, requested an opportunity to address the Board.

Mr. Easter proposed an alternative process that would treat nitrates as well as iron and manganese issues at the El Rio Water Treatment facility and respectfully requested the Board to direct staff to analyze his company's proposal and compare and contrast it to what was being proposed by Kennedy/Jenks and staff.

Janette Lombardo, also affiliated with Global Water Innovations, reiterated the advantages of the approach and process being suggested by Mr. Easter.

Mr. Grisham reported that Mr. Richardson had done an analysis and that the District disagrees with Global Water Innovations on the cost savings they are claiming for their process, stating that he believed the staff's recommendation to go with Kennedy/Jenks was the correct choice.

Director Maulhardt suggested that staff take some extra time and compare and contrast the process recommended by Global Water Innovations with that being recommended by staff and Kennedy/Jenks and bring that analysis and comparison back to the Operations Committee, who would then make its recommendation to the Board.

The Board agreed to withdraw this motion item at this time and will readdress the issue after staff presents its comparison and analysis of the two processes to the Operations Committee.

4.4 Amendment to Right of Way between United Water Conservation District ("Grantor") and Southern California Gas Company (SoCal Gas), a California Corporation ("Grantee")

Motion

Motion to approve the Amendment of Right of Way with Southern California Gas Company to construct a new 20-inch diameter natural gas pipeline and abandon two existing 14-inch diameter natural gas pipelines within existing right of way and direct the General Manager to execute the Amendment on behalf of the District, Director Maulhardt; Second, Director Naumann. Voice vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

4.5 Memorandum of Understanding for the Piru Groundwater Basin Storm Water Capture and Recharge Project

Motion

Mr. Grisham introduced Ewelina Mutkowska of the Ventura County Watershed Protection District to the Board. She expressed her belief that this MOU was a unique opportunity to use existing facilities to increase efforts to capture more storm water while improving storm water runoff.

Director Dandy said he felt it was a good project and demonstrated the District's collaborative efforts with the County. He also said that the Finance Committee had reviewed the MOU and was recommending the agreement.

Motion authorizing the General Manager to execute the Memorandum of Understanding (MOU) for the Piru Groundwater Basin Storm Water Capture and Recharge Project with the County of Ventura's Watershed Protection District; Director Maulhardt; Second, Director McFadden. Voice vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann,

Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

Environmental Planning and Conservation Department – Anthony Emmert

4.6 Multiple Species Habitat Conservation Plan Development and Support – R2 Resources Consultants

Motion

President Eranio asked if there were any public comments or Board questions, none were offered.

Motion to approve a supplemental appropriation of \$97,850 and authorize the General Manager to execute an amendment to the professional services agreement for R2 Resources Consultants, Inc. (R2 Resources), Director Dandy; Second, Director Mobley. Roll call vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

4.7 Multiple Species Habitat Conservation Plan Development Amendment to Agreement with Rincon Consultants Inc.

Motion

President Eranio asked if there were any public comments or Board questions, none were offered.

Motion to approve a supplemental appropriation of \$75,000 and authorize the General Manager to execute an Amendment to the Agreement with Rincon Consultants, Inc. (Rincon), in support of finalizing the third administrative draft of the District's Multiple Species Habitat Conservation Plan (MSHCP), Director Naumann; Second, Director Maulhardt. Roll call vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

4.8 Multiple Species Habitat Conservation Plan Development – Amendment to Agreement with Stillwater Sciences

Motion

President Eranio asked if there were any public comments or Board questions, none were offered.

Ms. Rivera said that she would like to inform the Board that the amendments proposed are budgeted against the Freeman Fund.

Motion to approve a supplemental appropriation of \$120,000 and authorize the General Manager to execute an Amendment to the Agreement with Stillwater Sciences for support in finalizing the third administrative draft of the District's Multiple Species Habitat Conservation Plan (MSHCP), Director Maulhardt; Second, Director Mobley. Roll call vote: six ayes

(Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

Groundwater Department – Staff

4.9 PUBLIC HEARING

Continuation of Annual Groundwater Hearing to Accept Comment on Groundwater Conditions within the District

In accordance with the California Water Code, the Board annually conducts a public hearing to consider the conditions of groundwater resources within the District. An “Annual Investigation and Report of Groundwater Conditions” was submitted to the Board on March 13 of this year and has been available for public review and comment. Additionally, a public hearing was opened at the regular Board meeting on April 11 and will be continued through the regular June Board meeting. During the Board’s June meeting, the Board will conduct a continued public hearing, then may choose to close the hearing and consider the establishment of zones and the levying of groundwater extraction charges in those zones.

President Eranio asked if there were any public comments or Board questions, none were offered. With that, he continued the public hearing to Wednesday, June 13, 2018. No Board decisions will be made until the final hearing on June 13, 2018.

Operations and Maintenance – Mike Ellis

4.10 Architectural Services Contract and Budget Transfer

Motion

President Eranio asked if there were any comments from the public or questions from the Boards, none were offered.

Director Naumann asked how long it will take to complete this process and would it be completed by the next fiscal year. Mr. Ellis replied that the building would not be empty until the end of the year.

Motion to authorize the General Manager to execute a professional consulting services contract with Roesling Nakamura Terada Inc. for the assessment, consultation and design of new district headquarters, in an amount not to exceed \$200,000 and to approve a budget line item transfer in the New Headquarters CIP project from Construction to Design, Director Maulhardt; Second, Director Naumann. Roll call vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

Parks and Recreation Department – Clayton Strahan

4.11 Application for Federal Assistance

Motion

Motion to authorize the General Manager to pursue United State Fish and Wildlife Funding through the agency's Quagga/Zebra Mussel Action Plan for Western U.S. Waters and referred to as the QZAP funding opportunity F18AS00103, Director Naumann; Second, Director Dandy. Voice vote: six ayes (Dandy, Maulhardt, McFadden, Mobley, Naumann, Eranio); none opposed; one absent (Berger). Motion carries unanimously 6/0/1.

5. PRESENTATIONS AND MONTHLY STAFF REPORTS (By Department)

Administration Services – Tina Rivera and Christy Ramirez

**5.1 Monthly Administrative Services Department Report – Tina Rivera
Information Item**

Ms. Rivera addressed the Board, reporting that the District's proposed FY 18-19 Budget has been posted on the District's website since April 20, 2018. She also reported on the various public meetings she and staff have presented to Oxnard Hueneme, Pumping Trough Pipeline and Pleasant Valley pipeline customers, which yielded good dialogue and public input regarding the District's strategic plan. She also reminded the Board that the District's Public Budget Workshop would take place on May 22 at 10am.

Ms. Rivera also reported that the District's Finance staff had implemented billing for the Fillmore and Piru Basins Groundwater Sustainability Agency, sending out some 400 invoices in an efficiently and timely manner. She added that the District had presented a similar agreement to the Board of the Mound Basin GSA.

Director McFadden complimented Ms. Rivera and staff on their innovative approach to billing implementation, and for explaining that process to the FPB GSA Board at its recent meeting.

President Eranio asked if there were any public comments or Board questions, none were offered.

Outreach, Legislative, Grants and Training Report – Christy Ramirez

**5.2 Monthly Outreach, Legislative, Grants and Training Report
Information Item**

Ms. Ramirez presented her report to the Board, highlighting staff's outreach efforts, encompassing government relations, legislative education, public speaking opportunities, and the District's public relations efforts.

Among the highlights of her report, Ms. Ramirez called attention to the GM and Board Directors' meetings with State Senator Hannah Beth Jackson, Assemblymember Monique Limon and Assemblymember Jacqui Irwin during a recent trip to Sacramento for the Spring 2018 ACWA Conference.

Ms. Ramirez also reported that the District's GM and Deputy GM had been successful in delivering presentations on the District's issues with NMFS and its strategic plans and proposed projects at meetings hosted by McGrath Farms, California Women for Agriculture Ventura County; and the Santa Clara River Watershed Coalition.

The District also presented its annual Laubacher Award to Mr. Joe Gibson at the April AWA Ventura County Symposium; participated in a press conference with Assemblymember Jacqui Irwin and representatives from the California and Ventura Department of Transportation and the State Contractors meeting.

Ms. Ramirez reported that the District is continuing to pursue various grant opportunities, including but not limited to: US Bureau of Reclamation's grant for the District's proposed Iron and Manganese Treatment Plant; Prop 1 IRWM grants for Iron and Manganese Treatment Plant, Outlet Work Safety Improvements, Sediment management, development of the Ferro Rose recharge basin and lower river invasive management, among others.

Ms. Ramirez also reported that the District's social media presence continues to increase, drawing new followers and friends to its Facebook and YouTube channel.

President Eranio asked if there were any public comments or Board questions, none were offered.

Engineering Department – Jim Grisham

5.3 Monthly Engineering Department Report

Information Item

Mr. Grisham provided the Board with updates on several Engineering projects, including the Lake Piru Recreation Area 2018 Pavement Management program; and progress to date on the Park Service Office at Lake Piru.

Mr. Grisham also reported on the success of the District's annual tabletop exercise in support of the Santa Felicia Dam Emergency Action Plan on May 9 and 10; and the PTP Users' Group meeting, which provided the Engineering department staff with an opportunity to update stakeholders on the District's recycled water strategy and efforts.

President Eranio asked if there were any public comments or Board questions, none were offered.

Environmental Planning and Conservation Department – Anthony Emmert

5.4 Monthly Environmental Planning and Conservation Department Report

Information Item

A summary report of environmental and regulatory issues was submitted to the Board.

President Eranio asked if there were any public comments or Board questions, none were offered.

5.5 Quagga Mussel Management Efforts Update

Information Item

A summary report of the ongoing management and monitoring efforts related to the Lake Piru quagga mussel infestation was submitted to the Board.

President Eranio asked if there were any public comments or Board questions, none were offered.

Groundwater Department – Staff

5.6 Monthly Groundwater Department Report

Information Item

A summary report of monthly Groundwater Department activities was submitted to the Board.

President Eranio asked if there were any public comments or Board questions, none were offered.

5.7 Update on Groundwater Sustainability Agencies (GSAs) and Sustainable Groundwater Management Act (SGMA)

Information Item

Summary report of the monthly activities of the two Groundwater Sustainability Agencies (Mound Basin GSA and Fillmore and Piru Basins GSA), for which the District serves as a member director, were submitted to the Board.

President Eranio asked if there were any public comments or Board questions, none were offered.

Operations and Maintenance – Brian Collins

**5.8 Monthly Operation and Maintenance Department Report
Information Item**

Brian Collins presented an overview of the monthly operations and maintenance efforts, including remediation of the Santa Felicia Dam Hydroelectric equipment; fire and weed abatement; and installation of a microwave link for the new Park Rangers office at Lake Piru.

Mr. Collins also reported that staff has been actively examining diverting water of various levels of turbidity and suspended solids at the Freeman Diversion; replaced the fish exit gate actuator and diverted 1,040 AF of water during the most recent storm event. Staff also installed the tower foundation at the Freeman.

Janette Lombardo asked Mr. Collins about the diversion of higher turbidity water at the Freeman. He responded that the higher turbidity water creates additional work and it must be removed from the desilting basin and is currently being added to a low lying area between the river and the canal at the Freeman Diversion facility.

The historic 750KW Generator was removed from service and staff is exploring options as repairing the 1960s era generator was estimated to be between \$30,000-\$50,000. Staff also oversaw the installation of a shed that will be used for chemical storage at Saticoy.

Other activities included bringing Well #7 into compliance as it had not met Fox Canyon GMA standards; evaluations were conducted by Wellhead Electric regarding solar power panels above the recharge basins; PTP metering project continues to present challenges and PTP Well #1, the last to rehabilitated, had been leaking. Staff also repaired the sand separator and installed an air vac on the PTP system at Sturgis Road.

President Eranio asked if there were any other public comments or Board questions, none were offered.

Park and Recreation Division – Clayton Strahan

**5.9 Monthly Park and Recreation Department Report
Information Item**

A summary report of operations and items of note relative to the Lake Piru Recreation Area was submitted to the Board.

President Eranio asked if there were any public comments or Board questions, none were offered.

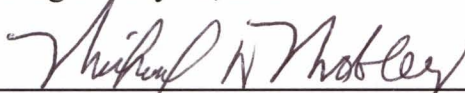
May 15, 2018
MINUTES
Page 14

ADJOURNMENT 4:45p.m.

President Eranio adjourned the Board to the **Regular Board Meeting** on **Wednesday, June 11, 2018** or call of the President.

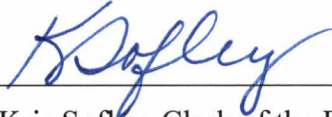
I certify that the above is a true and correct copy of the minutes of the Board of Directors meeting of May 15, 2018.

ATTEST:



Michael W. Mobley, Secretary/Treasurer

ATTEST:



Kris Sofley, Clerk of the Board

Legal Counsel
David D. Boyer



ATTENDANCE LIST



UNITED WATER CONSERVATION DISTRICT

SANTA FELICIA DAM PUBLIC SAFETY IMPROVEMENT PROJECTS

Constructed in 1954-1955 by United Water Conservation District (UWCD), the Santa Felicia Dam and Lake Piru Reservoir were built to provide supplemental water supply to agricultural, municipal, and industrial users in UWCD's jurisdiction. Water is strategically released from Santa Felicia Dam into lower Piru Creek, where it flows to the Santa Clara River. These flows, referred to as conservation releases, are diverted downstream to groundwater recharge basins, or are provided as direct deliveries of surface flows to downstream users.



Two of the dam's largest infrastructure projects, the Outlet Works and Spillway, currently pose a significant risk to public safety if they are not modernized and upgraded. The Spillway does not have the capacity to pass Probable Maximum Flood (PMF) standards. Failure of the Spillway could result in overtopping of the dam, leading to a catastrophic failure that could affect nearly half a million residents of the Santa Clara River valley. The Outlet Works could fail should we experience a significant seismic event and is at risk of becoming completely inoperable as sediment continues to rise within the reservoir.

SANTA FELICIA DAM SPILLWAY

Background:

In February 2017, the Oroville Dam's main and emergency Spillways were damaged during significant rainstorms. As the lake level rose and flowed over the weir, the risk of complete collapse and flooding downstream became very real. While the weir did not collapse, the risk is one that UWCD is cognizant of in its management of the Santa Felicia Dam Spillway.

Problem:

The Santa Felicia Spillway consists of a crest and a converging chute located in a cut through the hillside on the west abutment of the Santa Felicia Dam. The existing Spillway is not adequate to accommodate the new standard PMF established by the National Weather Service's California rainfall model. During a serious rain event, the quantity of water stored in Lake Piru Reservoir would exceed the capacity of the Santa Felicia Dam's existing Spillway, causing the dam's crest and the Spillway training walls to be overtopped. Like in the case of the Oroville Dam, the risk of dam collapse and significant downstream flooding are very possible.

Solution/Opportunities:

In April 2015, outside contractors GEI Geotechnical Engineering Consultants completed the Phase I Spillway Report which determined that the most viable alternatives to increase Spillway capacity at Santa Felicia Dam include a combination of raising the dam crest and widening the Spillway chute, or lowering the Spillway floor.

• NEED:

- Grant Funding
- Anticipated cost: \$21 million

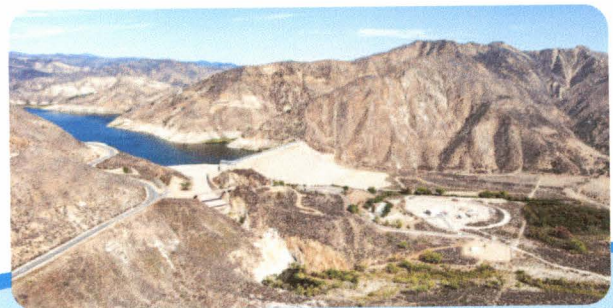
How does the project currently impact UWCD's ability to fulfill its mission?

Santa Felicia Dam, the only facility of its kind serving Ventura County, is critical to UWCD's water preservation and enhancement efforts. The safe and continued operation of Santa Felicia Dam is also critical to UWCD's mission of managing, protecting, conserving and enhancing the region's water supply. Improvements to the Spillway will reduce the risk of failure during a major rainfall event and will meet the criteria required to prevent overtopping of Santa Felicia Dam.

TIMELINE

In 2013, consultants were selected to provide guidance in alternative developments and selection.

