

**NOTICE OF REGULAR MEETING
OF THE
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY
ENGINEERING COMMITTEE**

Thursday, March 10, 2011

8:30 a.m.

NOTICE IS HEREBY GIVEN that a Regular Meeting of the South Orange County Wastewater Authority (SOCWA) Engineering Committee has been scheduled to be held on **Thursday, March 10, 2011 at 8:30 a.m.** at the SOCWA Administrative Office located at 34156 Del Obispo Street, Dana Point, California.

THE SOCWA MEETING ROOM IS WHEELCHAIR ACCESSIBLE. IF YOU REQUIRE ANY SPECIAL DISABILITY RELATED ACCOMMODATIONS (I.E., ACCESS TO AN AMPLIFIED SOUND SYSTEM, ETC.) PLEASE CONTACT THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY SECRETARY'S OFFICE AT (949) 234-5421 AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE SCHEDULED MEETING. THIS AGENDA CAN BE OBTAINED IN ALTERNATE FORMAT UPON WRITTEN REQUEST TO THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY'S SECRETARY AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE SCHEDULED MEETING.

AGENDA EXHIBITS AND OTHER WRITINGS THAT ARE DISCLOSABLE PUBLIC RECORDS DISTRIBUTED TO ALL, OR A MAJORITY OF, THE MEMBERS OF THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY ENGINEERING COMMITTEE IN CONNECTION WITH A MATTER SUBJECT TO DISCUSSION OR CONSIDERATION AT AN OPEN MEETING OF THE ENGINEERING COMMITTEE ARE AVAILABLE FOR PUBLIC INSPECTION IN THE AUTHORITY OFFICE, 34156 DEL OBISPO STREET, DANA POINT, CA ("AUTHORITY OFFICE"). IF SUCH WRITINGS ARE DISTRIBUTED TO MEMBERS OF THE ENGINEERING COMMITTEE LESS THAN 72 HOURS PRIOR TO THE MEETING, THEY WILL BE AVAILABLE IN THE RECEPTION AREA OF THE AUTHORITY OFFICE AT THE SAME TIME AS THEY ARE DISTRIBUTED TO THE ENGINEERING COMMITTEE MEMBERS, EXCEPT THAT, IF SUCH WRITINGS ARE DISTRIBUTED IMMEDIATELY PRIOR TO, OR DURING, THE MEETING, THEY WILL BE AVAILABLE IN THE ENGINEERING COMMITTEE MEETING ROOM.

PERSONS WISHING TO ADDRESS THE BOARD OF DIRECTORS ON MATTERS NOT LISTED ON THE AGENDA MAY DO SO AT THIS TIME. "REQUEST TO BE HEARD" FORMS ARE AVAILABLE AT THE ENTRANCE TO THE BOARD ROOM. COMMENTS ARE LIMITED TO THREE (3) MINUTES UNLESS FURTHER TIME IS GRANTED BY THE PRESIDING OFFICER. SUBMIT FROM TO THE CLERK OF THE BOARD PRIOR TO THE BEGINNING OF THE MEETING.

THOSE WISHING TO ADDRESS THE BOARD OF DIRECTORS ON ANY ITEM LISTED ON THE AGENDA SHOULD SUBMIT A "REQUEST TO BE HEARD" FORM TO THE CLERK OF THE BOARD BEFORE THE PRESIDING OFFICER ANNOUNCES THAT AGENDA ITEM. YOUR NAME WILL BE CALLED TO SPEAK AT THAT TIME.

NOTICE OF ENGINEERING COMMITTEE

March 10, 2011

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AGENDA

1. Review/Approval of Meeting Minutes (October and November '10)
2. Status Update – Coastal Treatment Plant Export Sludge System (Project Committee 15)
3. Construction Update – Coastal Treatment Plant Headworks and Return Activated Sludge Control Project (Project Committee 15)
4. Review of Fiscal Year '11/'12 Proposed Capital Budget (All Project Committees)
5. J. B. Latham Treatment Plant Facility Plan Presentation (Project Committee 2)
6. Plant 3A Aeration Upgrade Concept Review (Project Committee 3A)
7. Public Comments on Items 1, 2, 3, 4, 5, and 6.

I hereby certify that the foregoing Notice was personally emailed or mailed to each member of the SOCWA Engineering Committee at least 72 hours prior to the scheduled time of the Regular Meeting referred to above.

I hereby certify that the foregoing Notice was posted at least 72 hours prior to the time of the above-referenced Engineering Committee at the usual agenda posting location of the South Orange County Wastewater Authority.

Dated this 3rd day of March 2011.

 **for**

Thomas R. Rosales, General Manager/Secretary
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

**MINUTES OF THE REGULAR MEETING
OF THE
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY
ENGINEERING COMMITTEE**

October 14, 2010

A Regular Meeting of the South Orange County Wastewater Authority Engineering Committee was held on Thursday, October 14, 2010, at 8:30 a.m. at the Administrative Office located at 34156 Del Obispo Street, Dana Point, California.

The following Engineering Committee Members were present:

DAVID SHISSLER, City of Laguna Beach
TONI SCHMIDT, Emerald Bay Special District
MIKE DUNBAR, South Coast Water District
DAN FERONS, Santa Margarita Water District
MATT COLLINGS, Moulton Niguel Water District
DENNIS CAFFERTY, El Toro Water District
ZIAD MAZBOUDI, City of San Juan Capistrano
WAYNE POSEY, Irvine Ranch Water District (left at 9:10 a.m.)
DAVID REBENS DORF, City of San Clemente (left at 9:10 a.m.)
MICHAEL DUNBAR, South Coast Water District

Also Present:

BRIAN PECK, SOCWA Director of Engineering
CHRISTINE HUTTON, SOCWA Administrative Assistant
MIKE WISLON, SOCWA Asst General Manager / Director of Operations
GRANT SHARP, County of Orange Public Works (left at 9:10 a.m.)
DUC NGUYEN, County of Orange Public Works (left at 9:10 a.m.)
PORTIA ARUTUNIAN, OC Parks (left at 9:10 a.m.)

Mr. Peck, SOCWA Director of Engineering, called the meeting to order at 8:32 a.m. and welcomed all those in attendance.

Review / Approval of Meeting Minutes (May, June and July '10)

DISCUSSION:

Mr. Peck requested comments and corrections for the provided meeting minutes. There were none.

ACTION:

Motion was made by Mr. Ferons and seconded by Mr. Cafferty to approve the provided Engineering Committee minutes. Motion carried with all present Engineering Committee members voting aye.

Presentation on the Countywide Area Spill Control (CASC) Program by County of Orange/OC Watersheds (All Project Committees)

DISCUSSION:

Mr. Peck deferred this topic to Mr. Mazboudi. Mr. Mazboudi introduced this topic and noted that beyond his duties for the City of San Juan Capistrano he also chairs the County of Orange Storm Water Program Committee. Mr. Mazboudi explained that the County of Orange has requirements from the Regional Board to develop a program to respond to major sewage spills that enter the storm control channels. Mr. Mazboudi then introduced Duc Nguyen and Grant Sharp with the County of Orange. They have been working over the past six years with the Orange County Sanitation District on a program in the northern portion of Orange County. More recently, they have been working on a similar program for south Orange County. Mr. Mazboudi then turned the presentation over to Mr. Sharp.