- *Alternative designs were submitted to dam safety regulators for review in August 2015.*
- *It is anticipated that UWCD will proceed with final design in 2017.*
- *Design development will proceed in parallel to required environmental documentation.*
- *Construction could begin by FY 2021-2022.*



OUTLET WORKS SAFETY IMPROVEMENT PROJECT

Background:

The Outlet Works system consists of an intake tower, conduit beneath the dam, and downstream control facilities. It allows for the release of water from the Santa Felicia Dam downstream into the Santa Clara River. A hydroelectric generation facility with a capacity of 1,420 kilowatts is adjacent to the downstream control facility. The existing intake tower was extended 30 feet vertically in 1977.

Problem:

The Outlet Works system at Santa Felicia Dam was found to be seismically deficient and needs to be replaced. Additionally, sediment/siltation of the reservoir is within two to four feet of the intake tower sill, rendering the effective service life for the intake sill of no more than four to five years as increasing sediment levels virtually bury the water intake tower. This requires the intake sill to be raised or replaced. In May 2015, outside contractors GEI Geotechnical Engineering Consultants completed a report entitled Santa Felicia Dam Seismic Deformation Analysis, indicating that modification of the existing Outlet Works is impractical.

Solution/Opportunities:

The Santa Felicia Dam Seismic Deformation Analysis report also concluded that a new Outlet Works system should be constructed and the existing conduit should be abandoned. The Phase I Feasibility Study (April 2015) identified and screened various alternatives for the new Outlet Works on either the right (west) or left (east) abutments of the dam. The design of the new Outlet Works will include a dedicated outlet pipe to maintain habitat flows in lower Piru Creek. The project may require the relocation of the Santa Felicia Dam hydropower plant to the east

abutment. The existing power plant is inefficient and does not generate sufficient revenue to properly maintain the facility. However, the turbulence produced by generators results in a high mortality rate of quagga veligers—an invasive species that negatively impacts operations facilities—significantly reducing the amount of veligers released into lower Piru Creek.

• NEED:

Grant Funding

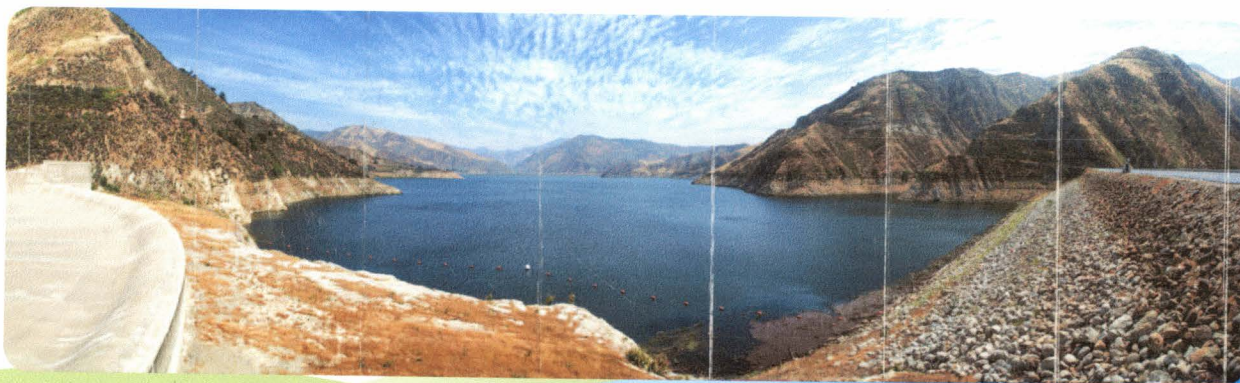
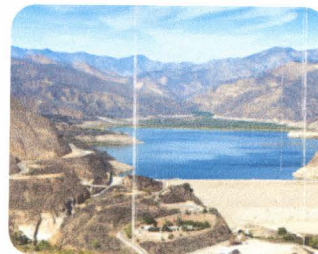
- *Anticipated cost: \$34 million*

How does the project currently impact UWCD's ability to fulfill its mission?

Santa Felicia Dam and the Freeman Diversion are the heart of UWCD's water preservation and enhancement efforts. The safe and continued operation of Santa Felicia Dam is critical to UWCD's mission and to the customers it serves.

TIMELINE

- *Seismic evaluations were finalized and submitted to dam safety regulators in 2012 and 2014.*
- *Alternative designs were submitted to dam safety regulators for review in August 2015.*
- *It is anticipated that UWCD will proceed with final design in 2018.*
- *Design development will proceed in parallel with environmental compliance.*
- *Construction could begin by FY 2019-2020. Conceptual plans are available in the engineering studies prepared by GEI Consultants.*





UNITED WATER CONSERVATION DISTRICT

FREEMAN DIVERSION PROJECT

BACKGROUND:

The Freeman Diversion Facility was constructed by United Water Conservation District (UWCD) to divert water off the Santa Clara River for recharge of local groundwater supplies. The facility is comprised of a concrete dam, a fish ladder, which allows unimpeded migration of steelhead trout upstream, and a screened fishbay, which keeps fish out of the canals and recharge basins. The facility was built at a cost of \$30 million in 1991.

The fish ladder was added at the Freeman Diversion in 1993, at a cost of \$1.7 million, to aid in the unimpeded migration of steelhead trout prior to the fish being listed as an endangered species, which occurred in 1997.

CURRENT STATUS:

In 2008, the National Marine Fisheries Service (NMFS) and an independent panel of ichthyologists deemed the fish ladder at UWCD's Freeman Diversion no longer sufficient for the unimpeded migration of steelhead trout. UWCD agreed to develop an alternate fish passage.

Representatives from UWCD and NMFS have met on multiple occasions to negotiate options and best practices for this massive project.

However, as a result of NMFS' lingering concerns over the accuracy of the size of historic fish runs and therefore the actual capacity needed for a new fish ladder, UWCD is at an impasse on how to move forward with the fish ladder. As a result, UWCD is unable to operate the Freeman Diversion to its fullest extent, reducing groundwater recharge for current and future sustainable use.



PROBLEM:

UWCD has invested \$5 million in planning, designing and evaluating multiple options for the fish ladder. Initially a hardened ramp was deemed the best alternative. With 60% of the design complete, it was realized that it would not work. There is no existing model or technology available to compare or emulate at this time.

NMFS is now asking that UWCD develop four separate options, including developing models for each option. The minimum cost to UWCD to build the models alone will exceed \$1million each.

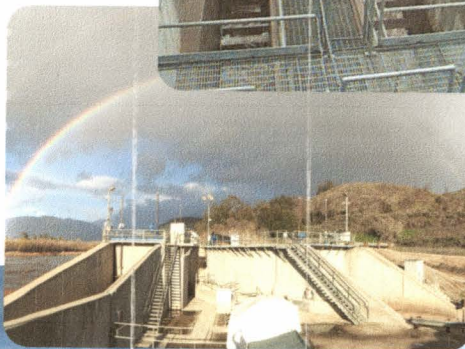
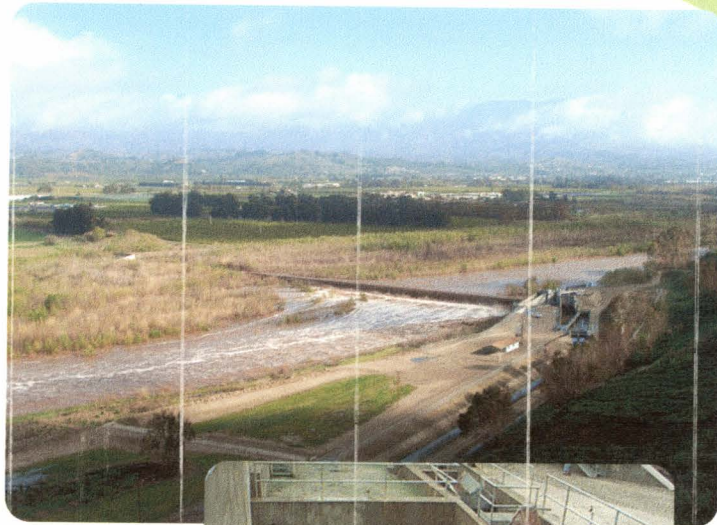
SOLUTION/OPPORTUNITIES:

1. UWCD may choose to seek grant funding in order to move forward on the planning, designing, modeling and construction of a redesigned fish ladder. The grants would total \$20-35 million depending on the design determined to be most feasible.
2. UWCD needs to seek assistance in securing a Memorandum of Understanding between UWCD and NMFS which clearly delineates provisions of accountability for scientifically based decisions in a timely manner in an effort to protect steelhead trout while ensuring a sustainable supply of water for basin recharge and, ultimately, human consumption.

PROJECT IMPACT ON UWCD'S ABILITY TO FULFILL ITS MISSION?

A significant portion of our nation's fruit and vegetables come from farms in UWCD's service region. The industry contributes \$3.5 billion to Ventura County's economy and employs nearly 43,000 people. The current impasse creates an untenable situation. UWCD is unable to operate at capacity as new requirements by NMFS resulted in a 50% decrease in diversions at the Freeman during the period of January 1 to May 31, 2017. That loss of 8,960 acre feet of diverted water risks water supplies to almost 18,000 households each year, placing water quality for safe consumption at risk for the cities of Oxnard, Port Hueneme and Ventura, and puts the local agriculture industry in danger.

In addition to creating a reduction in recharge capability, the cost of planning, designing and modeling several fish ladder options, not to mention the eventual construction costs of whichever model is deemed adequate, creates a significant strain on the organization's annual operating budget of some \$20 million. With project costs currently estimated at up to \$60 million, UWCD will require additional funding support as grants, if secured, only cover a portion of the costs.





Messaging Platform

July 2017

Prepared By:



Stacy Miller
PUBLIC AFFAIRS INC.

Creative Solutions to Complex Situations

The following document will serve as a road map for UWCD to implement a comprehensive external relations program and strategically communicate UWCD's to its key stakeholders and customers.

The challenge is to clearly and concisely convey the organization's work and the achievements of its stakeholder and customers. Business leaders, customers, legislators, funders and the community need to understand the efficacy and necessity of UWCD's efforts and the impact that it makes in Ventura County on a daily basis.

This will include: messaging goals and strategies, messaging categories/themes and framework/keywords to enable UWCD messengers to clearly and concisely convey the "United Story." It will provide a foundation for internal and external communications, and provide instant feedback on such questions as: 1) Is the communication on-theme? 2) Does it support the key messages?

This will keep UWCD focused on the overall goal, so as not to veer off-message before we've accomplished perception change. It will also serve to keep internal and external creative staff working from a common set of themes and messages, to improve consistency across the board.

In short, the Messaging Platform is a guide that will help UWCD communicate more clearly and consistently with all of its audiences and stakeholders to deliver the right message at the right time to the right audience.

In other words, it's a "**blueprint**" and "**playbook**" to strategically build the kind of perception we want to cultivate, and will serve as a guiding compass.

Messaging Goals/Strategies:

- **Increase the visibility of UWCD**
 - **Highlight the importance of UWCD programs, services and facilities and their impact on the community**
 - **Promote the technical expertise of UWCD**
 - **Brand UWCD as THE water expert in the region**
-

Messaging Categories/Themes

Overall Themes

The following are themes that can resonate with the multiple stakeholders of UWCD

<u>Category:</u>	<u>Theme</u>
Protect	Our primary goal must always be expressed
Innovate	What we use to achieve our primary goal: Science based, forward thinking, efficiency
Manage	Demonstrating efficiency and excellence in infrastructure management
Move	Demonstrating more of what we do
Secure	Resolving legal issues openly, shore up perception of UWCD
Steward	Demonstrating leadership in water issues of the region and beyond
Value	Recognize partners' and our place in the regional water continuum
Communicate	Transparency, authenticity, inclusivity
Galvanize	Legislative outreach, grass roots activism

These are THEMES...not targeted campaigns. These themes will be used as a compass to ensure that all messaging is on track with program goals.

Framework & Key Words

Messaging Framework

For the purpose of messaging, UWCD must eliminate the “alphabet soup” that is commonly used to describe its projects, facilities and program. UWCD must also eliminate opportunities for confusion, such as referring to customers as “pumpers” and talking in terms of Ag and M&I.

The following “buckets” should be used when describing UWCD’s projects, facilities program and activities to stakeholders

- **Protect**
- **Innovate**
- **Secure**
- **Enhance**
- **Move**

Message Keywords

As with themes, we need a palette of keywords to use to help create the most powerful messages, without resorting to boasting or patronization. For this reason, we’ve suggested a *palette of positive keywords*:

Experts	Transparent	Engagement	Environmental
Infrastructure	Protectors	Steward of Water	Long Standing
Innovative	Responsible	Responsive	Leaders
Credible	Win-Win	Groundwater Managers	Professional
Excellence	Mission Driven	Value	Trusted
Respected	Self Sufficient	Customers	Partners
Balanced	Effective	Strategic	Open

Other Language points to consider:

- **Avoid complex terms for which a simpler expression can be used**
- **Approach all language and tone from a ‘WE’ place rather than ‘Us vs. Them’**
- **Consider the average household/individual as your audience**
- **Acronyms:** Spell out important terms or use a simple description
- **‘Inside Baseball’:** Avoid language that might only be understood internally
- **Pumpers:** Use clients or partners instead
- **Avoid Evasion:** Speak directly and frankly, good or bad
- **Bureaucratic:** Avoid over complication of messages
- **Greatest/Superior:** Use effective or strategic instead
- **Bogged Down:** Speak directly of the challenge and ideal strategy to resolve
- **Environmentalists:** When used in a derogatory manner
- **Fish People:** Same as above! They are our partners on an important issue



UNITED WATER CONSERVATION DISTRICT

Economic Impacts on Ventura County Caused by Mandated Decreases in Water Diversion at Freeman Facility

BACKGROUND:

The Freeman Diversion facility was constructed by United Water Conservation District (UWCD) to divert water from the Santa Clara River for recharge of local groundwater supplies. The facility is comprised of a 20-foot tall concrete dam, a fish ladder, which facilitates migration of steelhead trout, and a screened fish bay, which keeps fish out of the canals and recharge basins. The facility was built at a cost of approximately \$30 million in 1991. The fish ladder component's cost was \$1.7 million. UWCD designed the fish ladder in consultation with fish regulatory agencies, and included it in the project specifically to aid steelhead trout in their migration. This was done prior to the fish being listed as an endangered species, which occurred in 1997.

In 2008, the National Marine Fisheries Service (NMFS) deemed the fish ladder at UWCD's Freeman Diversion insufficient to allow upstream passage of adult steelhead trout under higher river flow conditions, and opined that bypass flows to the ocean should be increased to allow steelhead adults and juveniles adequate swimming depths. In 2010, an independent panel of fish passage engineers and scientists confirmed that the fish ladder worked well during low river flows, but could be difficult for steelhead to find when river flows were high. Consequently, UWCD agreed to develop an alternate fish passage facility that could operate effectively through a wider range of river flows, and reduced its diversion operations to provide more water for fish migration.



Since 2010, UWCD has been actively working to evaluate alternatives and to design improvements to the Freeman Diversion that would improve fish passage. UWCD secured expert fish passage engineers and has worked closely with NMFS staff. It has been extremely difficult to design these improvements due to the Santa Clara River's challenging characteristics, the river typically flows only during or immediately following storm events, at which time the water is filled with high amounts of sediment and debris. Options being considered would cost tens of millions of dollars to construct, and their performance is unknown, as there are no other similar projects anywhere. Over the same period, UWCD prepared a detailed analysis of different bypass flows for steelhead trout, and proposed to NMFS an operational regime that would balance the needs of steelhead trout with those of the water users.



CURRENT STATUS:

In summer 2016, NMFS directed UWCD to implement a restrictive operational regime. Under this regime, in 2017, despite the wet winter, UWCD was only able to divert and recharge approximately 10,000 acre-feet, less than half of the water it would have recharged previously.





UNITED WATER CONSERVATION DISTRICT

ECONOMIC IMPACT – OVERVIEW OF FINDINGS

A recent report by **Highland Economics, Inc.** evaluated the use of Santa Clara River water diverted at the Freeman Diversion facility and its economic benefits.

- 378,000 residents of Ventura County (approximately) depend daily on the coastal plain groundwater aquifers recharged through United Water Conservation District's Freeman Diversion facility. That impacts almost HALF of Ventura County!
- The Freeman Diversion facility supports \$1.08 billion of annual crop production in Ventura County.
 - If the coastal plain area were a stand-alone county, it would rank in the top five among all California counties in production value of six crops: cilantro, raspberries, strawberries, celery, bell peppers, and cabbage.
- **16,800 jobs and \$994 million in direct agricultural sales value and indirect economic benefits are supported by the Freeman Diversion facility.**
- **1,500 local jobs and \$91 million in income will be lost in Ventura County when 10,000 acre-feet of water is not diverted. (estimates)**

Additional socioeconomic impacts of reduced water diverted from the Freeman Diversion include:

- Reduced employment and income for Ventura County residents and businesses.
- Lower property tax receipts, as land is de-valued.
- Higher residential and commercial water bills and/or higher frequency of Municipal & Industrial (M&I) water shortages.
 - These impacts are likely to disproportionately impact low income and minority populations, i.e., Latino populations in Oxnard and Port Hueneme. Ventura County's minority population, representing 99% of all agriculture jobs, will be disproportionately impacted by a loss of jobs caused by requirements to divert water at the Freeman Diversion facility.
 - Additionally, the municipal and industrial areas impacted by Zone B of the District already have issues with water affordability as these cities are in the lower income area of Ventura County.

ASK

Please join us in support of United Water Conservation District's efforts to keep Ventura County economically healthy and viable!

See sample letter attached

- Write a letter in support and email to UWCD at: Info@UnitedWater.org
- Address letter and EMAIL to:
Barry Thom
West Coast Regional Administrator
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Sent via email to: Barry.Thom@noaa.gov

Cc: The Honorable Julia Brownley
26th Congressional District
Attention: Lenny Young, Chief of Staff
Sent via email to: Lenny.Young@mail.house.gov

UWCD | Oxnard Recycled Water | White Paper

Project Objectives

1. Partner with the City of Oxnard *GREAT* program to fully utilize the City's Advanced Water Purification Facility (AWPF)
2. Expand City's ability to produce recycled water
3. Cover City's full cost of recycled water
4. Facilitate future cooperative water resource projects

Background

The City of Oxnard's Groundwater Recovery Enhancement and Treatment (GREAT) Recycled Water Program was formally established in 2002 but its origins go back nearly a decade prior to that. The objectives of the program, as it was first established, included the following:

1. Increased water supply reliability during drought.
2. Reduced water supply costs.
3. Water supply security in meeting growing water demand.
4. Enhanced local water supply stewardship through recycling and reusing a substantial portion of the region's wastewater.
5. Environmental benefits associated with the development and rehabilitation of local saltwater wetlands.

As part of the GREAT Program, the City has constructed an Advanced Water Purification Facility (AWPF) utilizing Reverse Osmosis (RO) technology and Advanced Oxidation Process (AOP) to recycle wastewater. The main transmission pipelines for the recycled water system were constructed in 2011. As of 2015, the AWPF has the capacity to produce 7,000 AFY (6.25 million gallons per day).

Oxnard intends to use recycled water from the AWPF for landscape irrigation, its Indirect Potable Reuse (IPR) program, and agricultural and industrial use. In 2014, Oxnard entered into an agreement with United and agricultural users in the Oxnard Plain to provide recycled water when available. In 2015, the River Ridge Golf Course, which had been using its own groundwater well, was converted to recycled water use. According to the agreement, the City's internal uses, including its Aquifer Storage and Recovery (ASR) project, take priority over other usages. Oxnard has been temporarily using Calleguas' Salinity Management Pipeline (SMP) to deliver recycled water to agricultural users in the Oxnard Plain, which the permit is set to expire on July 9, 2019. There are two alternatives that Oxnard is considering; 1) The Riverpark pipeline extension to Saticoy recharge basins and 2) The Hueneme Road pipeline, both of which would replace the use of the SMP.

Status

In April 2017, UWCD formally submitted to the City of Oxnard an Alternatives Analysis and Feasibility Study for various recycled water pipeline connections to the City's existing infrastructure. UWCD's recommendation was to construct pipelines in the Riverpark area that would extend to UWCD's Saticoy groundwater recharge basins and to UWCD's Pumping Trough Pipeline (PTP) system and to the Pleasant Valley County Water District. The goals of the project were to fully expand the capacity of the City's current recycled water plant, resulting in increased groundwater recharge, and water for agricultural irrigation.

The City is in process of creating several master plans for all their facilities including wastewater and recycled water. Both have large, yet to be determined, costs. The City is also currently developing a Recycled Water Business Plan that has hit several delays. Currently, the plan is being spearheaded by the City Manager's office.

Next Steps

Meet with the interim City Manager, Scott Whitney and request the development of a Memorandum of Understanding (MOU). The Oxnard business plan is currently in draft stage.

UWCD Board Talking Points Oxnard Recycled Water

THEMES

- Protecting ▪ Enhancing
 - Innovating ▪ Moving
 - Securing
-

UWCD Communication Themes

- **Protect** Our primary goal must always be expressed, protect groundwater and the basin
 - **Innovate** What we use to achieve our primary goal: Science based, forward thinking, efficiency
 - **Manage** Demonstrating efficiency and excellence in infrastructure management
 - **Move** Demonstrating more of what we do
 - **Secure** Resolving legal issues openly, shore up perception of UWCD
 - **Steward** Demonstrating leadership in water issues of the region and beyond
 - **Value** Recognize partners' and our place in the regional water continuum
 - **Communicate** Transparency, authenticity, and inclusivity
 - **Galvanize** Legislative outreach, grass roots activism
-

Oxnard Recycled Water Fast Facts

- The aim is for the project to be a **partnership** with the City of Oxnard's Groundwater Recovery Enhancement and Treatment (GREAT) Recycled Water Program.
- The GREAT program utilizes the City of Oxnard's Advanced Purification Facility (AWPF).
- The facility utilizes Reverse Osmosis (RO) and Advanced Oxidation Process (AOP) technology to treat water.
- As of 2015, the AWPF has the capacity to produce 7,000 AFY (6.25 million gallons per day).
- UWCD formally approached the City of Oxnard in April 2017 to propose a **project** between the City and UWCD.

Potential Impact of Oxnard Recycled Water on UWCD

- To fully expand the capacity of the City's current recycled water plant, resulting in increased groundwater recharge, and water for agricultural irrigation.

Status

- The City is in process of creating several master plans for all its facilities including wastewater and recycled water. The costs are yet to be determined.
- The City is also currently developing a Recycled Water Business Plan that has encountered several delays.
- Currently, the plan is being spearheaded by the City Manager's office.
- UWCD's next step is to meet with the interim City Manager, Scott Whitney, and request the development of an MOU.

(Updated 2-28-18)

UWCD Board Talking Points Quagga Mussels

THEMES

- Protecting
 - Enhancing
 - Innovating
 - Moving
 - Securing
-

UWCD Communication Themes

- **Protect** Our primary goal must always be expressed, protect groundwater and the basin
 - **Innovate** What we use to achieve our primary goal: Science based, forward thinking, efficiency
 - **Manage** Demonstrating efficiency and excellence in infrastructure management
 - **Move** Demonstrating more of what we do
 - **Secure** Resolving legal issues openly, shore up perception of UWCD
 - **Steward** Demonstrating leadership in water issues of the region and beyond
 - **Value** Recognize partners' and our place in the regional water continuum
 - **Communicate** Transparency, authenticity, and inclusivity
 - **Galvanize** Legislative outreach, grass roots activism
-

Quagga Mussel Quick Facts

- Invasive quagga mussels could impact water flow down to the Santa Clara River.
- Lake Piru and the creek below the dam are infested with quagga mussels. Adult quagga mussels have also been detected from August-November 2017 in the Santa Clara River but not thereafter suggesting infestations in the Santa Clara River may not be successful long-term. .
- United's **team of scientists** designed and implemented a pilot program January-December 2017 to test treatment options that could significantly reduce Lake Piru's Quagga population and protect the region from the invasive mussels.
- The **innovative**, team-tested treatment options provide the best balance for effectively treating quagga mussels while minimizing impacts to other, non-target species at Lake Piru and downstream in the Santa Clara River.
- UWCD has also been working in **partnership** with the California Department of Fish and Wildlife to implement the Lake Piru Quagga Mussel Monitoring and Control Plan, which focuses on minimizing the spread of Quagga Mussels to other water bodies by private boats and other water vessels as well as releases through the dam.

What is Being Done Now?

- **UWCD received** Quagga and Zebra Mussel Action Plan (QZAP) **grant funding** awarded by the U.S. Department of Fish and Wildlife Service that will provide for several full-time seasonal staff members to perform outbound vessel inspections and decontamination activities to help prevent the spread of Quagga.
- The seasonal staff will also assist in **public education efforts**.

Cost to Date

- United has spent more than \$1.5 million to date dealing with quagga mussels (approximately \$300,000 per year on average).
- Most of these costs were for professional services required for quagga mussel removal from critical infrastructure, which requires divers, as well as costs associated with United's ongoing comprehensive monitoring program.

(Updated 2-28-18)

UWCD | Quagga Mussel White Paper

Objective

Rid Lake Piru of the highly invasive quagga mussel.

Background

First detected in Lake Piru in December 2013, invasive quagga mussels are capable of clogging our water systems.

Lake Piru is infested with quagga mussels. Quagga mussels also have colonized cobbles in lower Piru Creek below the Santa Felicia Dam. Juvenile mussels (veligers) have never been detected in the main stem of the Santa Clara River. However, in 2017, low numbers of adult quagga mussels were detected in the main stem of the Santa Clara River from August to November. One adult quagga mussel was detected on Torrey Road Bridge in August 2017, but no quagga mussels have been detected on Torrey Road Bridge since August during monthly checks. 12 quagga mussels were detected on the 12th Street Bridge in August 2017, 13 adults were detected in this same location in September 2017, and 4 adults were detected on the bridge (3 of which were dead) in November 2017. No quagga mussels were detected on the 12th Street Bridge in December 2017, suggesting a failed infestation in the slow and still water around the bridge. During a survey in November 2017, no quagga mussels were detected in the Santa Clara River on Newhall Ranch property upstream of the confluence between Piru Creek and the Santa Clara River.

Possible Solutions - Pilot Study

To combat the quagga mussels, UWCD's team of scientists designed and implemented a pilot program in January-December 2017 to test treatment options to significantly reduce Lake Piru's quagga mussel population. The pilot program was specifically designed for Lake Piru as it is a relatively small lake with its own unique water chemistry. The team tested treatment options with specialized pesticide to determine effectiveness as well as the best concentration for minimizing impacts to non-target species at Lake Piru and downstream in the Santa Clara River.

In addition to the unique quagga mussel pilot study, United Water staff have also been working with the California Department of Fish and Wildlife to implement the Lake Piru Quagga Mussel Monitoring and Control Plan, which focuses on minimizing the spread of quagga mussels to other water bodies by private boats and other water vessels, as well as through releases through the dam.

In 2017 United Water Conservation District received a Quagga and Zebra Mussel Action Plan (QZAP) grant awarded by the U.S. Fish and Wildlife Service that will provide for several full-time seasonal staff members who will focus their efforts on outbound vessel inspections and decontamination activities to help prevent the spread of quagga mussels, while also assisting in overall public education efforts.

Next Steps

- Running tests to refine the pilot program—moving forward with *special local need registration* through Calif. Dept. of Pesticides (EPA).
- Being able to move forward is potentially 1-3 years away, because the treatment plan may require a formal Section 7 consultation under the Endangered Species Act, as well as the CEQA and NEPA processes.

Costs to Date

UWCD has spent over \$1.5 million to date (an average of ~\$300,000/year) dealing with the quagga mussel issue. Most of these costs were for professional services required for quagga mussel removal from critical infrastructure, which requires divers, as well as costs associated with UWCD's ongoing comprehensive monitoring program.

(Updated 2-28-18)

UWCD Levee Issue | White Paper

Objective

This County of Ventura project seeks to protect the western edge of the Riverpark development from flooding/reduce flood insurance, increase public safety, provide flood risk management benefits, and potentially assist Ventura County with its Santa Clara River Total Maximum Daily Load (TMDL) issue and UWCD with groundwater recharge at the adjacent Ferro Basin.

Background

The Santa Clara River Levee (SCR-1) system is 4.72 miles long and located along the southeast bank of the Santa Clara River between U.S. Highway 101 and Saticoy. The levee system was designed and constructed by the U.S. Army Corps of Engineers (USACE) in 1958 and is currently owned and maintained by the Ventura County Watershed Protection District (VCWPD). Based on work done for the Federal Emergency Management Agency (FEMA) Levee Certification Program, SCR-1 Levee does not currently meet the requirements set forth in the National Flood Insurance Program (NFIP) regulations.

- The levee project is a Ventura County Watershed Protection District (VCWPD) project; not a UWCD project. Yet it is adjacent to UWCD's Ferro Basin, therefore impacting UWCD assets.
- VCWPD plans to improve the portion of SCR-1 that extends from U.S. Highway 101 to the Central Avenue drain to meet NFIP regulations. The preferred project alternative consists of an 8-foot thick soil cement levee face that will be constructed on the existing levee embankment.
- VCWPD plans to proceed with decertification of the portion of SCR-1 that extends from the Central Avenue drain to Saticoy. The reason for decertification is that the portion of SCR-1 that extends from the Central Avenue drain to Saticoy protects mostly agricultural land and resulted in a low benefit-to-cost ratio according to USACE criteria.
- The project is currently in the design phase and will cost just under \$50 mil - not funded as of yet.
- The project is at least two years away.

Why now?

- In response to hurricane Katrina, levees in the U.S. were re-evaluated and the existing SCR-1 does not meet the 100-year design standard. Therefore, VCWPD is working to improve the levee to meet regulatory standards.

Impact to UWCD

- *Groundwater Recharge*
 - VCWPD is looking at how storm water from the Central Avenue drain can be diverted (and pre-treated) to be discharged and spread in UWCD's Ferro Basin. UWCD will receive benefits of groundwater recharge and the County will be in a better position to meet its water quality targets in the Santa Clara River. Presently, storm water from the Central Avenue drain is discharged directly to the Santa Clara River.
- *Increased State Water Project and Recycled Water Storage*
 - Up to 3,000 AF of water storage may be available in the Ferro Basin for projects such as State Water Project interconnections and/or recycled water.
- *Future Planning at the Ferro Basin*
 - The existing SCR-1 levee runs adjacent to and along the western edge of the Ferro Basin. The improved SCR-1 levee will run along the Central Avenue drain along the southern edge of the Ferro Basin. USACE policies may preclude the ponding of water in the Ferro Basin against the face of the levee improvements. Therefore, there could be some loss of storage in the southern portion of the Ferro Basin.
 - UWCD has plans to use the Ferro Basin as an additional groundwater recharge basin by connecting it to the Freeman Diversion and Lower River System using mostly existing canals and pipelines. This may include storage and groundwater recharge of surface water from the Santa Clara River that is higher in turbidity.

(Updated 2-28-18)

UWCD Board Talking Points Levee Project

THEMES

- Protecting
 - Enhancing
 - Innovating
 - Moving
 - Securing
-

UWCD Communication Themes

- **Protect** Our primary goal must always be expressed, protect groundwater and the basin
 - **Innovate** What we use to achieve our primary goal: Science based, forward thinking, efficiency
 - **Manage** Demonstrating efficiency and excellence in infrastructure management
 - **Move** Demonstrating more of what we do
 - **Secure** Resolving legal issues openly, shore up perception of UWCD
 - **Steward** Demonstrating leadership in water issues of the region and beyond
 - **Value** Recognize partners' and our place in the regional water continuum
 - **Communicate** Transparency, authenticity, and inclusivity
 - **Galvanize** Legislative outreach, grass roots activism
-

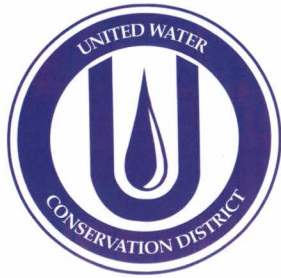
SCR-1 Levee Fast Facts

- The levee project is a potential **partner project** of the Ventura County Watershed Protection District (VCWPD) project.
- UWCD is impacted, as UWCD's Ferro Basin is a **valuable** asset and is adjacent to the project.
- This project seeks to **protect**:
 - The western edge of the Riverpark development from flooding/reduce flood insurance
 - Increase public safety
 - Provide flood risk management benefits
 - Potentially assist Ventura County with its Santa Clara River Total Maximum Daily Load (TMDL) issue
 - Assist UWCD with groundwater recharge at the adjacent Ferro Basin.
- The project will potentially assist UWCD in **securing** additional water through the Central Ave. Drain.
- It is currently in the design phase and will cost just under \$50 mil - not funded as yet. It is at least two years away.
- In response to hurricane Katrina, levees in the U.S. were re-evaluated and the existing SCR-1 Levee does not meet the 100-year design standard. Therefore, VCWPD is working to improve the levee to meet regulatory standards.