Mr. Sharp introduced himself as the Storm Water Program Manager for the County of Orange. The program is part of the County of Orange Public Works Department within the division called OC Watersheds. It was noted that the program had really started with the Orange County Sanitation District about 10 years ago as a pilot project in an unincorporated area of Tustin. The program has evolved and, because of the requirements that are showing up in the latest round of MS4 permits, is rolling throughout the County. The program is about protecting receiving waters; beneficial uses where the creeks outlet to the beaches; and similar recreational areas. The program is currently on the fourth term version of the NPDES municipal storm water permit in the San Diego region which was adopted on December 16, 2009. In the event of a sanitary sewer flow that impacts the municipal storm drain system there is a requirement that the involved wastewater agencies, cities, and the County coordinate work together to contain, recover, and remove the spill. This defines the goal of the Countywide Area Spill Control (CASC) program. The CASC program is to facilitate compliance with this permit provision as well as some specific language contained in the Santa Ana region storm water permit that covers the northern half of Orange County. The CASC program is not looking to supplant mutual aid agreements and other WDR efforts in the County. An essential element of the CASC program is simply participation and coordination between the 34 cities and other entities of the County of Orange. Mr. Sharp and Mr. Nguyen are currently trying to do some outreach to the agencies in south Orange County. This portion of the county is different than the northern area due to there are fewer engineered concrete lined flood control channels than in central and northern Orange County. Many of the flood control channels are actually creeks including Aliso and San Juan Creeks.

Agencies in this region have been asked to add the CASC program to their list of notifications in the event of a spill. There are three methods to provide this notification: a 24

hour hotline, a website report that is linked to County mobile devices, and using Sheriff Department communications.

Another key element of the CASC program is characterizing the infrastructure. This entails a lot of GIS work. The County has already compiled the network of GIS layers from all of the city storm drain systems. Additionally, the County has also requested GIS layers from all of the wastewater agencies. This data will be used to determine locations where containment can be set up and sewage diverted back into the sewer system.

The County has a Memorandum of Understanding (MOU) that was developed as part of the CASC program; this was utilized with OCSD several years ago. The County is working on a template MOU for the rest of the County in terms of cities, local sanitary sewer districts, and regional providers of sanitary treatment such as SOCWA and IRWD. The MOU is being reviewed by the NPDES Technical Advisory Committee. Agencies will then have the opportunity to review this document. Mr. Shissler asked if the agreement would include a response guarantee. Mr. Sharp indicated that the County was looking at incorporating that language.

Mr. Sharp reviewed several recent examples of the activation of the CASC program. In June there was a small spill into Aliso Creek from a private mobile home park. The spill did get into a County facility and required the clean up of several underground storm drain lines. In early July there was an IRWD force main rupture that resulted in a spill into Buck Gully Creek along the Newport Coast. A larger incident occurred in March when the Santa Margarita Water District (SMWD) force main ruptured impacting Tijeras Creek. A containment berm was set up about 1.5 miles downstream from where the rupture occurred (Antonio Parkway). Mr. Sharp believed that a total of 2.5 million gallons was captured including 1.5 million gallons of sewage. This event took place over 5 days, in which, approximately 763 vacuum truck trips occurred using 3,000 gallon vacuum trucks. Mr. Ferons complimented Mr. Sharp and Mr. Nyugen for the speed in which the CASC program was able to react to the situation. Mr. Ferons further noted that that CASC program was able to mobilize a significant amount of equipment for the set up of the containment berm.

Mr. Posey asked if a district dealing with a spill is allowed to make entry and set up the creek berm without going through the permit process. Mr. Sharp indicated that they would not access a creek without contacting the Department of Fish and Game and the Regional Board first. Mr. Sharp further stated that the resource agencies would not automatically issue emergency permits; however, they would send staff out to assess the situation. The resource agencies had in the past provided input on items including the construction of the berm. Mr. Ferons concurred that that had been their experience as well.

Mr. Sharp gave a brief overview of the July 2nd sewage overflow from IRWD down near the Little Corona Beach along the Newport Coast. Mr. Sharp noted that IRWD crews were able

to set up a containment area; install a couple of trash pumps; and then pumped into a City of Newport Beach manhole. Over two and a half days IRWD diverted approximately 710,000 gallons. Mr. Posey indicated frustration that Mr. Steve Mayville with the Santa Ana Regional Water Quality Control Board had indicated that their Board staff was going to recommend enforcement action against IRWD based on the 6 hours needed to get the spill contained. Mr. Posey added that based on this response the Regional Board appeared more concerned about the containment time than the actual cause of the spill. This emphasizes the importance of working with the CASC program.

Mr. Mazboudi reported that the City of San Juan Capistrano Technical Advisory Committee is currently reviewing the MOU. Sanitary districts should also be preparing review comments. Mr. Sharp emphasized the County is not looking at this program as a revenue generator. The MOU provides a mechanism for cost recovery not only for the County but also for the cities and the sanitary districts. Mr. Mazboudi noted that even though an agency may not have an MOU yet that agency can still contact CASC in the event of a spill.

Mr. Ferons noted that one lesson learned from their spill is that an agency needs to go through all of its lifts stations to determine different failure scenarios and possible options for diverting flows.

ACTION:

No action on this item is necessary at this time.

JB Latham Treatment Plant East Plant Improvements Construction Progress Report
(PC 2)

DISCUSSION:

Mr. Peck reported that the East Plant Improvements Project is entering the final phase of work. The concrete for the new Emergency Pump bases are being poured simultaneous to the Engineering Committee meeting. Project completion is anticipated between mid-November and early December. There are five new change orders presented to the Engineering Committee, however, the result of these change orders is a \$7,000 reduction in project cost. Two of the proposed change orders are deductions. Change Order No.18 involves the switch from natural gas driven pumps to diesel fueled pumps. The change in fuel type resulted in an approximate deduction of \$32,000. Another deduction, titled Change Order No. 15, resulted from the modification of a duct bank routing which yielded a cost reduction of approximately \$9,000. Change Order No. 14 involved the replacement of the electrical conduit from the new primary clarifier drives back to the motor control center. The contract required the contractor to remove the existing wire; however, the contractor was not able to pull the wire from the existing conduit. Change Order No. 14 has an approximate cost of \$7,300. Change Order No. 16 involved the

removal of old concrete encased duct banks which was located in the route of the new suction and discharge piping for the Emergency Pumps. The final change order involves the installation of a new non-potable water pipeline for the irrigation system along the perimeter of the plant. The irrigation system was often disrupted during the construction of the new electrical facility. SOCWA staff has not been able to determine where the irrigation system is currently fed from. Mr. Peck reported that the net cost of the five change orders was -\$7,389.26; he requested a recommendation from the Engineering Committee to present the change orders to the Board of Directors. The Project Committee 2 Engineering Committee members indicated their support.

ACTION:

The Engineering Committee recommended bringing the five change orders to the Board of Directors for approval.

Coastal Treatment Plant Headworks Upgrade Construction Progress Report (PC 15)

DISCUSSION:

Mr. Peck noted that the project was still at an early stage. There is one new change order arising from the lining of the two new magnetic flow meters for return activated sludge flow. During review of the shop drawing SOCWA's electrical staff noted that the polyethylene had been specified as the liner material. SOCWA has traditionally used a Teflon liner for this application. Discussions with different meter supplier revealed that the primary difference was that the Teflon liner would have a longer life than the Polyethylene liner. SOCWA staff requested that S.S. Mechanical provide a change order proposal to provide meters with Teflon liners. The contractor provided a proposed cost of \$1,970 for Change Order No.2. Carollo Engineers reviewed and agreed with the proposed pricing. Discussion ensued.

ACTION:

The Project Committee 15 Engineering Committee members recommended bringing Change Order No.2 to the Board of Directors for approval.