Impact to UWCD of Levee

- *Groundwater Recharge*
 - VCWPD & UWCD are **collaborating** to identify if/how water can be diverted (and pre-treated) to be discharged and spread in UWCD's Ferro Basin.
 - UWCD will receive benefits of groundwater recharge.
 - The County will be in a better position to meet its water quality targets in the Santa Clara River.
- *Increased State Water Project and Recycled Water Storage*
 - Up to 3,000 AF of water storage may be available in the Ferro Basin for projects such as State Water Project interconnections and/or recycled water.

(Updated 2-28-18)



FREEMAN DIVERSION WATER REDUCTION IMPACTS ON VENTURA COUNTY

Approximately 377,600 people depend daily on groundwater aquifers recharged through United Water Conservation District's Freeman Diversion Facility; that's almost **HALF** of Ventura County!

The Freeman Diversion operations support an estimated **16,800 jobs**.

An estimated **\$1.08 Billion** of annual crop production in Ventura County is supported by the Freeman Diversion Facility.

The Freeman Diversion operations support an estimated **\$994 Million** in direct and indirect agriculture income.

Ventura County's minority population represents **99%** of all agriculture jobs and will be disproportionately impacted by job losses, as a result of reductions in diversion.

In the cities of Ventura, Oxnard and Port Hueneme, more than **20%** of residents currently have 'unaffordable water bills'.

Reductions in water diversion at the Freeman Diversion Facility will impact cities and business water users by an estimated **\$1 million to \$2.25 million** annually.

Locally, a 10,000 acre feet reduction in water from the Freeman Diversion will result in:

1,500
LOCAL JOBS
LOST



\$91.1M
FOR LOCAL
ECONOMY
LOST



PROPERTY
VALUE
DECLINE



PROPERTY TAX
RECEIPTS
DECLINE



RESIDENTIAL
WATER BILLS
INCREASE



COMMERCIAL
WATER BILLS
INCREASE



WATER
SHORTAGES

presented by:



UNITED WATER CONSERVATION DISTRICT

UWCD Role in City of Oxnard Rice Avenue Grade Separation Project

UWCD is pleased to be serving as a vital partner to the City of Oxnard as it constructs the much needed Rice Avenue Grade Separation safety project.

The City's project design will require UWCD to relocate approximately 3,300 linear feet of the Pumping Trough Pipeline (PTP) at the project site along with significant modifications to PTP Well No. 4.

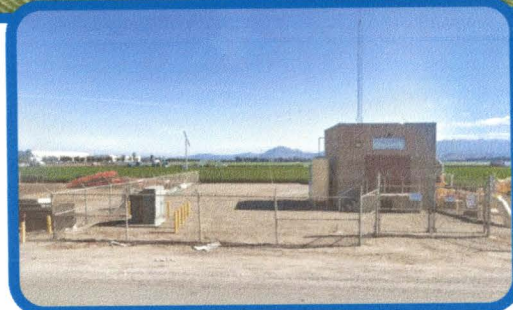
Of the \$76 million projected cost for this project, \$6 million is needed to relocate utilities, acquire property, acquire construction easements, and match Federal Railroad Administration funds already received to fund the final design. Of this, **it is estimated that \$2 million needs to be allocated to cover relocation and modification costs for UWCD's infrastructure** for this important project.

During a Utility coordinating meeting at the City of Oxnard on March 15, 2016, it was determined that the City is financially responsible for all utility relocation costs associated with this important safety project.

However, in June 2016, the City reversed its position, stating UWCD is within the City's franchise agreement and thereby responsible for utility relocation costs. This in spite of the fact that UWCD has no such agreement with the City, and UWCD was never notified of the City's change of position.

At a Design Review Meeting held on January 31, 2018 at UWCD headquarters, with UWCD, WKE Engineering and the City of Oxnard in attendance, WKE walked through its proposed design. United again stated the overall impact that this project will have on its operation.

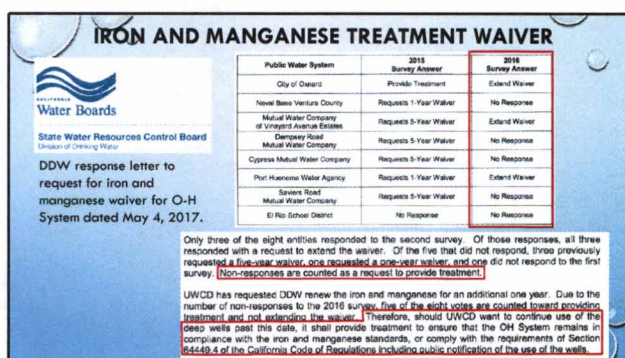
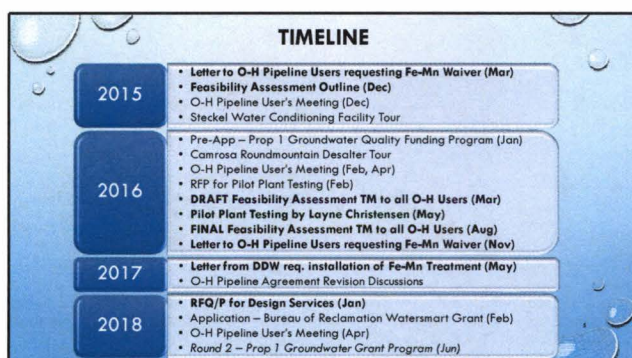
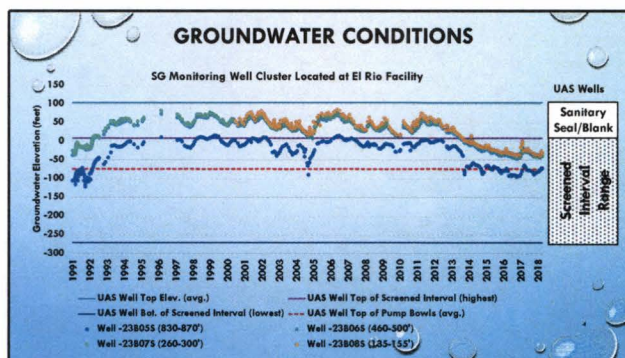
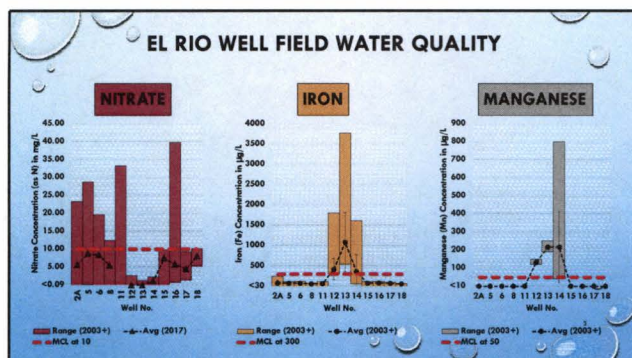
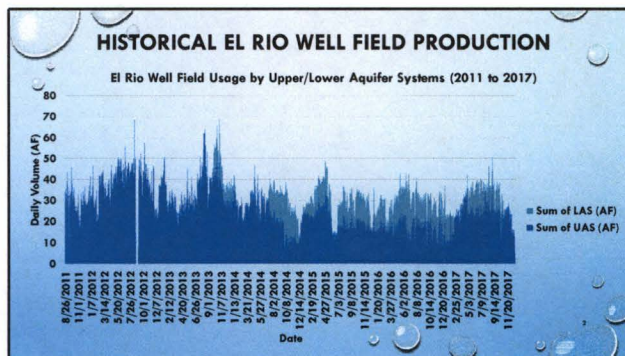
UWCD continues to stress its position that the City of Oxnard's Rice Avenue Grade Separation Project, not UWCD, is financially responsible for the water line relocation portion of the project.



4.3 Award Design Contract for the Iron and Manganese Treatment for Deep Wells of the El Rio Water Treatment Plant and Oxnard Hueneme OH Pipeline System

5/15/2018


4.3. IRON AND MANGANESE TREATMENT PLANT AWARD DESIGN CONTRACT



4.3 Award Design Contract for the Iron and Manganese Treatment for Deep Wells of the El Rio Water Treatment Plant and Oxnard Hueneme OH Pipeline System

5/15/2018

FEASIBILITY STUDY (2016)



CONTENTS

- PURPOSE AND BACKGROUND
- REGULATORY DRIVERS
- EXISTING FACILITIES AND PROCESS
- WATER QUALITY
- DEMAND AND OPERATIONAL MODES
- PROPOSED DESIGN CRITERIA
- AVAILABLE TYPES OF TREATMENT

- INTEGRATING NEW TREATMENT PROCESS INTO EXISTING FACILITIES
- LOCATIONS
- HYDRAULICS
- DEMAND
- SUPPLY AND WELL DRAWDOWN
- OXIDANT
- CONTROLS
- ELECTRICAL
- SEWER
- COSTS
- MAR & AUG 2016 - O-H PIPELINE USER REVIEW
- JAN 2018 - POSTED TO DISTRICT WEBSITE
<https://www.water.org/reports-3/water-supply>

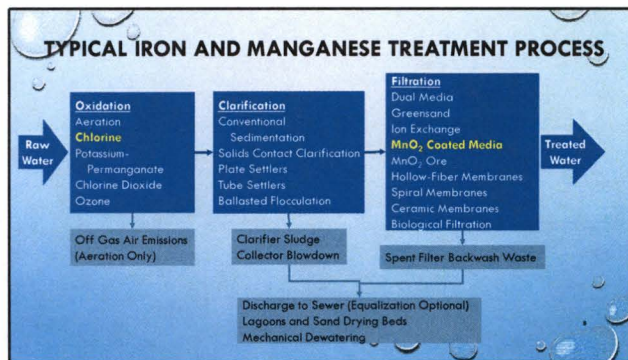


Table 8 - Theoretical Operating Scenarios and Their Respective Water Qualities

Scenario	WtB System	Annual Production (ac-ft/year)	Nitrate (NO3) in mg/L MCL = 45 mg/L				Iron (Fe) in mg/L MCL = 100 mg/L				Manganese (Mn) in mg/L MCL = 50 mg/L			
			Min	Avg	Max	AE ^a	Min	Avg	Max	AE ^a	Min	Avg	Max	AE ^a
1. Do Nothing (2014 Blend)	UAS	9,486	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,419	0.0	3.3	9.1	0.0%	306.7	688.9	2193.3	76.7%	116.7	196.9	896.7	97.2%
	Blend	30,135	0.0	17.0	73.1	7.4%	68.0	299.2	1070.0	11.0%	29.9	49.9	897.9	23.1%
2. Treat one LAS well @ 50%, 24/7/365	UAS	12,070	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	0.0	15.0	80.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.0	18.4	77.4	8.4%	0.0	89.0	112.8	0.0%	0.0	0.7	1.4	0.0%
3. Treat one LAS well @ 75%, 24/7/365	UAS	11,062	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	1,024	0.0	3.3	9.1	0.0%	0.0	15.0	80.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.0	17.1	72.2	7.9%	0.0	89.4	105.9	0.0%	0.0	1.1	2.1	0.0%
4. Treat one LAS well @ 100%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	4,033	0.0	3.3	9.1	0.0%	0.0	15.0	80.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.7	15.9	60.0	7.1%	0.0	92.1	99.0	0.0%	0.0	1.4	2.9	0.0%
5. Treat two LAS wells @ 50%, 24/7/365	UAS	6,021	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	8,061	0.0	3.3	9.1	0.0%	0.0	15.0	80.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.4	19.8	42.2	4.4%	0.0	40.7	71.3	0.0%	0.0	2.8	5.7	0.0%
6. Blend one LAS well @ 50%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	688.9	2193.3	76.7%	116.7	196.9	896.7	97.2%
	Blend	14,086	0.7	15.9	60.0	7.1%	43.0	146.3	437.0	11.0%	16.7	29.9	36.2	13.0%
7. Treat one LAS well @ 75%, 24/7/365	UAS	9,045	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	688.9	2193.3	76.7%	116.7	196.9	896.7	97.2%
	Blend	14,086	0.6	14.6	60.2	6.4%	43.9	142.2	430.4	11.0%	16.7	29.3	36.3	13.0%
8. Treat one LAS well @ 100%, 24/7/365	UAS	8,027	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	688.9	2193.3	76.7%	116.7	196.9	896.7	97.2%
	Blend	14,086	0.0	3.3	9.1	0.0%	0.0	15.0	80.0	0.0%	0.0	5.0	10.0	0.0%
9. Blend one LAS well @ 50%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	4,033	0.0	3.3	9.1	0.0%	0.0	15.0	80.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.6	13.3	54.6	5.7%	43.9	138.0	423.4	11.0%	16.7	29.6	36.4	13.0%

"GREENSAND FILTRATION" DESIGN CRITERIA

- TREATMENT CAPACITY: 3,500 GPM (5,646 AC-FT/YR)
- AVERAGE DAILY LOADING RATES:
 - IRON: 0.64 MG/L
 - MANGANESE: 0.2 MG/L
- ESTIMATED CHLORINE DEMAND: 1.24 MG/L (52 LB/DAY)
- FILTER SURFACE LOADING RATE: 6 GPM/SF
- ESTIMATED BACKWASH VOLUME: 0.6% TO 3.3% OF TOTAL VOLUME

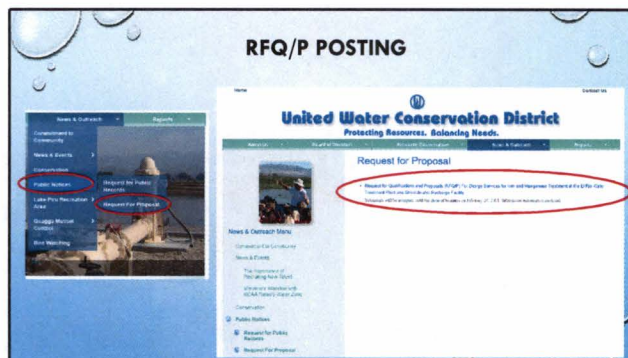


Table 17 - Conceptual Level Construction Cost Estimate for a Greensand Treatment Plant at El Rio Facility

Item	Estimated Cost	Description
Capital Costs		
Fully Enclosed Building ⁽¹⁾	\$ 448,000	Concrete block construction ⁽¹⁾
Manufactured Equipment	\$ 678,000	Pressure filters
Plant Piping and Valves	\$ 182,000	Filter valves and piping
Electrical and Instrumentation	\$ 139,000	Control panel and instrumentation
Yard Piping and Valves	\$ 336,000	Various pipes, fittings and valves
Well No. 12 Upgrades	\$ 54,000	VFD and motor rewired
Well No. 13 Upgrades	\$ 130,000	VFD, motor rewired, new stage
Well No. 14 Upgrades	\$ 107,000	VFD and motor rewired
Labor (six months construction)	\$ 275,000	
Subtotal	\$ 2,449,000	
General Conditions @ 10%	\$ 245,000	
Mobilization and Insurance @ 10%	\$ 245,000	
Subtotal	\$ 2,939,000	
Bonds @ 2%	\$ 59,000	
Contractor Overhead and Profit @ 8%	\$ 236,000	
Contingency @ 20%	\$ 588,000	
Total	\$ 3,822,000	
Operation and Maintenance Costs		
Process Energy	\$ 496,000	per year (assumes 24/7/365)
Building Energy	\$ 40,000	per year
Chemical	\$ 30,000	per year
Maintenance Material	\$ 28,000	per year
Total	\$ 594,000	

Note: (1) The ideal scenario is to provide a temperature controlled environment for oxidation and filtration efficiency. However, this is not a requirement. Alternatives that would reduce costs include a building that would partially enclose filtration units or a canopy.

5/15/2018





www.GlobalWaterInnovations.org

Global Water Innovations

Why We Believe the
Current RFP for Design
for Solving the El Rio
Nitrate Problem is
Flawed

United Water Conservation
District

5/14/18

The Problem

- We think the current RFP for design services is based on a chosen design that has significant assumptions, implications & limitations that UWCD Managers & Board Members may not yet fully realize.
- We believe that this chosen design will leave ratepayers covering significant future capital and operating costs, while depriving UWCD of optimum flexibility in choosing which wells to use for day to day operations. We think the District is likely to be forced to spend even more money over time to counter the current design's limitations.
- We respectfully ask that this RFP be suspended until the Board has a chance to fully review and understand the implications of the current chosen design. We think the underlying design needs to be sent back to the Engineering Department for a closer look at other options.

The Problem

- The Iron/Manganese problem that the current design RPF is meant to address is there because the LAS is being used to provide blend water to address the Nitrate problem in the UAS. We believe a more direct approach, and one that would be more likely to receive grant money, would be to remediate the Nitrates in the UAS.
- If, for example, UWCD simply pulled 500 AFY from the LAS each year, there is no Iron/Manganese problems – the effluent blend is only at about 1/3 of Secondary MCL's for each.
- History for the last 40 years shows that staying under 500 AFY was possible in 75% of the years, with no additional blending needed to keep the Nitrate level of the plant effluent also under its MCL. Even in the 5 years ending in 2014, only 2 years went beyond 500 AF from the LAS.

Historical Usage of Lower Aquifer System

Over a recent 5 year span, UWCD only used the Lower Aquifer System (the wells with the Iron/Manganese problem) for an **average of only 5.3%** of its water needs.

Table 6 - El Rio Plant Annual Well Production							
Well No.	Aquifer	2014	2013	2012	2011	2010	Average
2A	UAS	1,188	766	1,250	1,102	1,162	1,094
4	UAS	0	129	183	647	740	340
5	UAS	80	248	51	510	440	266
6	UAS	653	1,509	201	949	2,037	1,070
7	UAS	1,174	425	119	673	1,181	714
8	UAS	2,059	2,077	3,269	1,575	1,595	2,115
11	UAS	286	1,895	2,264	1,004	1,254	1,341
12	LAS	466	878	3	3	5	271
13	LAS	4	122	3	2	22	31
14	LAS	1,949	3	3	3	6	393
15	UAS	2,549	4,666	3,782	2,203	4,659	3,572
16	UAS	507	1,134	3,082	2,076	2,627	1,885
17	UAS	0	0	0	0	0	0
Totals		10,915	13,852	14,210	10,747	15,728	13,090

From 2010 through 2014 there was only a 695 AF yearly average of use of the LAS, with **a peak in 2014 of 2,419 AF, or 22% of the total El Rio supply that year**

Historical Usage of Lower Aquifer System – Further Back

United Water Conservation District

OH Deep Aquifer Well Pumping History
Table 9-2

Calendar Year	Deep Aquifer Pumping (AF)
1984	0
1985	0
1986	2
1987	564
1988	43
1989	711
1990	2,796
1991	1,597
1992	97
1993	206
1994	67
1995	28
1996	33
1997	62
1998	168
1999	12
2000	91
2001	18
2002	793
2003	10
2004	437

Note: In 2002 and 2004, deep aquifer wells were pumped to the irrigation pipeline (Not part of the OH System).

Over the 20 year span from 1984 to 2004, UWCD only used those same wells for an **average of about 3%** of its water needs.

1990 was a peak year with 2,795 AF of use, even more than 2014.

So Really You Have a Nitrate Problem that needs to be addressed somewhere between 25% and 40% of the Time

The Nitrate Problem is Episodic in the UAS – it intensifies and weakens depending on rainfall, basis recharge, etc. Historically in most years, some slight blending from the LAS is more than sufficient (under 500 AFY)

The Iron/Manganese Problem is however Constant in the LAS – If that water is used over a certain threshold in any year, the levels start to approach the Secondary MCL's. It has to be pointed out though, that even in 2014 – the worst year presented in the Technical Memorandum – with 2400+ AF used from the LAS, the averages were still below the MCL's.

The First Implication of the Current Design

3. Discussion

3.1 Proposed Design Criteria

The goal of the proposed project is to satisfy the regulatory drivers as described in Section 2.2. While the final position of O-H customers towards treatment for iron and manganese is not known at this time, it will be assumed for the purposes of this TM that the objective is to meet both primary and secondary MCLs as mandated by DDW. In order to demonstrate how these regulatory drivers might be satisfied, eight different operating scenarios have been presented in **Table 7** and **Table 8** below. Each operating scenario excluding the first (the do nothing option) will include partial or full treatment of water from LAS wells. All of the operating scenarios are based on the following assumptions:

- Annual O-H pipeline demand is constant at 14,086 acre-feet per year or 12.6 million gallons per day (annual average from 1984 to 2014). See **Section 3.3.4** for a discussion on potential future demand changes;
- Total peak production from UAS wells is 24,970 gpm. With nine (9) UAS wells total, average production from each UAS well is 2,775 gpm. The total peak production from LAS wells is 8,500 gpm. With three (3) LAS wells total, average production from each LAS well is 2,833 gpm. Since Well Nos. 12 and 13 are limited to 2,500 gpm, this number will be used instead.
- UAS and LAS wells will operate 24 hours per day, 7 days per week, 365 days per year (24/7/365). **Interruptions to the proposed treatment process of LAS wells could potentially cause fouling of filtration units. Not all the LAS wells have to operate at the same time.**
- In some scenarios, variable speed is proposed for the LAS wells. These scenarios were proposed under the assumption of operating 24/7/365 to potentially reduce the overall treatment capacity for iron and manganese removal. However, it can also be inferred that this could include a strategic operation wherein the LAS wells are not run during on-peak electrical rate hours.
- Typical water quality data is assumed from **Table 4**.
- Only LAS wells will be treated. Anticipated concentrations of iron and manganese from proposed treatment process is at non-detectable levels. UAS will not be treated, and will be blended with LAS wells.

According to the Technical Memorandum, the chosen Greensand Plus media filter will need to run 24/7/365.

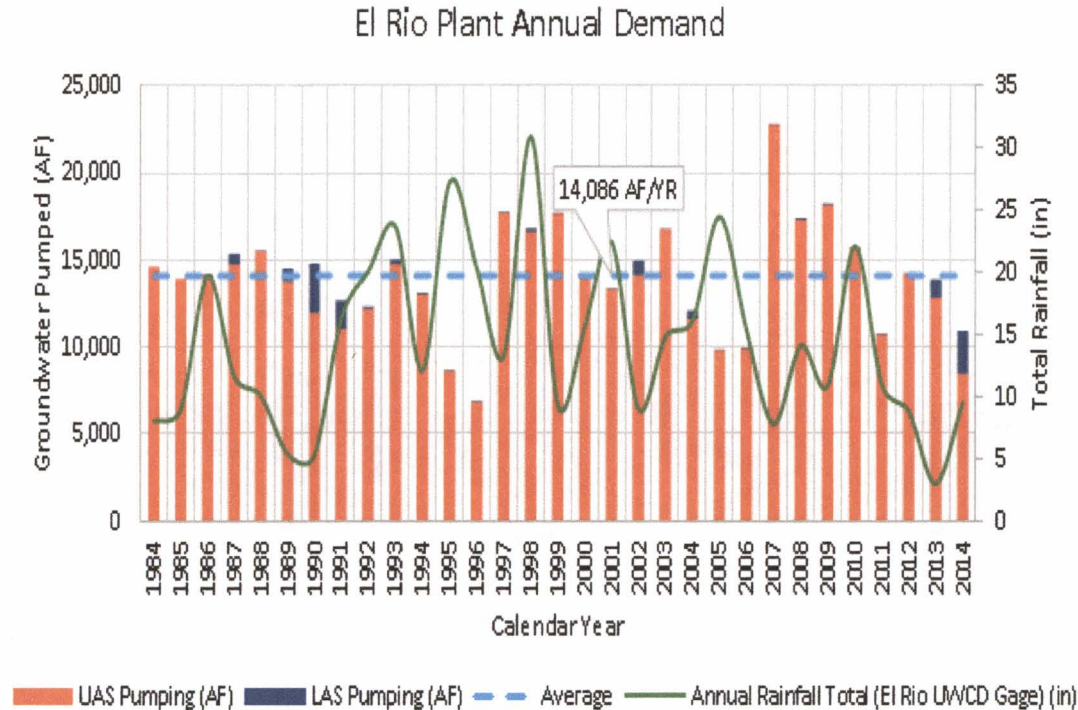
- Extended interruptions can cause fouling or worse – the media bed can “cement up”.
- Flow through design is set to go from minimum well flow of 2,500 GPM up to biggest well flow of 3,500 GPM.
- **This means that 4,000 to 5,600 Acre-Feet of water will be pulled from the lower aquifer every year going forward**

The First Implication of the Current Design

- Because of the need for the Greensand Plus media filter to run 24/7/365, if the design is implemented as currently envisioned, **at least 4,000 AF per year** will come from the Lower Aquifers. That means that at least 30%, and perhaps as much as 40% of the overall El Rio supply will come from the LAS in coming years.
- ***This compares to less than 700 AF per year in the recent 5 year history*** (less than 5%)
- ***This compares to less than 400 AF per year in prior 20 year period*** (less than 3%)
- This is a significant change in policy and reality.
- **Historically, UWCD has only used water from the LAS when they really needed to. Going forward they will be forced to take at least 4,000 AFY**
- Has adequate attention been paid to what might be potential unforeseen impacts of this dramatic change?
- Has adequate attention been paid to what impact this might have on SGMA modeling and outcomes?

The First Implication of the Current Design

30 Years of Prior History – The Blue Section of Each Bar Represents the Relative Acre-Feet of Use of Water from the LAS for that Particular Year



Under the proposed current design, a minimum of 4,000 AF, and as much as 5,600 AF of water will be pulled and treated from the LAS every year – which will represent at least 30%, and perhaps as much as 40%, of El Rio's water supply

The Drivers Given for the Current Design are that it Solves the Nitrate Problem, and that Iron/Manganese Levels are Violating Secondary MCL's.

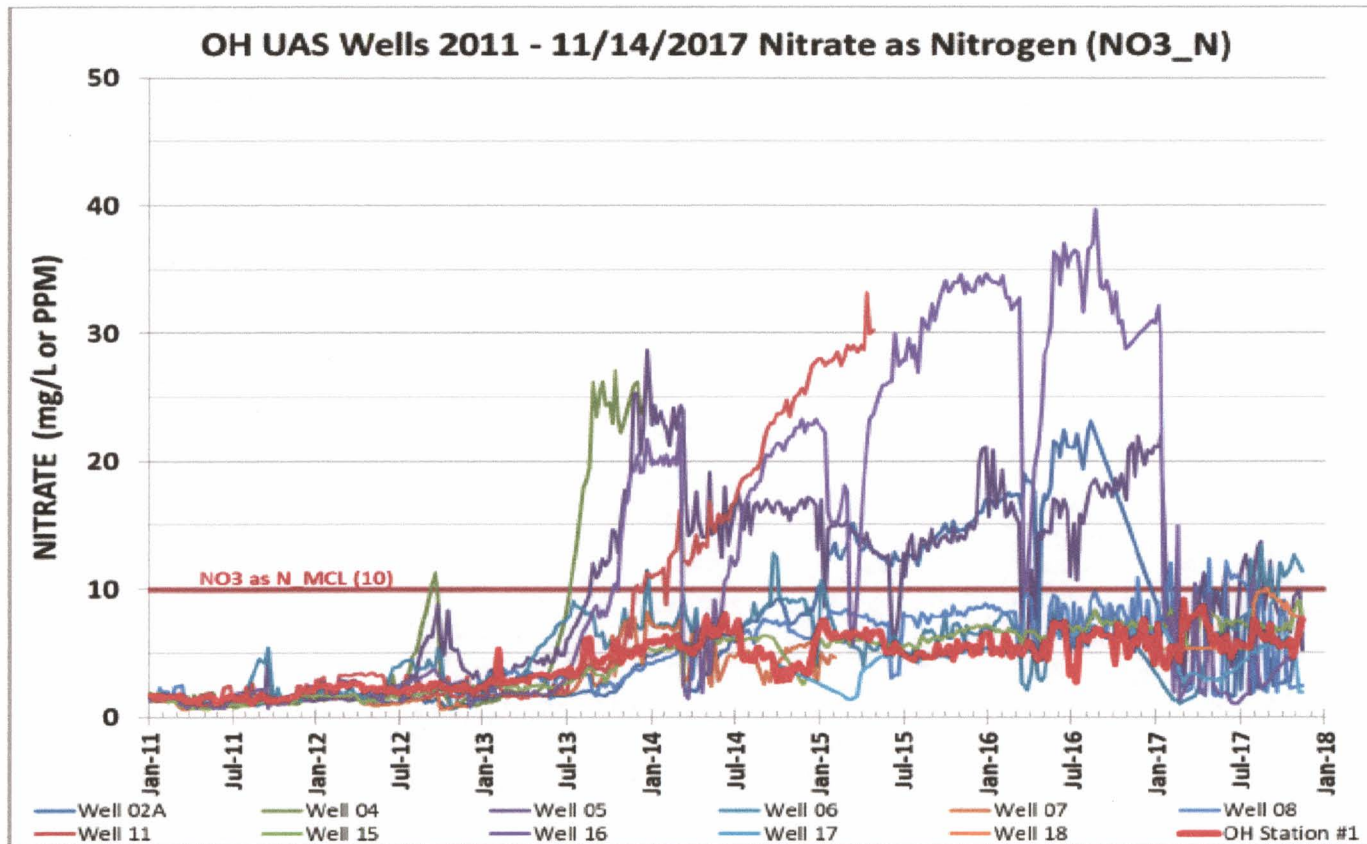


Figure 2 - Nitrate Concentrations for All El Rio Facility UAS Wells

The bright red line on this chart represents the blended effluent from El Rio, reflecting the impact of LAS water counteracting high individual well levels of Nitrates. Blending has worked across the years. Let's look at the year chosen for the Theoretical Operating Scenario in the Technical Memo – 2014.

The Drivers Given for the Current Design are that it Solves the Nitrate Problem, and that Iron/Manganese Levels are Violating Secondary MCL's.

Table 8 - Theoretical Operating Scenarios and Their Respective Water Qualities

Scenario	Well System	Annual Production (ac-ft/year)	Nitrate (NO3) in mg/L MCL = 45 mg/L				Iron (Fe) in µg/L MCL = 300 µg/L				Manganese (Mn) µg/L MCL = 50 µg/L			
			Min	Avg	Max	AEP ⁹	Min	Avg	Max	AEP ⁹	Min	Avg	Max	AEP ⁹
1 Do Nothing (2014 Blend)	UAS	8,496	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,419	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	Blend	10,915	0.8	17.0	71.1	7.8%	68.0	199.2	629.0	17.0%	25.9	43.6	87.9	21.5%
2 Treat one LAS well @ 50%, 24/7/365	UAS	12,070	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.9	18.4	77.4	8.6%	0.0	65.6	112.8	0.0%	0.0	0.7	1.4	0.0%
3 Treat one LAS well @ 75%, 24/7/365	UAS	11,062	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	3,024	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.8	17.1	71.7	7.9%	0.0	61.4	105.9	0.0%	0.0	1.1	2.1	0.0%
4 Treat one LAS well @ 100%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	4,033	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.7	15.9	66.0	7.1%	0.0	57.1	99.0	0.0%	0.0	1.4	2.9	0.0%
5 Treat two LAS wells @ 100%, 24/7/365	UAS	6,021	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	8,065	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.4	10.8	43.2	4.3%	0.0	40.2	71.3	0.0%	0.0	2.9	5.7	0.0%
6 Treat one LAS well @ 50%, Blend one LAS well @ 50%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	LAS	2,016	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.7	15.9	66.0	7.1%	43.9	146.5	437.3	11.0%	16.7	28.9	58.2	13.9%
7 Treat one LAS well @ 75%, Blend one LAS well @ 50%, 24/7/365	UAS	9,045	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	LAS	3,024	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.6	14.6	60.3	6.4%	43.9	142.2	430.4	11.0%	16.7	29.3	58.9	13.9%
8 Treat one LAS well @ 100%, Blend one LAS well @ 50%, 24/7/365	UAS	8,037	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	LAS	4,033	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.6	13.3	54.6	5.7%	43.9	138.0	423.4	11.0%	16.7	29.6	59.6	13.9%

Note that in 2014 (Line 1) a year in which LAS use peaked at 2,409 AF (22% of total El Rio supply) the resulting blend of Nitrates was at a 17.0 mg/L average level. Note that the blended levels of Iron and Manganese in 2014 were both well under their respective MCL's. There was no violation on average of their MCL's in a peak year of LAS use.