Coastal Treatment Plant Export Sludge Force Main Replacement Environmental Services Requests for Proposal (PC 15)

DISCUSSION:

Mr. Peck reviewed the status of the Environmental Consultant selection. At the August Engineering Committee meeting the Request for Proposals (RFP) was reviewed. The intent of the RFP was modified as a result of the subsequent Project Committee 15 Board meeting. Per recommendation from the Board of Directors, the scope of the work was expanded to provide a full Environmental Impact Report (EIR) as opposed to the originally intended Mitigated Negative Declaration (MND). The primary reason for this change was to note that there had been

heightened interest regarding potential alternatives. The EIR process allows for a more rigorous review of alternative and public review meetings.

Mr. Shissler asked if this would be a full NEPA process; Mr. Peck responded that it would only go through CEQA. Mr. Mazboudi asked if the project would be federally funded; Mr. Peck replied that it was not part of the current project. However, SOCWA would look for future funding opportunities.

Mr. Peck stated that the RFP's would be mailed on Monday if the Engineering Committee approved. The goal is to review the proposals at the December Engineering Committee meeting. A special Project Committee 15 meeting would then be set up to act on the Engineering Committee's recommendation. Therefore, the environmental review will not get underway any earlier than January.

Mr. Peck noted that six firms would receive the RFP based on the August Engineering Committee discussion: Michael Brandman, Dudek, ESA, TetraTech, BonTerra and Ed Almanza. Mr. Peck stated that Mr. Almanza was the gentleman from Laguna Beach who was suggested by the Sierra Club. Mr. Almanza has done work for the County of Orange, the City of San Juan Capistrano and the City of San Clemente. Mr. Peck noted that Mr. Cameron had given Almanza a positive recommendation. Mr. Mazboudi recommended adding Keeton Kreitzer; he will send the contact information to Mr. Peck. Mr. Peck indicated that he would review Mr. Kreitzer's qualifications.

The discussion regarding the environmental services contract shifted to the AWMA Road Access Bridge. The preliminary report from TetraTech has been received and will shortly be distributed to the Engineering Committee members. The preliminary finding of the report is that the bridge should be replaced in the short-term future. The reasons cited for the replacement need are (1) the apparent deterioration of the wood members of the bridge and (2) the weight capacity limitation of the bridge. It was noted that the bridge met structural code requirements at the time of design in the late 1970's; however, the bridge does not meet current structural standards. The TetraTech report also noted that vehicle guards on the sides of the bridge were not strong enough. The report did not address the mixing of vehicular with pedestrian/bike traffic. That was not part of the work scope. TetraTech estimated the bridge replacement cost at approximately \$1.5 million. Mr. Rosales has hired a program manager who is currently communicating with the City of Laguna Niguel, City of Aliso Viejo, County of Orange, and the Church of the Latter Day Saints to determine the basis for proceeding. Mr. Ferons noted that a pre-fabricated bridge company might be able to provide a more cost effective solution.

Mr. Dunbar asked about the alternate route into the treatment plant. Mr. Wilson indicated that the Wood Canyon Road remained an option. However, the tanker traffic down those routes would be difficult due to the traffic around the elementary school. Mr. Wilson

indicated that it might be able to schedule deliveries during off-hours to avoid conflicts with school traffic. Discussion ensued.

ACTION:

The Project Committee 15 Engineering Committee members directed SOCWA staff to distribute the Request for Proposals after reviewing Mr. Kreitzer's credentials.

Regional Treatment Plant Digester No. 4 Recoating Bid Review (PC 17)

DISCUSSION:

Mr. Peck discussed the results of the Digester No. 4 recoating bid. This is the first time that SOCWA has a bid project directly through coating contractors. Five coating contractors were invited to submit bids. The list of invited contractors was developed by Harper & Associates, the coating system designer. Only two bids were received. It was surprising that the higher of the two bids came from Murphy Industrial who is already mobilized on the site. The low bid firm was Advanced Industrial Services (AIS). SOCWA staff contacted several different water districts who have used AIS for tank recoating. These districts provided AIS with positive references.

The low base bid was \$199,500. There was also a bid additive for dehumidification at \$15,000. Harper reviewed the bids and recommended the award to AIS; they also recommended executing the bid additive given the time of year (early spring) in which the work will be done.

Mr. Peck noted that the low bid and bid additive exceeded the available budget. The reasons for the higher than expected bids may be due to an element of work that was not included in the original budget relating to the digester cover seal. During design it was noted that the material that sits between the steel cover and the concrete wall of the digester was failing. Four bid items cover the process of removing and replacing the seal. Those four items totaled to \$50,500. Mr. Peck proposed moving \$85,000 from the next digester recoating project (that's already been budgeted) to address the current project. The hope is that when SOCWA bids the second digester recoating project that enough experience will be accumulated with the first digester to allow trimming the scope on the subsequent project. Mr. Peck asked the Committee for a recommendation to award the construction contract to AIS for \$214,500 and a shift of budget of \$85,000.

Mr. Dunbar noted that AIS had identified Enviroline 224 as the coating project. He questioned whether SOCWA had experience with that coating system. Mr. Peck indicated that this would be the first experience with the Enviroline product. The Enviroline system did have the recommendation of Harper & Associates.

Mr. Wilson stated that the need to recoat the digesters was growing more urgent as the last coatings were applied in the mid-90's.

ACTION:

The Project Committee 17 Engineering Committee members recommended awarding the contract to AIS and shifting the budget as proposed by SOCWA staff.

Regional Treatment Plant Headworks Upgrade Construction Progress Report (PC 17)

DISCUSSION:

Mr. Peck noted that there were five new change orders associated with the wind down of the Headworks project. Mr. Peck stated that these change orders had been reviewed with Dr. Gumerman; Mr. Collings indicated that there was no need for detailed review of the change orders. Discussion ensued.

ACTION:

The Project Committee 17 Engineering Committee members recommended presenting the five change orders to the Board of Directors.

Public Comments

DISCUSSION:

Mr. Peck asked if there were any public comments on items 1, 2, 3, 4, 5, 6 and 7. There were none.

ACTION:

No action needed.

There being no further business, the meeting adjourned at 9:41 a.m.

/Christine Hutton/
Christine Hutton, Administrative Assistant/Recorder

**MINUTES OF REGULAR MEETING
OF THE
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY
ENGINEERING COMMITTEE**

December 09, 2010

A Regular Meeting of the South Orange County Wastewater Authority Engineering Committee was held on Thursday, December 09, 2010, at 8:30 a.m. at the Administrative Office located at 34156 Del Obispo Street, Dana Point, California.

The following Engineering Committee Members were present:

MIKE DUNBAR, South Coast Water District
DR. ROBERT GUMERMAN, Moulton Niguel Water District
TONI SCHMIDT, Emerald Bay Service District
DAVID SHISSLER, City of Laguna Beach
DAN FERONS, Santa Margarita Water District
DENNIS CAFFERTY, El Toro Water District

Also Present:

BRIAN PECK, SOCWA Director of Engineering
CHRISTINE HUTTON, SOCWA Administrative Assistant
THOMAS ROSALES, SOCWA General Manager
MIKE WILSON, SOCWA Asst General Manager / Director of Operations
MIKE DEMAREE, SOCWA Director of Finance

Mr. Peck, SOCWA, Director of Engineering, called the meeting to order at 8:33 a.m. and welcomed all those in attendance.

Review/Approval of Meeting Minutes (Special Meeting July 22, 2010)

DISCUSSION:

Mr. Peck referenced the July 22, 2010 Special Engineering Committee Minutes. Mr. Peck noted that the spelling of the Emerald Bay Service District ('Service'; not 'Services'). Mr. Peck asked if there were any questions or comments. There were none.

ACTION:

Motion was made by Mr. Ferons and seconded by Mr. Cafferty to approve the provided Engineering Committee minutes. Motion carried unanimously.

AWMA Road Access Bridge Status Report (PC 15)

DISCUSSION:

Mr. Peck recapped the discussion regarding the AWMA Road Access Bridge from the December 8 SOCWA Board of Directors meeting. Mr. Peck reviewed the findings of the structural analysis done by TetraTech. The existing bridge meets the deflection limits for the

structural standards that were in place at the time the bridge was designed (circa 1979); however, the bridge does not meet deflection requirements for current standards. The TetraTech report also noted the natural deterioration of the wood bridge through weathering. Issues were also raised regarding the safety of the existing vehicle barriers. It is the combination of these factors that has led TetraTech to recommend the long term replacement of the bridge. Mr. Rosales has assembled a group of the stake holders to review this issue. TetraTech also recommended a series of four interim improvements:

- posting of a weight limit for traffic on the bridge
- installing speed bumps
- constructing guard rails along the approaches to the bridge
- installing seismic supports on the larger piping supported from the bridge.

The posting of the weight limit will restrict certain types of trucks from using the bridge (e.g. chemical deliveries.) Mr. Wilson has been working with SOCWA's vendors to re-route traffic around the bridge via Knollwood Road. TetraTech has estimated that the cost for the interim retrofits at \$80,000. Mr. Demaree is looking into drawing upon existing accounts to provide an \$80,000 budget. It is believed that it will take four to eight weeks to get these interim improvements completed.

The issue of biker and hiker safety was not addressed in the TetraTech report. It has been proposed to post signs on the bridge that restrict usage. SOCWA staff will review the proper signage with Pat Giannone. Mr. Shissler suggests that any bridge sign should just be a 'warning' sign rather than a restriction sign.

Mr. Peck noted that the construction of any interim improvements might require a permit from the County. Mr. Peck noted that the improvements would be within SOCWA's easement. Several Engineering Committee members indicated that the interim improvements should be installed without the permit; Mr. Ferons indicated that the County should be notified as a courtesy. Mr. Wilson stated that SOCWA had previously indicated signs along the AWMA Road without obtaining a county permit.

ACTION:

No action necessary at this time.

Regional Treatment Plant Clarifier Upgrade Phase I Upgrade Construction Progress Report (PC 17)

DISCUSSION:

Mr. Peck reviewed the status of the Regional Treatment Plant Clarifier Upgrade I project. Work within Secondary Clarifier No.3 is nearing completion; the basin should be returned to service by the end of December. Work can not begin on the next unit (Secondary Clarifier No.1)

until the beginning of April, 2011. Given the amount of extra work needed in Clarifier No.3 there was some question regarding how to proceed with Clarifier No.1. The option is open to replace the equipment in the remaining secondary clarifiers rather than retrofitting and recoating.

Mr. Peck will report on the final status of the change orders for Clarifier No.3 after the basin has been returned to service. At that point, SOCWA staff will make a recommendation about how to proceed with Clarifier No.1.

ACTION:

No action is necessary at this time.

Coastal Treatment Plant Export Sludge Force Main Replacement Environmental Services Proposal Review (PC 15)

DISCUSSION:

Mr. Peck stated that the urgency of the Export Sludge project had been highlighted on Wednesday, December 1 by the failure of one of the two Export Sludge Force Mains. The failure took place in Wilderness Park in the gravel parking on the west side of Alicia Parkway across the street from the Regional Lift Station. Mr. Peck presented a PowerPoint presentation showing the failure location and the repair. Mr. Peck noted that SOCWA was fortunate that the failure had been detected by a Moulton Niguel Water District (MNWD) inspector not long after the failure is believed to have happened. Mr. Peck noted that there had been a discharge into the dry portion of Sulfur Creek but it appears to have been a very small volume. MNWD staff mobilized on site rapidly to install small berms and to utilize a vactor test to pump escaped liquid into a nearby sewer manhole. Mr. Wilson arranged for Jamison Engineering to come to the site to find and repair the pipeline break.

Mr. Peck discussed a series of PowerPoint pictures showing the exposed pipeline failure. Mr. Peck noted that Jamison exposed approximately six feet of the ductile iron pipeline (at a depth of approximately 10 feet) beyond the break which didn't appear to be any signs of weak points. Although there was no sign of any warping, there did not appear to be any significant corrosion along the exterior of the pipelines. A repair clamp was installed by Jamison. The force main was returned to service on Thursday, December 2.

Mr. Wilson noted that this was the first time in over 11 years that there had been a failure of the Export Sludge Force Mains. Mr. Dunbar recalled that the last failure occurred in 1992 or 1993.

Mr. Shissler queried if adding cathodic protection would help prolong the remaining life of the force mains. Mr. Peck responded that adding cathodic protection might be expensive as each length of pipe would need to be bonded. Mr. Peck pointed out that the failure also points out the exposure of the pipeline due to the eroding creek bed along Sulfur Creek. This should be addressed in the forthcoming Environmental Analysis of the force main.

The discussion moved on to the Environmental Services Proposals. Requests for Proposals (RFP's) were transmitted to seven firms: ESA, Michael Brandman, Dudek, Ed Almanza, BonTerra, TetraTech, and Keeton Kreitzer. Kreitzer was the only one of the seven firms that did not attend the pre-proposal meeting. The pre-proposal meeting lasted for two hours; a subsequent two hour site visit was conducted. A significant amount of time was spent with the invited firms to educate them about the project. Several firms questioned whether or not Dudek had a lock on the project given the extent of work that Dudek has done in Aliso Canyon over the past ten years. SOCWA staff told the firms that (a) SOCWA had a reputation among engineering firms for an honest selection process and (b) select members of the environmental community had express concerns about Dudek given that Dudek had already been awarded the preliminary design for the project. Dudek picked up on this issue and elected to serve on the Ed Almanza team as a sub consultant. In the end SOCWA received only two proposals for the project: BonTerra and Ed Almanza. SOCWA staff tried to follow up with the other firms that did not propose. ESA did not respond to e-mails. Michael Brandman felt that they did not have enough background on the project to be competitive. TetraTech was tied up with other proposals.

The proposal by Ed Almanza was unique in that it offered both PCR and Dudek as sub consultants for the same tasks. Subsequent discussion with Mr. Almanza indicated that he had a good working relationship with PCR; however, Dudek had a significant level of experience in Aliso Creek Canyon. Mr. Peck reported that Mr. Almanza's intent was to provide SOCWA with a choice.

Mr. Peck was asked about the relative pricing of the proposals. Mr. Peck stated that the proposed fee for BonTerra was approximately \$305 thousand. The pricing for the Almanza proposal ranged from \$220 thousand to \$285 thousand depending on which sub consultant was used.

Mr. Peck noted that neither of the proposals fulfilled the proposal requirements as set forth in the RFP. Ed Almanza bound his proposal; the RFP asked for plain lettered proposals without binding. The BonTerra proposal failed to offer any comments regarding the base contract as set forth in the RFP. Mr. Peck stated that those were theoretical grounds for rejecting both proposals. Mr. Shissler indicated that he felt that the proposals should be rejected. Mr. Shissler felt it was important to have more than two proposals he also felt that Dudek should have submitted its own proposal given their experience. Mr. Shissler stated that it was inappropriate for one firm to not submit based on the political stance of certain environmental groups.

Mr. Dunbar asked what the time impact of rejecting the proposals and going out for new proposals. Mr. Peck stated that it would be a delay of two to three months.