The Drivers Given for the Current Design are that it Solves the Nitrate Problem, and that Iron/Manganese Levels are Violating Secondary MCL's.

Now compare the 2014 High LAS Use (2,419 AF - 22%) Actual Outcome - with Nitrates in the blend at 17.0 and Iron and Manganese each under their respective Secondary MCL's – to the Line 4 Proposed Base Design scenario of 4,000 AF per year treated (30%). Note that the Nitrate level in the blend is only down to 15.9 when use of the LAS has increased to 30%. Not much to show for the money spent.

Scenario	Well System	Annual Production (ac-ft/year)	Nitrate (NO3) in mg/L MCL = 45 mg/L				Iron (Fe) in µg/L MCL = 300 µg/L				Manganese (Mn) µg/L MCL = 50 µg/L			
			Min	Avg	Max	AEP ³	Min	Avg	Max	AEP ³	Min	Avg	Max	AEP ³
1 Do Nothing (2014 Blend)	UAS	8,496	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,419	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	Blend	10,915	0.8	17.0	71.1	7.8%	68.0	199.2	629.0	17.0%	25.9	43.6	87.9	21.5%
2 Treat one LAS well @ 50%, 24/7/365	UAS	12,070	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.9	18.4	77.4	8.6%	0.0	65.6	112.8	0.0%	0.0	0.7	1.4	0.0%
3 Treat one LAS well @ 75%, 24/7/365	UAS	11,062	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	3,024	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.8	17.1	71.7	7.9%	0.0	61.4	105.9	0.0%	0.0	1.1	2.1	0.0%
4 Treat one LAS well @ 100%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	4,033	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.7	15.9	66.0	7.1%	0.0	57.1	99.0	0.0%	0.0	1.4	2.9	0.0%
5 Treat two LAS wells @ 100%, 24/7/365	UAS	6,021	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	8,065	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.4	10.8	43.2	4.3%	0.0	40.2	71.3	0.0%	0.0	2.9	5.7	0.0%
6 Treat one LAS well @ 50%, Blend one LAS well @ 50%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	Blend	14,086	0.7	15.9	66.0	7.1%	43.9	146.5	437.3	11.0%	16.7	28.9	58.2	13.9%
7 Treat one LAS well @ 75%, Blend one LAS well @ 50%, 24/7/365	UAS	9,045	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	Blend	14,086	0.6	14.6	60.3	6.4%	43.9	142.2	430.4	11.0%	16.7	29.3	58.9	13.9%
8 Treat one LAS well @ 100%, Blend one LAS well @ 50%, 24/7/365	UAS	8,037	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	Blend	14,086	0.6	13.3	54.6	5.7%	43.9	138.0	423.4	11.0%	16.7	29.6	59.6	13.9%

The Drivers Given for the Current Design are that it Solves the Nitrate Problem, and that Iron/Manganese Levels are Violating Secondary MCL's.

- Not Really a Nitrate Solution
- And yes, Iron and Manganese are dramatically lowered
- But they are only high in the first place because so much water from LAS is being used.

Table 8 - Theoretical Operating Scenarios and Their Respective Water Qualities

Scenario	Well System	Annual Production (ac-ft/year)	Nitrate (NO3) in mg/L MCL = 45 mg/L				Iron (Fe) in µg/L MCL = 300 µg/L				Manganese (Mn) µg/L MCL = 50 µg/L			
			Min	Avg	Max	AEP ³	Min	Avg	Max	AEP ³	Min	Avg	Max	AEP ³
1 Do Nothing (2014 Blend)	UAS	8,496	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,419	0.0	3.3	9.1	0.0%	306.7	638.9	2393.3	76.7%	116.7	196.9	396.7	97.2%
	Blend	10,915	0.8	17.0	71.1	7.8%	68.0	193.2	629.0	17.0%	25.9	43.6	87.9	21.5%
2 Treat one LAS well @ 50%, 24/7/365	UAS	12,070	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	2,016	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.9	18.4	77.4	8.6%	0.0	65.6	112.8	0.0%	0.0	0.7	1.4	0.0%
3 Treat one LAS well @ 75%, 24/7/365	UAS	11,062	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	3,024	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.8	17.1	71.7	7.9%	0.0	61.4	105.9	0.0%	0.0	1.1	2.1	0.0%
4 Treat one LAS well @ 100%, 24/7/365	UAS	10,053	1.0	20.9	88.8	10.0%	0.0	74.0	126.7	0.0%	0.0	0.0	0.0	0.0%
	LAS	4,033	0.0	3.3	9.1	0.0%	0.0	15.0	30.0	0.0%	0.0	5.0	10.0	0.0%
	Blend	14,086	0.7	15.9	66.0	7.1%	0.0	57.1	99.0	0.0%	0.0	1.4	2.9	0.0%

- In the prior 40 years, other than in a handful of years when the LAS is being overly used to blend down Nitrates, average LAS use has been under 500 AFY.
- **At 500 AFY, the Iron in the blend will be at 0.094 mg/L, and the Manganese will be at 0.007 mg/L. – in each case about a third of the MCL**
- There is no Iron Manganese problem at this level of LAS usage. And this has been true in over 80% of the prior 40 years.

Treating Iron & Manganese in Order to Have Enough Water to Blend Down the Nitrates in the UAS is a Very Expensive Approach (from the Technical Memorandum)

- Iron/Manganese levels are consistently high in LAS, unlike Nitrate problems in UAS which fluctuate and lots of time need only partial or no treatment
- As previously noted, recommended practice mandates running Greensand Plus filter 24/7/365 in order to avoid fouling and cementing of bed media. This mandates 4,000 AFY of treatment from LAS.
- LAS Wells are deep, so big electric bills associated with pumping.
- Capital Costs are going to be \$5 million or so with design work, etc.
- Capital Costs not eligible for Prop.1 Funding
- Operating Costs look to be around \$600k per year.

Table 17 - Conceptual Level Construction Cost Estimate for a Greensand Treatment Plant at El Rio Facility

Item	Estimated Cost	Description
Capital Costs		
Fully Enclosed Building ⁽¹⁾	\$ 448,000	Concrete block construction ⁽¹⁾
Manufactured Equipment	\$ 678,000	Pressure filters
Plant Piping and Valves	\$ 182,000	Filter valves and piping
Electrical and Instrumentation	\$ 139,000	Control panel and instrumentation
Yard Piping and Valves	\$ 336,000	Various pipes, fittings and valves
Well No. 12 Upgrades	\$ 54,000	VFD and motor rewind
Well No. 13 Upgrades	\$ 130,000	VFD, motor rewind, new stage
Well No. 14 Upgrades	\$ 107,000	VFD and motor rewind
Lab or (six months construction)	\$ 375,000	
Subtotal	\$ 2,449,000	
General Conditions @ 10%	\$ 245,000	
Mobilization and Insurance @ 10%	\$ 245,000	
Subtotal	\$ 2,939,000	
Bonds @ 2%	\$ 59,000	
Contractor Overhead and Profit @ 8%	\$ 236,000	
Contingency @ 20%	\$ 588,000	
Total	\$ 3,822,000	
Operation and Maintenance Costs		
Process Energy	\$ 496,000	per year (assumes 24/7/365)
Building Energy	\$ 40,000	per year
Chemical	\$ 30,000	per year
Maintenance Material	\$ 28,000	per year
Total	\$ 594,000	per year

Note: (1) The ideal scenario is to provide a temperature controlled environment for oxidation and filtration efficiency. However, this is not a requirement. Alternatives that would reduce costs include a building that would partially enclose filtration units or a canopy.

The construction costs shown in **Table 17** do not include design and construction administration costs. UWCD will solicit for proposals from engineering firms to obtain costs for design. Design costs for engineering projects are typically estimated at 8 to 15 percent of the construction cost (depending on complexity), or in this case, \$306k to \$573k. Construction administration may be implemented by UWCD staff or may be contracted separately. If contracted separately, construction administration is estimated to be 3 to 5 percent of the construction cost, or \$115k to \$191k.

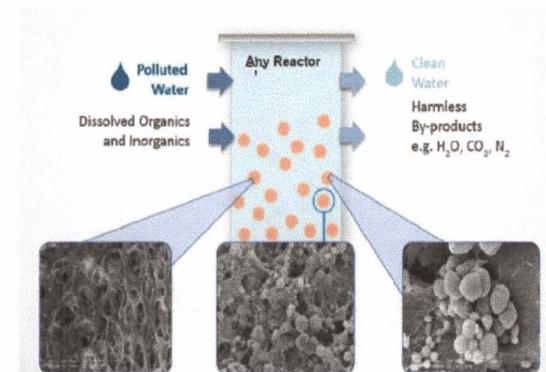
Removing Nitrates via WesTech/Microvi Bioreactors in part of UAS Water (3,000 GPM capacity) is a more practical and less expensive approach

- Unlike Iron/Manganese levels in LAS, Nitrate levels in UAS fluctuate wildly.
- Historically, **in 75% of last 40 years no Nitrate Treatment at all would have been necessary**, with blend from LAS wells of 500 AFY, or less, sufficient to keep blend levels of Nitrates under MCL, and to keep blend levels of both Iron and Manganese at 1/3 of MCL.
- Microvi biotechnology can be interrupted for long periods with no ill effects, other than giving bacteria a starter shot of nutrients a few hours in advance of restarting system.
- UAS Wells are shallow, pumping costs same or less than current practice.
- Capital Costs, including design & install, look to be under \$3.2 million.
- With 500 AF of Blend from LAS, and 3,000 GPM of Microvi treatment, average Nitrate level will be 17, same as Line 1.

Item A – Denitrification Bioreactor System Powered by Microvi

Microvi Biocatalyst

Microvi Biotechnologies (Microvi) has developed an innovative biological nitrate removal system (Nitrovi™) that overcomes the disadvantages of conventional biological systems. With our Microvi MicroNiche Engineering Technology platform, microbes are irreversibly maintained within specially engineered “biocatalysts”. In addition, cell growth is limited due to special engineering of the biocatalyst so that the microbe population remains stable. Therefore, biological sludge production is vastly reduced, resulting in no biological waste stream to be disposed of.



Removing Nitrates via WesTech/Microvi Bioreactors in part of UAS Water (3,000 GPM capacity) is a more practical and less expensive approach

Bioreactor

For treatment of a 3000 gpm flow system, a total of 6 bioreactors will be required. The system will need to divert 1800 gpm to the reactors, where it will remove the nitrates to < 2 mg/l, and blend back in with the rest of the flow for 8 mg/l nitrates. Each bioreactor will be 11.5 feet in diameter and have a side water depth of 16.2 feet (overall reactor height will be 18.2 feet). Each bioreactor will come equipped with all mechanical equipment, instrumentation, and dosing equipment needed for a complete system.

A carbon feed system will be integrated into the tank to provide the required food source for nitrate removal. A mixer is provided for each bioreactor to keep the biocatalyst in suspension. These mixers will be equipped with a variable frequency drive to allow the mixer speed to be varied. A platform will be provided at the top of each bioreactor for installation of the mechanical mixer and to allow access to the bioreactor via hinged tank lids on either side of the platform. Access to the platform will be by a caged ladder included with the bioreactor.

The bioreactors will be equipped with an internal baffle to minimize short circuiting through the reactor. The downstream side of the baffle will create a quiescent zone that will allow any biocatalysts that have flowed under the baffle wall to settle and return to the mixed zone, thereby offering protection against loss of any biocatalyst.

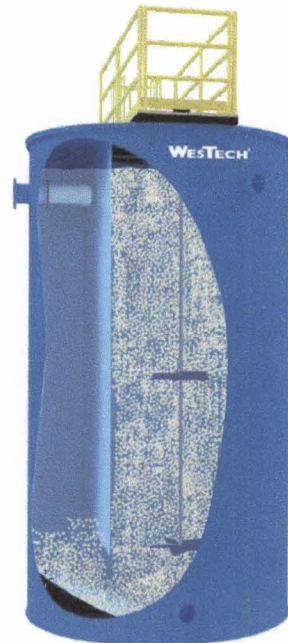


Fig 1: Bioreactor Cutaway

Item A-1 – 3000 gpm Microvi Denitrification System

Design Information		
Description	Unit	Dimension/Capacity
Total Number of Reactors	-	6
Total Design Flow	gpm	3000
Blending Flow	gpm	1800
Influent Reactor Nitrate	mg/l NO ₃ -N	17
Effluent Reactor Nitrate	mg/l NO ₃ -N	2
Target Blend Effluent Nitrate	mg/l NO ₃ -N	8
Mixer Orientation	-	Vertical
Influent pH	-	7
Tank Dimensions	ft x ft	11.5 dia x 18.2 H
Design Flow Rate per Tank	gpm	300
Design Velocity Gradient	s ⁻¹	20-80

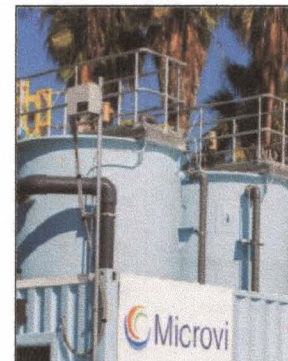


Fig 2: Reaction Tanks

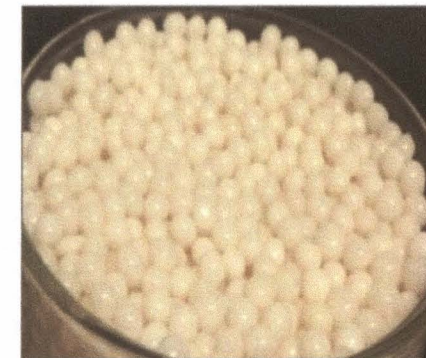


Fig 3: Biocatalyst

WesTech

Proposal No. 1830218

WesTech

Proposal No. 1830218

Removing Nitrates via WesTech/Microvi Bioreactors in part of UAS Water (3,000 GPM capacity) is a more practical and less expensive approach

- Not only is the capital cost almost 40% less, but the operating costs are far less as well
- Operating costs will fluctuate with the levels of Nitrates in UAS wells.
- In many years (up to the 80% historical average?) the system will be virtually in hibernation – with no extra Nitrate removal required because 500 AF baseline supply from the LAS each year provides sufficient blending. Cost - \$10k per month, or \$120k per year.
- In high Nitrate years, the cost could go as high as \$45k per month, \$540k per year. The key driver of cost is acetic acid to supply carbon to the bacteria.
- At the UAS Nitrate level of 20.9 assumed in the scenario's, the blended Nitrate level will be 17 for the whole 14,000 AF El Rio supply after Microvi treatment.

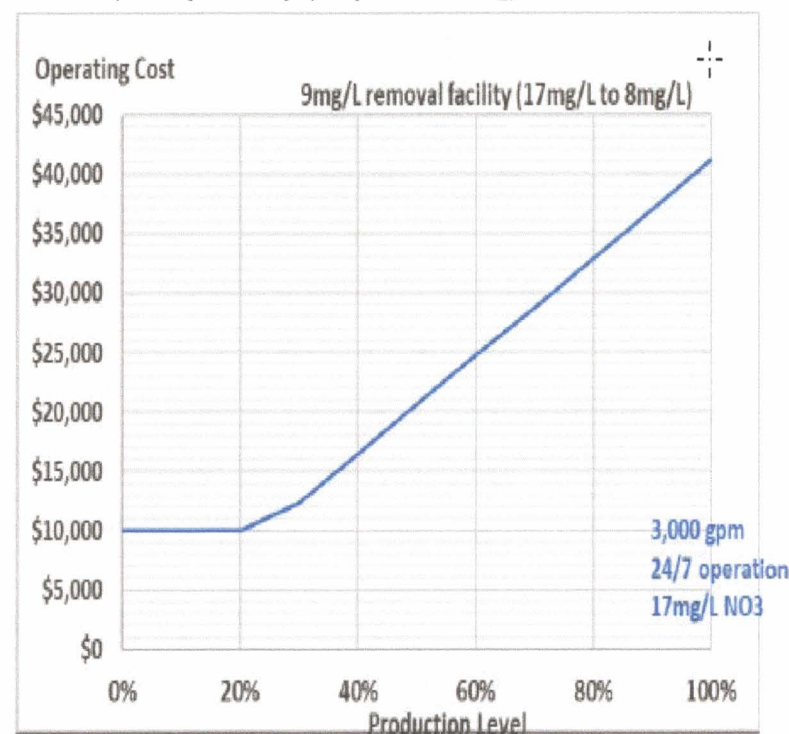


Figure1 3,000 gpm facility to reduce nitrate from 17mg/L to 8mg/L

Operating Costs are likely to average significantly less than the proposed Iron/Manganese Approach – maybe as much as 70% less, given historical averages

Removing Nitrates via WesTech/Microvi Bioreactors in part of UAS Water (3,000 GPM capacity) is a more practical and less expensive approach

- Yes there would be one truck a week delivering 5,900 gallons of Acetic Acid to feed the bacteria – but this would only be peak years. Many years that might only be one truck per six months!
- And this is no different than running an RO plant for example – truckloads of pH adjustment acid come continually.
- Square Footage for the Microvi only technology is under 6,000.
- Square Footage to address either Nitrates or Iron Manganese (solution on the next page) is under 8,000 square feet.