There was general agreement among the Engineering Committee members that two proposals were not sufficient for a project of this magnitude. Discussion ensued regarding the best way to proceed.

ACTION:

Mr. Peck was directed to (1) reject the two proposals; (2) talk to the invited firms about what changes would be needed to obtain more proposals; (3) talk to Ed Almanza and Dudek about submitting separate proposals; and (4) restructure and reissue the RFP.

Regional Treatment Plant Headworks Upgrade Construction Progress Report (PC 17)

DISCUSSION:

Mr. Peck presented the status of change orders for the Regional Treatment Plant Headworks Upgrade Project.

ACTION:

Dr. Gumerman recommended bringing the noted change orders to the Board of Directors as presented by Mr. Peck.

Public Comments on Items 1, 2, 3, 4, and 5

DISCUSSION:

Mr. Peck asked if there were any public comments on items 1, 2, 3, 4 and 5. There were none.

ACTION:

No action needed.

There being no further business, the meeting adjourned at 9:39 a.m.

/Christine Hutton /

Christine Hutton, Administrative Assistant/Recorder

Engineering Committee Agenda Item

Meeting Date: March 10, 2011

Agenda Item No.: 4

Action Required: Yes

TO: SOCWA Engineering Committee

FROM: Brian Peck, Director of Engineering

SUBJECT: Proposed Fiscal Year '11/'12 Capital Improvement Budget – Project Committees 2, 3A, 5, 15, 17 and 21

Summary

The preliminary SOCWA capital improvements budget for Fiscal Year '11/'12 is attached. This is essentially the same document that was distributed at the February Engineering Committee Meeting. Key issues for this agenda item include the following:

- The Project Committee 2 budget is impacted by the Facility Plan. There will be a presentation on the Facility Plan at the March Engineering Committee Meeting.
- The most significant item in the Project Committee 3A budget is the Aeration Upgrade project. The draft engineering report will be distributed to the Project Committee 3A members during the week of March 7. This item will be reviewed at the March Engineering Committee Meeting.
- The item for the addition of rip rap protection along the east bank of Aliso Creek has been left in the budget. There will be further discussion on this item after a site visit by the participating agencies.
- SOCWA staff has still not determined how to integrate the strain presses with the standard capital budget. A draft memo was received by SOCWA staff from Black & Veatch on March 2, 2011. This memorandum will be distributed to the Engineering Committee after internal review by SOCWA staff. This item will be addressed as part of the budget discussion during the March Engineering Committee Meeting.

Requested Action

The proposed budget is being presented for review and approval by the Engineering Committee.



South Orange County Wastewater Authority

**PROPOSED CAPITAL BUDGET FOR FISCAL
YEAR 2011/2012**

MARCH 10, 2011

PROPOSED FISCAL YEAR '11/'12 CAPITAL IMPROVEMENTS BUDGET - J. B. LATHAM TREATMENT PLANT (PROJECT COMMITTEE 2)

Project date	Project code	Capital Projects	Project cost	Project cost (adjusted) CSJC	Project cost (adjusted) MNWD	Project cost (adjusted) SMWD	Project cost (adjusted) SCWD
FISCAL YEAR (2011/12)							
		Administration and Legal	\$106,680	\$32,564	\$24,130	\$22,194	\$27,792
		Engineering Support (2C)	\$25,200	\$7,673	\$5,637	\$5,761	\$6,129
	02A	4 mgd Diversion Flow Meter and Diversion Control Structure (2L)	\$300,000	\$92,310	\$69,240	\$51,930	\$86,520
	02B	Energy and Gas Utilization Evaluation (2C)	\$40,000	\$12,180	\$8,948	\$9,144	\$9,728
	02C	SRF Loan Application (2C)	\$100,000	\$30,450	\$22,370	\$22,860	\$24,320
	02D	Small Capital Improvements (2C)	\$189,000	\$57,551	\$42,279	\$43,205	\$45,965
		TOTALS	\$760,880	\$232,728	\$172,605	\$155,094	\$200,454

3/3/2011

PROPOSED FISCAL YEAR '11/'12 CAPITAL IMPROVEMENTS BUDGET - PLANT 3A (PROJECT COMMITTEE 3A)

Project date	Project code	Capital Projects	Project cost	Project cost (adjusted) MNWD	Project cost (adjusted) SMWD
FISCAL YEAR (2011/12)					
		Administration and Legal	\$44,730	\$32,150	\$12,580
		Engineering Support	\$12,600	\$9,056	\$3,544
	02A	Energy and Gas Utilization Evaluation (3A)	\$40,000	\$28,750	\$11,250
	02B	Aeration Upgrade (3A)	\$450,000	\$323,438	\$126,563
	02C	Sodium Hypochlorite Pump Replacement (3A)	\$25,000	\$17,969	\$7,031
	02D	Small Capital Improvements (3A)	\$131,250	\$94,336	\$36,914
		TOTALS	\$703,580	\$505,698	\$197,882

3/3/2011

PROPOSED FISCAL YEAR '11/'12 CAPITAL IMPROVEMENTS BUDGET - COASTAL TREATMENT PLANT (PROJECT COMMITTEE 15)

Project date	Project code	Capital Projects	Project cost	Project cost (adjusted) MNWD	Project cost (adjusted) SCWD	Project cost (adjusted) CLB	Project cost (adjusted) EBSD
FISCAL YEAR (2011/12)		Administration and Legal	\$84,630	\$24,754	\$25,262	\$32,083	\$2,530
		Engineering Support	\$18,900	\$5,528	\$5,642	\$7,165	\$565
	02A	Export Sludge System Repair and Rip Rap - Reach 1 (15)	\$150,000	\$43,875	\$44,775	\$56,865	\$4,485
	02B	Export Sludge System Rip Rap - Reach 2 (15)	\$125,000	\$36,563	\$37,313	\$47,388	\$3,738
	02C	Energy Utilization Evaluation (15)	\$40,000	\$11,700	\$11,940	\$15,164	\$1,196
	02D	MCC 1 Replacement (15)	\$975,000	\$285,188	\$291,038	\$369,623	\$29,153
	02E	Small Capital Improvements (15)	\$168,000	\$49,140	\$50,148	\$63,689	\$5,023
		TOTALS	\$1,561,530	\$456,748	\$466,117	\$591,976	\$46,690

3/3/2011

PROPOSED FISCAL YEAR '11/'12 CAPITAL IMPROVEMENTS BUDGET - REGIONAL TREATMENT PLANT (PROJECT COMMITTEE 17)

Project date	Project code	Capital Projects	Project cost	Project cost (adjusted) MNWD	Project cost (adjusted) ETWD	Project cost (adjusted) SCWD	Project cost (adjusted) CLB	Project cost (adjusted) EBSD
FISCAL YEAR (2011/12)								
		Administration and Legal	\$86,835	\$76,816	\$7,438	\$3,379	\$4,229	\$223
		Engineering Support	\$25,200	\$19,689	\$2,586	\$1,263	\$1,580	\$83
	02A	Administration Building Repairs and HVAC Replacement (17C)	\$465,000	\$363,305	\$47,709	\$23,297	\$29,156	\$1,535
	02B	Secondary Clarifier Retrofit (17L)	\$650,000	\$650,000	\$0	\$0	\$0	\$0
	02C	Digester Dome Recoating (17S)	\$275,000	\$161,755	\$56,128	\$24,640	\$30,855	\$1,623
	02D	Small Capital Improvements (17C)	\$150,000	\$117,195	\$15,390	\$7,515	\$9,405	\$495
		TOTALS	\$1,652,035	\$1,388,759	\$129,250	\$60,093	\$75,225	\$3,958

3/3/2011

PROPOSED FISCAL YEAR '11/'12 CAPITAL IMPROVEMENTS BUDGET - ETM REACH E (PROJECT COMMITTEE 21)

Project date	Project code	Capital Projects	Project cost	Project cost (adjusted) ETWD	Project cost (adjusted) IRWD	Project cost (adjusted) MNWD
FISCAL YEAR (2011/12)						
	02A	ETM Rip Rap - Reach 2 (21)	\$125,000	\$31,250	\$31,250	\$62,500
		TOTALS	\$125,000	\$31,250	\$31,250	\$62,500

3/3/2011

ALLOCATION OF PROPOSED CAPITAL BUDGET FY '11/'12 AND STRAIN PRESS COST

AGENCY	Proposed FY 11/12 Capital Budget w/o Strain Press Facility Cost	Strain Press Facility Cost	Combined Proposed FY 11/12 Capital and Strain Press Costs	From Total 2010 - 10 Year Plan
El Toro Water District	\$160,500	\$143,490	\$303,991	\$204,687
Emerald Bay Service District	\$50,648	\$3,898	\$54,546	\$51,051
Irvine Ranch Water District	\$31,250	\$0	\$31,250	\$0
City of Laguna Beach	\$667,201	\$110,479	\$777,680	\$685,557
Moulton Niguel Water District	\$2,586,309	\$661,505	\$3,247,814	\$3,692,035
City of San Clemente	\$0	\$0	\$0	\$0
City of San Juan Capistrano	\$232,728	\$144,613	\$377,340	\$1,449,814
Santa Margarita Water District	\$496,062	\$138,502	\$634,564	\$1,452,697
South Coast Water District	\$726,664	\$221,335	\$947,998	\$1,715,183
TOTAL	\$4,951,361	\$1,423,822	\$6,375,183	\$9,251,025

3/3/2011

**South Orange County
Wastewater Authority**

**J.B. Latham Treatment Plant
Facility Plan**

**Engineering Committee
Presentation**

March 10, 2010



INTRODUCTIONS

Workshop No. 1 Review

TM No.	Title
1	Flows and Loadings
2	Existing Facilities
3	Seismic Vulnerability/Structural Condition
4	Water Quality Regulatory Impacts
5	Air Quality Regulatory Impacts

Subsequent TMs

TM No.	Title
6	Potential Liquid Trains
7	Key Liquid Stream Issues
8	Key Solids Handling Issues
9	Energy Management
10	Odor Control

Today's Focus

TM No.	Title
6	Potential Liquid Trains
7	<i>Key Liquid Stream Issues</i>
8	<i>Key Solids Handling Issues</i>
9	<i>Energy Management</i>
10	Odor Control

Aeration and Energy Management are Coupled



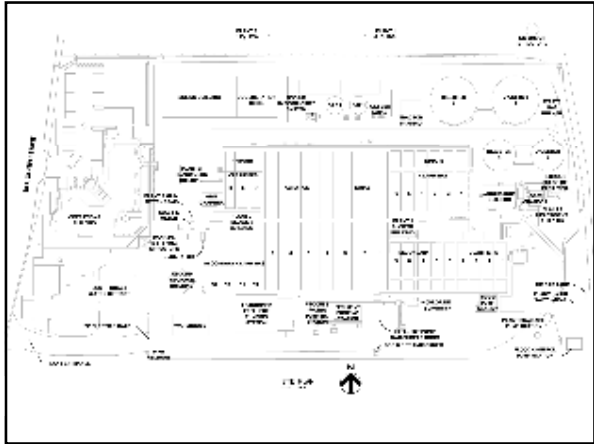
Treatment Scenarios

1. Current
 - a. Average Annual Flow 9.4 mgd
2. Chemically Enhanced Primary Treatment (CEPT)
3. CEPT Plus Plant 3A Solids

Key Solids Handling Issues

Key Issues

1. Solids Storage
2. Digestion Capacity
 - a. Impacts Thickening



Existing Design Criteria

	Number	Diameter (ft)
Large Digesters	2	65
Small Digesters	2	45
DAF Thickener No. 1	1	30
DAF Thickener No. 2	1	25

- ### Solids Handling Goals
1. Solids Storage
 - a. 4 Days
 2. Digestion
 - a. Odor Control
 - b. Operational Stability
 - c. Class B Biosolids
 - d. Increased Solids Destruction
 - e. Increased Gas Production
- Goals established as part of Carollo report, June 2010*

Solids Storage (Existing Digesters)

Operating Case	Current
All Digesters In Service	5.0
Smallest Digester OOS	2.9
Largest Digester OOS	0

Solids Storage

1. Current – Liquid storage in digesters
 - a. Up to 7 feet of SWD used
2. Elevated Cake Storage Infeasible
 - a. Space
 - b. Truck Loading
3. Trailer Storage Infeasible
 - a. Odor Control
4. Liquid Storage Best Option

Digestion Operating Criteria

Criteria	Odor Control	Operational Stability	Class B Reg. Compliance	Increased Solids Destruction	Increased Gas Production
Hydraulic Retention Time	12 day min. 15 day ave.	12 day min. 15 day ave.	15 day min. 20 day ave.	15 day min. 20 day ave.	15 day min. 20 day ave.
Volatile Solids Loading	0.20 max. 0.15 ave.	0.20 max. 0.15 ave.	N/A	0.15 max. 0.12 ave.	0.15 max. 0.12 ave.
Temperature	95 min. 98 set point	95 min. 98 set point	95 min. 98 set point	95 min. 98 set point	95 min. 98 set point

Odor Control & Operational Stability

Operating Case	Current
All Digesters In Service	
Detention Time	Yes
VSS Loading	Yes
Smallest Digester OOS	
Detention Time	Yes
VSS Loading	Yes
Largest Digester OOS	
Detention Time	No
VSS Loading	No

Class B Biosolids

Operating Case	Current
All Digesters In Service	
Detention Time	Yes
VSS Loading	N/A
Smallest Digester OOS	
Detention Time	No
VSS Loading	N/A
Largest Digester OOS	
Detention Time	No
VSS Loading	N/A

Solids Destruction/Gas Production

Operating Case	Current
All Digesters In Service	
Detention Time	Yes
VSS Loading	Yes
Smallest Digester OOS	
Detention Time	No
VSS Loading	No
Largest Digester OOS	
Detention Time	No
VSS Loading	No

Summary

- 1. All digesters must be in operation to meet storage requirements
- 2. All digesters must be in operation to meet all digestion goals for current flows
- 3. Odor control and process stability goals not met when largest digester OOS
 - a. 10 days detention time vs recommended 12 days
- 4. No capacity for increased flows or loadings

Summary – Cont.