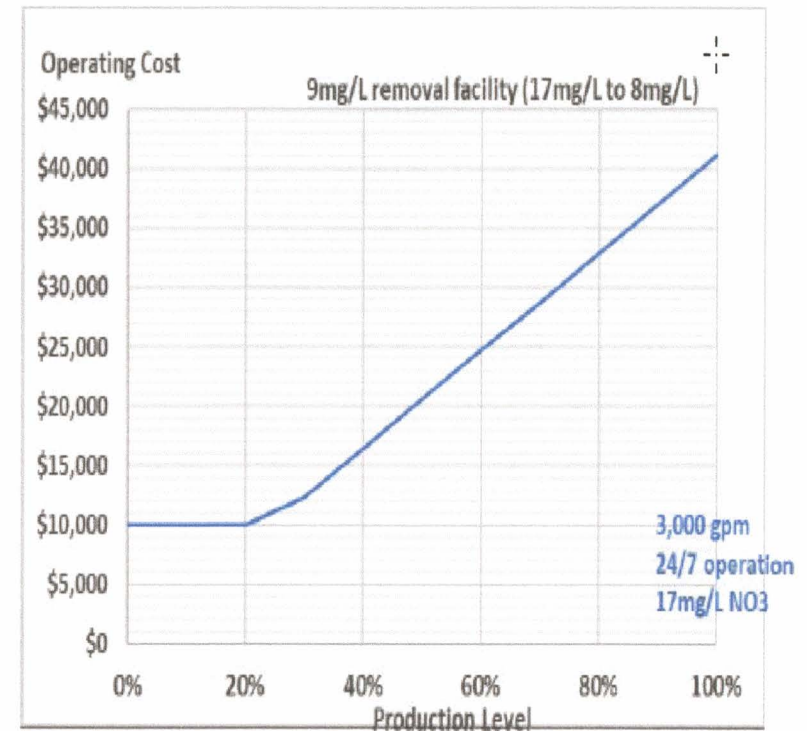


Figure1 3,000 gpm facility to reduce nitrate from 17mg/L to 8mg/L

Operating Costs are likely to average significantly less than the proposed Iron/Manganese Approach – maybe as much as 70% less, given historical averages

Another Alternative – If UWCD Wants Ultimate Flexibility

WesTech also makes Greensand Plus Reactors

Item B – Horizontal MULTICELL® Pressure Filter System

Design Criteria	
Flow to System	3,000 gpm
Number of Filters	2
Number of Cells/Filter	3
Size of Each Filter	10 ft diameter x 32 ft O.E. Length
Filter Loading Rate	6.0 gpm/ft ²
Filter Media Type	GreensandPlus with Anthracite
Backwash Type	MULTIWASH
Backwash Supply	In-service cells
Backwash Rate* (air/water)	5 gpm/ft ² water and 3 scfm/ft ²
Backwash Rate* (re-stratification)	12 gpm/ft ² water only

*The design backwash rate listed is based on a temperature of 25 degrees Celsius. The actual backwash water rate must be adjusted 2% up or down for each degree Celsius difference above or below from design temperature; i.e. above 25° C increase by 2%, below 25° C decrease by 2%.

Technical Description

Horizontal Pressure Filters are an effective, inexpensive, and low-maintenance method of reducing many raw water constituents including iron, manganese, turbidity, color, arsenic (as co-precipitant) etc. Water is introduced to each cell where it passes through a bed of filter media to remove unwanted particulate. The water then passes a common underdrain plate with distribution nozzles for effluent discharge. Once the media fouls each cell to a predetermined set-point, a backwash cycle is required to dislodge residual particulate for waste discharge. Only one cell is backwashed at a time. The design of the filter with a common underdrain allows

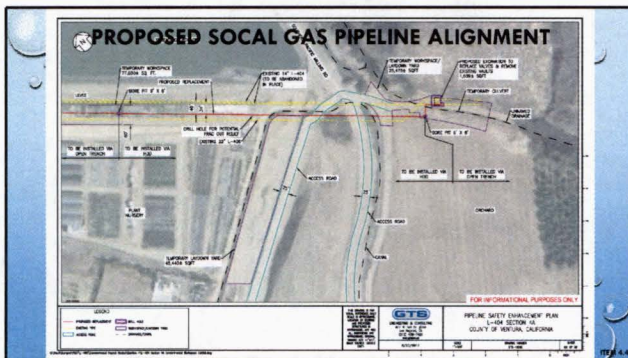
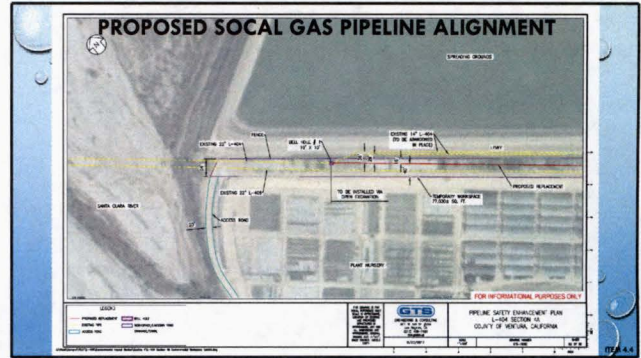
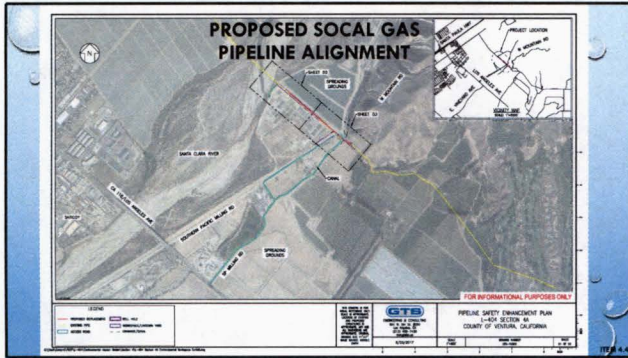


backwash water to be supplied from the in service cells to the cell in backwash.

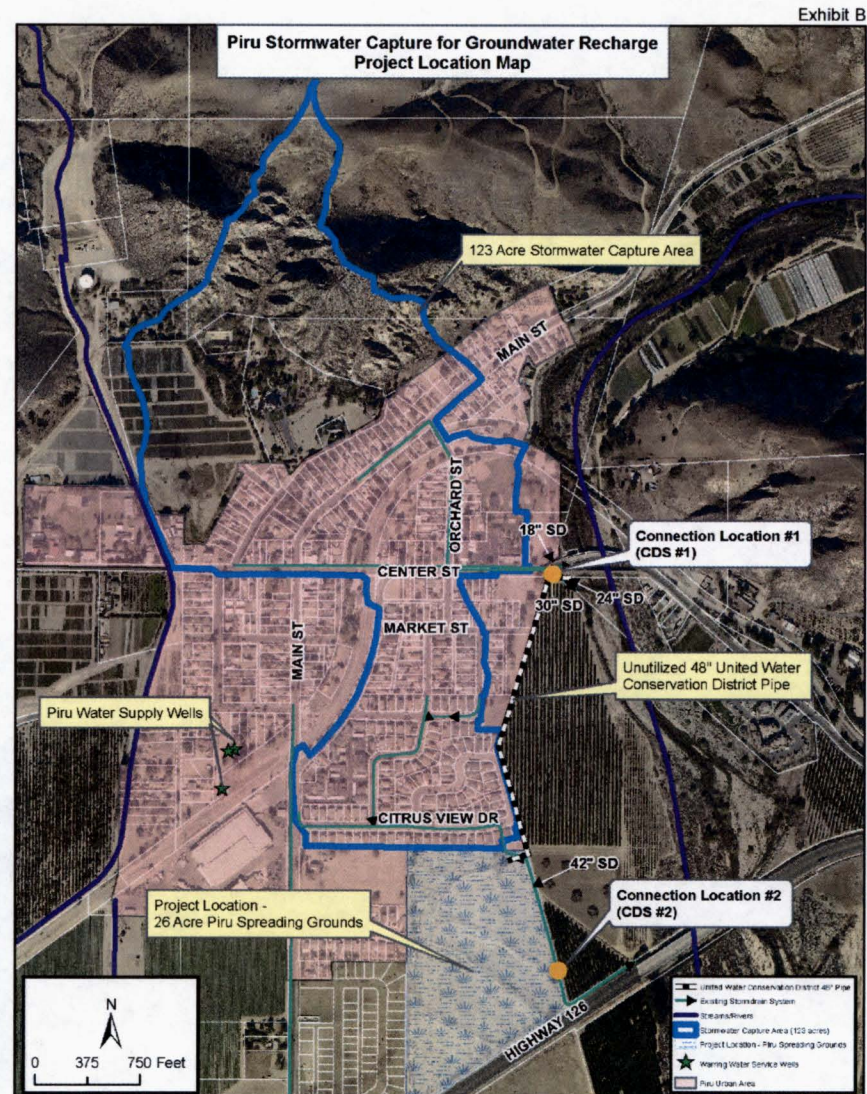
Key Features and Benefits

- Economical multi-media filtration at mid-level flows (300 – 1,200 gpm)
- Robust, high quality non-code constructed tanks, or ASME code tanks
- Versatility across many applications (groundwater, process water, etc.)
- Customized to accommodate a specific application (MULTIWASH® Process, Air wash, water wash, air/water wash)
- Reduced operator attention with automatic actuated system valves
- Equipment cost reduction, no need for a backwash supply tank and backwash supply pumps

- WesTech will design & tightly integrate Greensand Plus bed in with Microvi Bioreactor
- UWCD will be able to either treat Iron/Manganese in LAS, or remove Nitrates in UAS, ensuring ultimate flexibility in supply choices with this WesTech design.
- Greensand Bed will be used as filter for Microvi bioreactor when it is not being used for Iron/Manganese treatment, ensuring that bed never dries out and turns to cement. This means no requirement to pump and treat 4,000 AFY from LAS
- Capital Costs likely to be around \$5 million for this approach, but O&M will be significantly less than current design on average.



PIRU STORMWATER RECHARGE



5/15/2018

ITEM 4.5

5.2 Admin Staff Report

OUTREACH, LEGISLATIVE, TRAINING, AND GRANTS

OUTREACH

GOVERNMENT RELATIONS
LEGISLATIVE EDUCATION
BOARD INTERACTIONS
BOARD NORMS
BOARD OF DIRECTORS SPEAKERS BUREAU
STAFF RELATIONSHIPS – INTERNAL COMMITTEE
EXTERNAL AGENCY RELATIONSHIPS
PUBLIC RELATIONS
E-NEWS
STAKEHOLDER ENGAGEMENT
SOCIAL MEDIA PLAN
MESSAGE ALIGNMENT

“Continually educate our elected officials about the importance of programs and services in order to garner support for District programs and engage key political leaders and stakeholders to support our mission.”

MEETINGS WITH ELECTED OFFICIALS

- Sacramento Meetings with Elected Officials:
Senator Hannah Beth Jackson's office, Assembly Member Limon, Assembly Member Irwin
- District Overview Presentation to Ventura Water Commission
- Meeting with Supervisor Long April 11

“Highlight the importance of UWCD programs, services and facilities and their impact on the community.”

DISTRICT OVERVIEW &/OR ECONOMIC IMPACT PRESENTATIONS

- April 9 – McGrath Farms
- April 17 – California Women for Agriculture Ventura County
- April 26 – Santa Clara River Watershed Coalition

“Establish UWCD as industry leaders in Ventura County.”

OUTREACH OPPORTUNITIES

- AWA Symposium
April 19 – Presented Laubacher award to a very surprised Joe Gibson
- Assembly Member Irwin Press Conference – Rice Avenue Overpass
Hosted at PTP Well #4, Emcee'd by General Manager
- State Contractors Meeting
Establishing United's role in the Ventura County Watershed Protection District group, along with Ventura and Casitas



“Increase the visibility of UWCD.”



- Meeting with Brian Miller, Supervisor Peter Foy's Chief of Staff and David Spade of Salem Media
- Metropolitan Water District Tour of Hoover Dam
- Park Management Company Video

LEGISLATIVE

LEGISLATIVE PLATFORM

WORK CONTINUES

LETTERS OF SUPPORT/OPPOSITION PROVIDED

COALITION LETTER IN SUPPORT OF CALIFORNIA WATER FIX

- REQUESTED MAY 4, DUE PRIOR TO ASSEMBLY HEARING ON MAY 9
- JOINED BY CALLEGUAS MUNICIPAL, SANTA CLARITA VALLEY WATER, CITY OF OXNARD, ETC.

LETTERS OF SUPPORT/OPPOSITION NOT PROVIDED

COALITION LETTER IN OPPOSITION OF AB 3045 (GALLAGHER)

- REQUESTED MAY 9, DUE FOLLOWING DAY MAY 10

WATER BOND

\$8.877 BILLION CITIZENS INITIATIVE: NOVEMBER BALLOT
JUNE 7 PRESENTATION HOSTED BY CITY OF VENTURA
1-2PM

GRANTS

US BUREAU OF RECLAMATION

IRON & MANGANESE TREATMENT PLANT

ZEBRA & QUAGGA MUSSEL INVASIVE SPECIES

INCREASED FUNDING REQUEST

GW SUSTAINABILITY GRANT PROGRAM

FREEMAN DIVERSION PROJECT

IRON & MANGANESE TREATMENT PLANT

PROP 1 IRWM GRANT

IRON & MANGANESE, OUTLET WORKS,
SEDIMENT MANAGEMENT, FERRO ROSE,
LOWER RIVER INVASIVE, ETC.