- 1. Fifth Digester Recommended
 - a. Provide additional liquid storage
 - b. Provide reliable process stability and prevent odors

Solids Storage w/ Fifth Digester

Operating Case	Current
All Digesters In Service	11.5
Smallest Digester OOS	9.3
Largest Digester OOS	5

Digestion Goals w/ Fifth Digester

Operating Case	Current
All Digesters In Service	
Detention Time	Yes
VSS Loading	Yes
Smallest Digester OOS	
Detention Time	Yes
VSS Loading	Yes
Largest Digester OOS	
Detention Time	Yes
VSS Loading	Yes

New Opportunity – Handle Plant 3A Solids

1. Take advantage of economies of scale
2. Eliminate awkward cake handling at Plant 3A
3. Can re-assign Plant 3A staffing
4. Solids area at Plant 3A subject to significant settlement problems
5. Will probably require chemically enhanced primary treatment (CEPT)
 - a. Needed to handle WAS

CEPT

1. Based on successful use at OCSD & Encina WPCF
2. Ferric Chloride + Polymer
3. Advantages
 - a. Reduced Aeration Demand
 - b. Increased Digester Gas Production
4. Disadvantages
 - a. Increased Chemical Costs
 - b. Increased Digester Loading
5. May be beneficial w/o 3A Solids

Solids Storage (Existing Digesters)

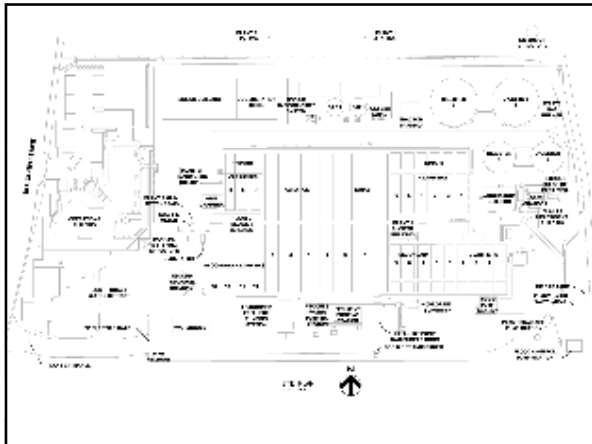
Operating Case	Current	CEPT	CEPT + 3A
All Digesters In Service	5.0	0.1	0
Smallest Digester OOS	2.9	0	0
Largest Digester OOS	0	0	0

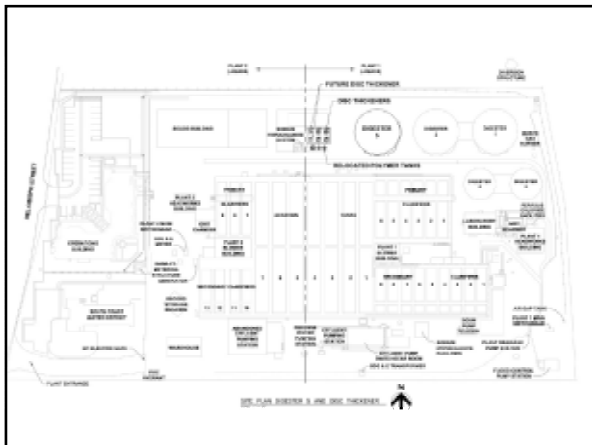
Solids Storage w/ Fifth Digester

Operating Case	Current	CEPT	CEPT + 3A
All Digesters In Service	11.5	4.8	2.7
Smallest Digester OOS	9.3	3.2	1.3
Largest Digester OOS	5	0.1	0

Digestion Goals w/ Fifth Digester and Plant 3A Solids

Operating Case	Current
All Digesters In Service	
Detention Time	Yes
VSS Loading	Yes
Smallest Digester OOS	
Detention Time	Yes
VSS Loading	Yes
Largest Digester OOS	
Detention Time	No
VSS Loading	No





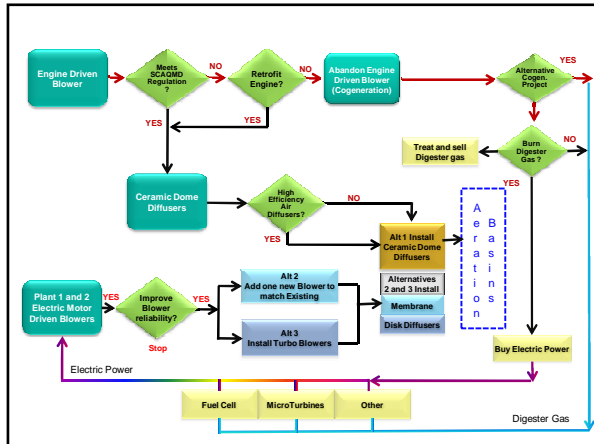
Alternative Thickening Technology

1. Disk thickeners considered
 - a. Drum thickener sizes don't fit conditions
2. Similar performance to DAFs
 - a. Thickened WAS and capture
3. Advantages
 - a. Reduced foot-print
 - b. Lower power consumption
4. Disadvantage
 - a. New capital cost

Solids Handling Capital Cost Summary

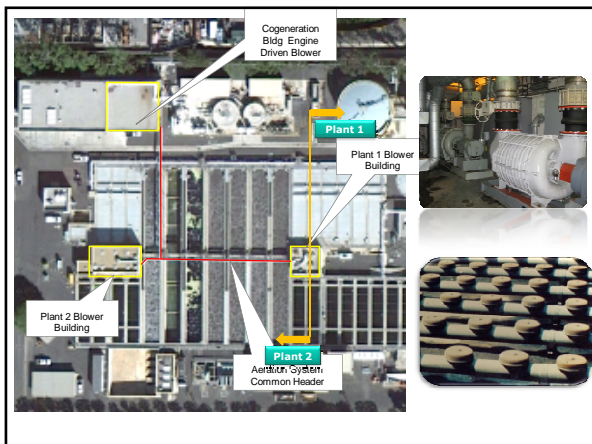
New Digester	\$2,947,000
Disk Thickeners	\$1,716,000
Digester 3 Pumped Mixing	\$632,000
Total	\$5,295,000

Aeration/Energy Management



KEY ISSUES AERATION

- ### Existing Activated Sludge Aeration System
1. Aeration Blowers
 - a. 437 Hp (Output) Engine Driven Blower
 - b. Plant 1 -Three 300 Hp Hoffman blowers
 - 2 blowers > 40 years old, 1 blower 4 years old
 - c. Plant 2 -Three 200 Hp Torin blowers
 2. Air diffusers
 - a. Ceramic domes and PVC Headers - 1990
 3. Single aeration header serving Plant 1 and 2
 4. Air flow rate to satisfy activated sludge oxygen requirements manually controlled





Aeration System Potential Issues

1. System has been in operation over 20 years
2. SCAQMD regulations most likely will impact the engine driven blower operation
3. Newer blower and air diffuser technology requires less energy to operate activated sludge process
4. Current aeration system cannot be controlled to match diurnal flow fluctuations
5. Spare parts are difficult to find for the Torin Blowers

Alternatives to Upgrade Aeration System

1. **Alternative 1**
 - a. Maintain existing engine driven blower
 - b. Replace dome diffusers in-kind
2. **Alternative 2**
 - a. Use existing blowers
 - b. Add new blower
 - c. Replace dome diffusers with membrane disk diffusers
3. **Alternative 3**
 - a. Replace blowers with Turbo Blowers
 - b. Replace dome diffusers with membrane disk diffusers

Present Worth of Aeration System Alternatives, Dollars

Item	Alt 1	Alt2	Alt 3
Capital	\$1,512,000	\$1,781,000	\$2,199,000
Present Worth of O&M	\$6,407,000	\$4,886,000	\$4,018,000
Total	\$7,919,000	\$6,667,000	\$6,217,000
Use Existing Engine Driven Blower	yes		
Upgrade ceramic dome diff.	yes		
Use exist. Blowers plus new blower		yes	
Use disk diffusers		yes	yes
Use Turbo blowers			yes