INTERDEPARTMENTAL COMMITTEE


GRANT INPUT

MONTHLY ENGINEERING
DEPARTMENT REPORT

MAY 15, 2018

- Lake Piru Recreation Area 2018 Pavement Management Program
- Lake Piru Park Service Office
- Annual Santa Felicia Dam EAP Update & Tabletop Exercise
- PTP User's Group Meeting/Recycled Water Update


LPRA 2018 PAVEMENT MANAGEMENT PROGRAM



Reasoner Canyon Creek Bridge

Piru Canyon Road Looking West Towards Day-Use

LPRA 2018 Pavement Management Program



Entrance to Olive Grove Campground

Lake Piru Recreation Park Service Office



Former office/residence



Lake Piru Recreation Park Service Office



Existing ranger's office

Santa Felicia Dam Emergency Action Plan
Annual Tabletop Exercise

May 9 and 10, 2018



Santa Felicia Dam Emergency Action Plan
Annual Tabletop Exercise

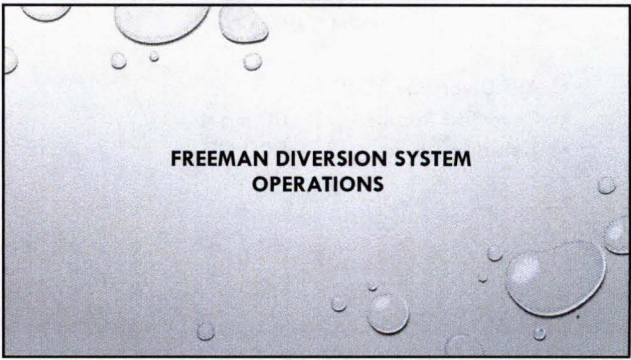
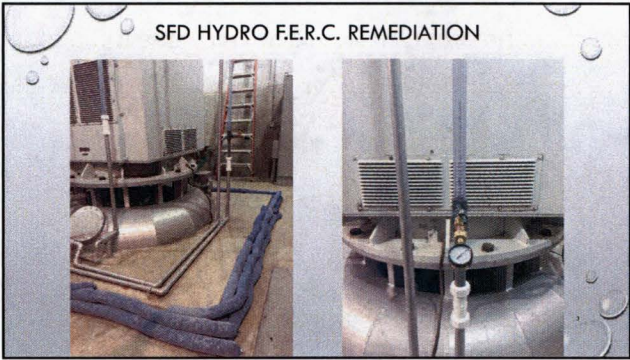
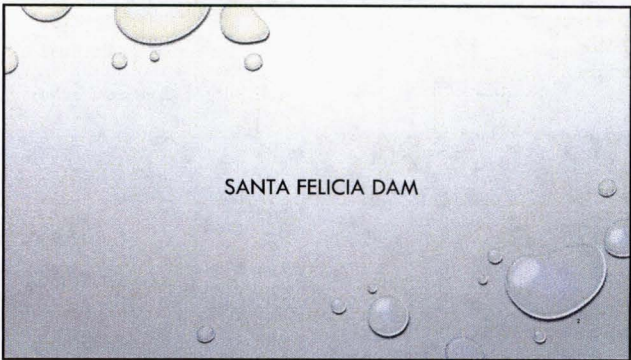
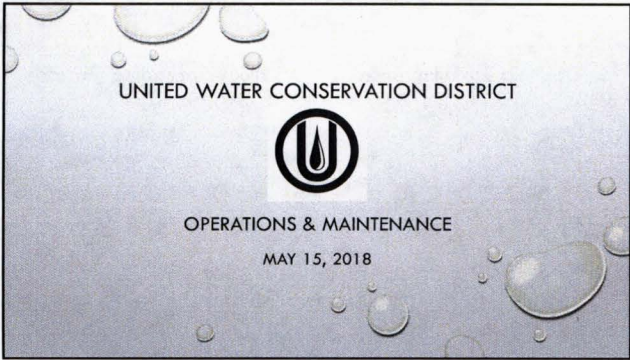
May 9 and 10, 2018

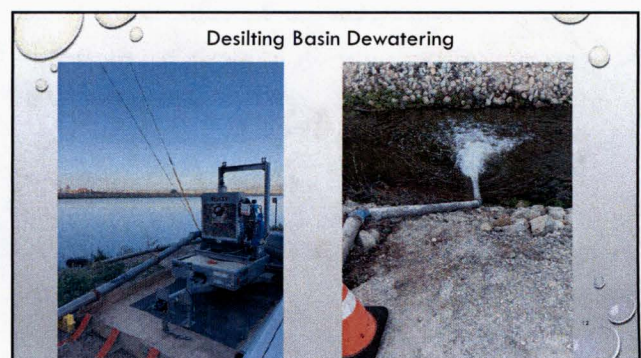
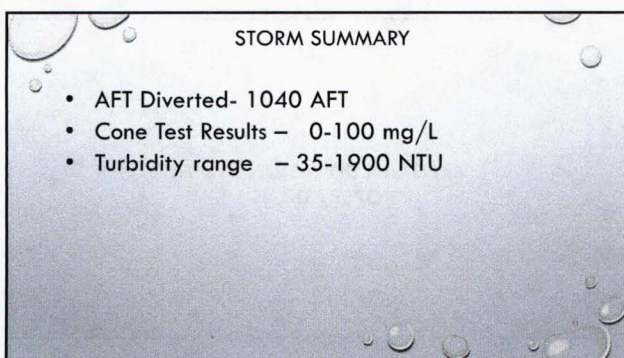
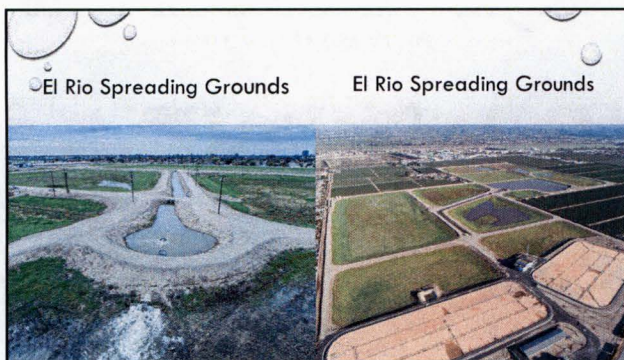
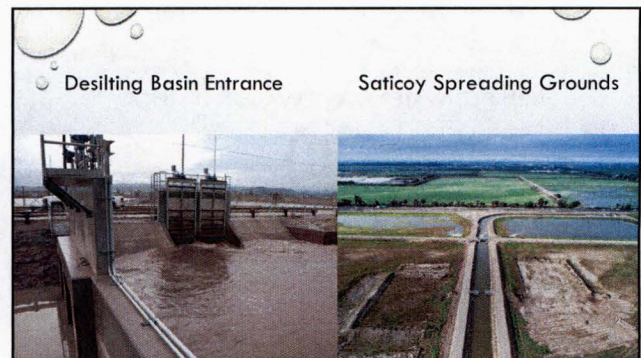
- Attendees: Ventura County (Sheriff, Fire, OES, EMS, Watershed Protection), City of Oxnard, City of Port Hueneme, Fillmore Unified School District, DWR, NWS, CHP, Red Cross, Fillmore Fire
- Two Tabletop scenarios: "Wildfire" and seismic event
- 2019 Functional Exercise (Dam Safety and Security)

PTP User's Group Meeting and Recycled Water
Update

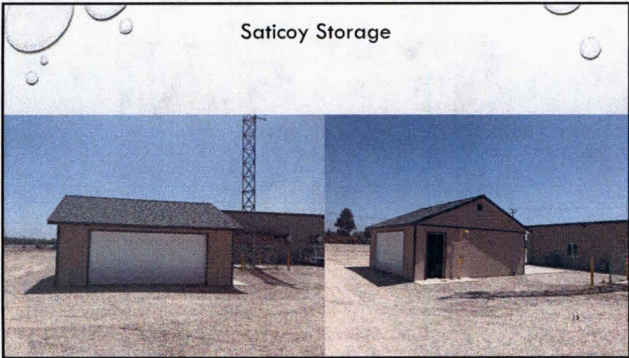
April 26, 2018



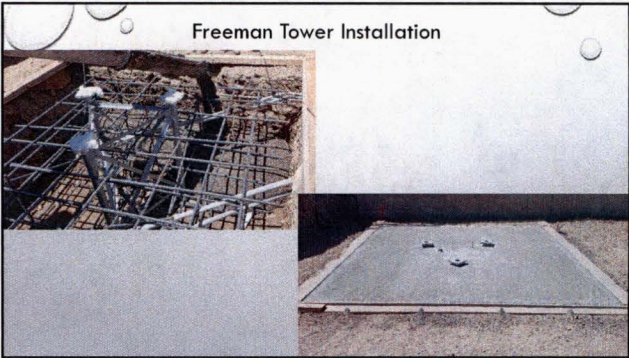




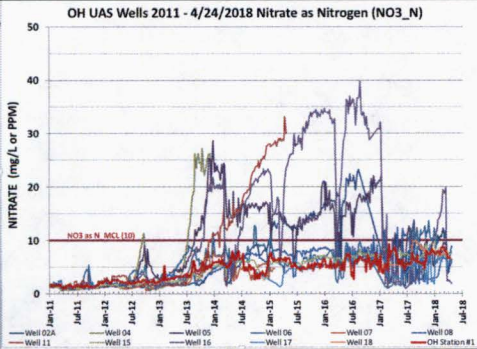
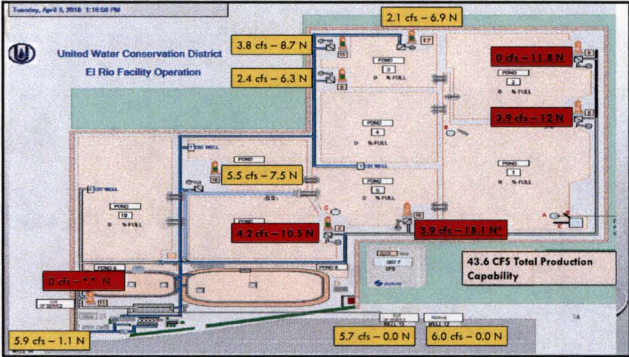
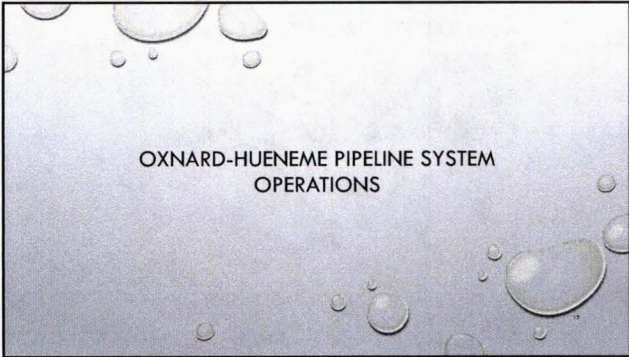
Saticoy Storage



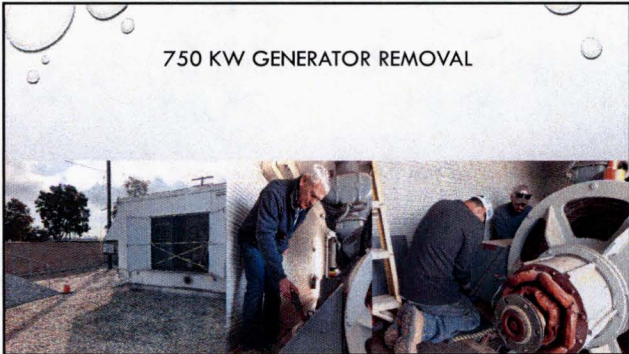
Freeman Tower Installation



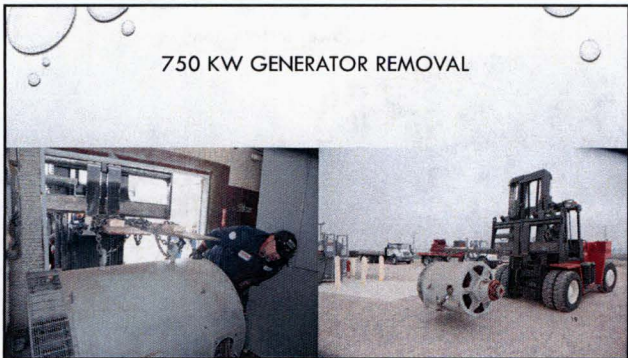
OXNARD-HUENEME PIPELINE SYSTEM
OPERATIONS



750 KW GENERATOR REMOVAL



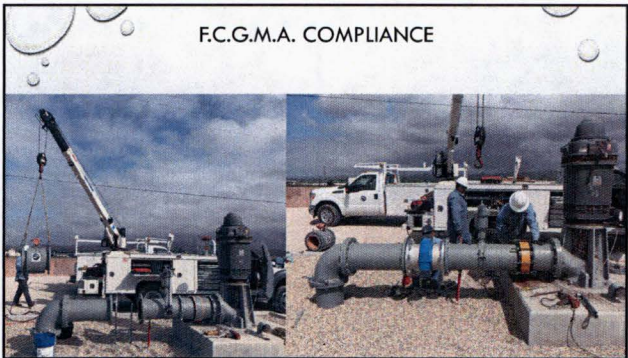
750 KW GENERATOR REMOVAL



INSPECTION PHOTO



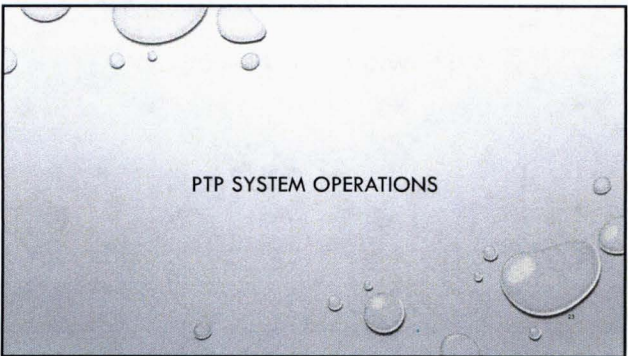
F.C.G.M.A. COMPLIANCE



WELLHEAD ELECTRIC SOLAR EVALUATIONS

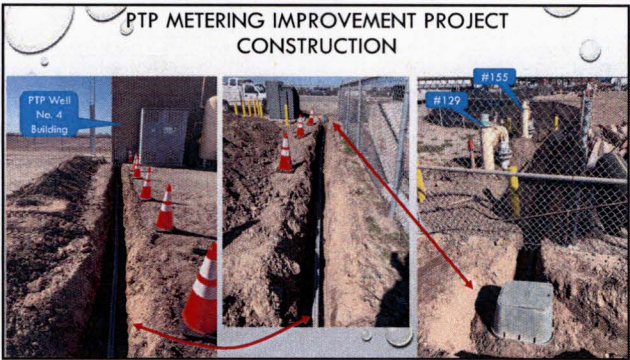
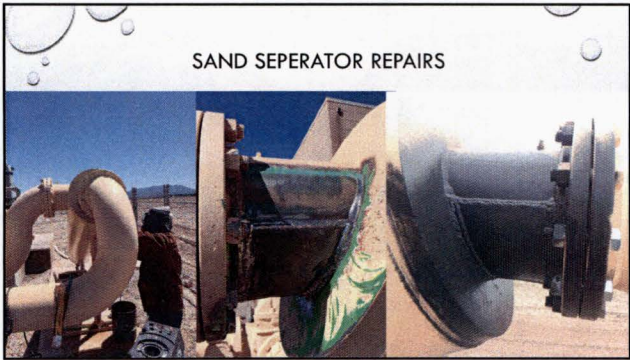
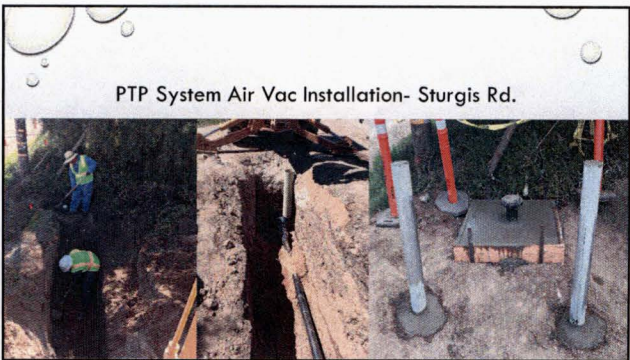
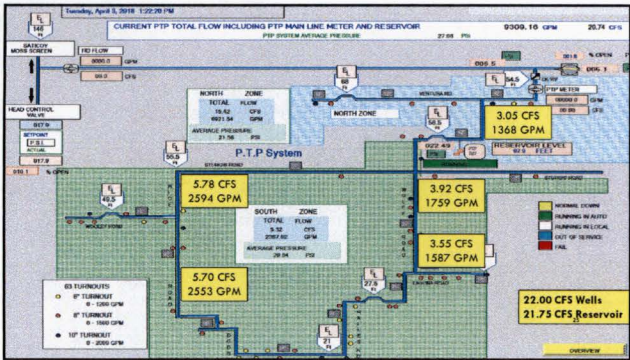


PTP SYSTEM OPERATIONS



PTP Well Flows & Static Levels

	April 2017	Apr-18	Level Above
	Flow/Static Level	Flow/Static Level	Pump Bowls
PTP #1	3.9cfs / 178'	*3.4cfs / 156'	42'
PTP #2	3.1cfs / 192'	3.0cfs / 165'	48'
PTP #3	4.7cfs / 156'	*3.7cfs / 167'	110'
PTP #4	5.9cfs / 119'	5.6cfs / 168'	125'
PTP #5	4.6cfs / 124'	5.5cfs / 155'	167'



PTP Well #1

- Preliminary analysis indicates bearing issue
- Reduced production
- Harsh water Chemistry
- \$123,000 included in FY18-19 proposed budget for well rehabilitation
- No current SCE incentives available

QUESTIONS