Recommended Alternative to Upgrade Aeration System

- 1. Final recommendation pending
 - a. Final disposition of Rule 1110.2
 - b. Cost effectiveness of Aeration and Cogeneration Alternatives
- 2. Alternative Ranking
 - a. Alt 3 –
 - Energy efficient membrane diffusers and Turbo Blowers
 - No engine driven blower
 - Requires fewer aeration basins to handle design flows
 - Requires alternative Cogeneration system
 - b. Alt 2
 - New membrane diffusers and upgrade existing blowers system
 - c. Alt 1
 - New ceramic diffusers and existing engine driven blower
 - d. Other
 - Age of existing equipment
 - Availability of spare parts to maintain old equipment in operation (Alternatives 1 and 2)

KEY ISSUES ENERGY MANAGEMENT

Existing Cogeneration Facts

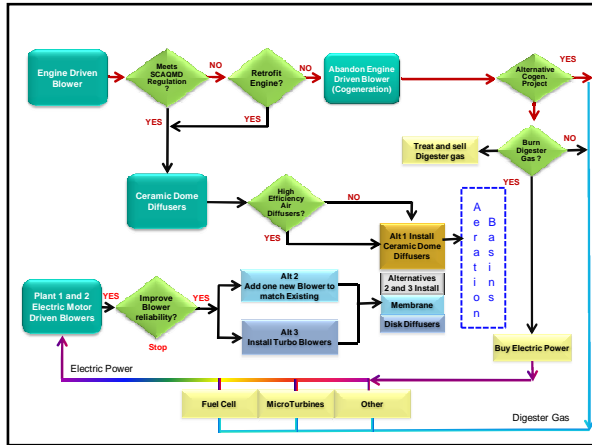
Parameter	Value
Engine Output	437 HP
Blower Output	10,000 cfm

- Engine approximately 20 years old
- Engine operated at constant 970 rpm to facilitate meeting current 1110.2 limits.
- System can operate for 10 years +

Energy Management Alternatives

1. Existing – No Change to Rule 1110.2
 - a. No capital costs
2. Existing – Rule 1110.2 Implemented
 - a. Gas Treatment and SCR Required
3. Microturbines
4. Fuel Cells
5. Purchase Power
6. Other?

Nos. 1 and 2 – Aeration Alternative No. 1
 Nos. 3 – 6 – Aeration Alternatives Nos. 2 & 3



Digester Gas Production (cfm)

Current	CEPT	CEPT + 3A
162,000	231,000	248,000

Alternative Cogeneration Technology Sizing

	Current	CEPT	CEPT + 3A
Microturbine Sizing (kW)	5 @ 70	2 @ 250	2 @ 250
Microturbine Output (kW)	315	450	450
Microturbine Production (MWhrs/yr)	2,621	3,745	3,745
Fuel Cell Sizing (kW)	2 @ 250	2 @ 300	2 @ 300
Fuel Cell Output (kW)	450	797	797
Fuel Cell Production (MWhrs/yr)	4,559	6,838	6,838

Economic Comparison – Microturbines and Fuel Cells (20-Yr PW)

	Current	CEPT	CEPT + 3A
No Cogeneration	\$12,395,000	\$12,395,000	\$12,395,000
Microturbine Capital Cost	\$6,133,000	\$6,301,000	\$6,301,000
20 Year Cost of Energy	\$14,348,000	\$12,275,000	\$12,017,000
<i>Microturbine Net Savings</i>	<i>(\$1,953,000)</i>	<i>(\$237,000)</i>	<i>\$90,000</i>
Fuel Cell Capital Cost	\$4,869,000	\$6,184,000	\$6,184,000
20 Cost of Energy	\$11,420,000	\$9,564,000	\$9,277,000
<i>Fuel Cell Net Savings</i>	<i>\$975,000</i>	<i>\$2,474,000</i>	<i>\$2,829,000</i>

Digester Gas Fueled Fuel Cells

Operating Installations


- Santa Barbara, CA
- LA County San. District, CA
- City of Tulare, CA
- DSRSD, CA
- City of Riverside, CA
- EMWD, CA (Moreno Valley)
- TID/City of Turlock, CA
- City of Rialto, CA

Projects Under Consideration

- TID/Hilmar Cheese Co, CA
- MID/City of Modesto, CA
- City of Davis, CA
- Union Sanitation District, CA
- Palm Springs, CA
- MRWPCA, CA
- City of Visalia, CA
- City of Livermore, CA
- City of Redlands, CA

Under Construction

- EMWD, CA (Perris Valley)



- EMWD, CA (Temecula)
- City of Yuma, AZ
- City of Salem, OR
- Delta Diablo SD, CA
- City of Fayetteville, NC

Upgrade Existing

1. Required Upgrades
 - a. Gas Conditioning
 - b. Selective Catalytic Reduction (SCR)
 - c. Only one SCR installation on IC engine in California
2. Requires Constant Emission Monitoring System (CEMS)
 - a. Staffing Increase
 - b. Greater Potential For Violation

Economic Comparison – Fuel Cells and More Stringent Rule 1110.2 (20-Yr PW)

	Current	CEPT	CEPT + 3A
No Cogeneration	\$12,395,000	\$12,395,000	\$12,395,000
System Upgrades Capital Cost	\$2,291,000	\$2,291,000	\$2,291,000
20 Year Cost of Energy	\$11,346,000	\$11,346,000	\$11,346,000
System Upgrades Net Savings	<i>1,049,000</i>	<i>1,049,000</i>	<i>1,049,000</i>
Fuel Cell Capital Cost	\$4,869,000	\$6,184,000	\$6,184,000
20 Year Cost of Energy	\$11,420,000	\$9,564,000	\$9,277,000
Fuel Cell Net Savings	<i>\$975,000</i>	<i>\$2,474,000</i>	<i>\$2,829,000</i>

Energy Management Summary & Recommendations

1. Continued operation of existing engine has lowest cost
 - a. Requires current Rule 1110.2 limits
2. Upgrade of existing engine has lowest cost if Rule 1110.2 is more stringent for Current scenario
3. Fuel cells have a lower cost than microturbines

Total Present Worth Comparison

	Current	Current	Current	CEPT	CEPT+3A
Aeration	Ceramic	Ceramic	Membrane/ Turbo	Membrane/ Turbo	Membrane/ Turbo
Capital Cost	\$1,512,000	\$1,512,000	\$2,199,000	\$2,552,500	\$2,552,500
PW O&M	\$5,644,000	\$5,644,000	\$5,504,000	\$6,632,000	\$6,666,000
Subtotal	\$7,156,000	\$7,156,000	\$7,703,000	\$9,184,500	\$9,218,500
Cogen	Existing	SCR	Fuel Cells	Fuel Cells	Fuel Cells
Capital Cost	\$0	\$2,291,000	\$4,869,000	\$6,184,000	\$6,184,000
PW O&M	-\$4,130,336	-\$3,785,474	-\$5,992,000	-\$8,450,000	-\$9,240,000
Subtotal	-\$4,130,336	-\$1,494,474	-\$1,123,000	-\$2,266,000	-\$3,056,000
Totals	\$3,025,664	\$5,661,526	\$6,580,000	\$6,918,500	\$6,162,500

Recommended Projects

1. Alternative No. 1 - Replace diffusers in-kind (existing engine stays)
2. If 1110.2 becomes more stringent, consider SCR. Further evaluation of feasibility is needed.
3. Alternative No. 3 - Replace existing blowers and install high efficiency blowers and membrane disks (If Nos. 1 or 2 can't be implemented)
4. Install fuel cells (If abandon engine)
5. Construct Digester No. 5

Recommended Projects (Cont.)

6. Divert solids from Plant 3A to JBLTP (Only if Recommendations 5 is implemented)
7. Implement CEPT (Only if Recommendations 6 is implemented)

Range of Costs

Cost Item	Minimum Estimate	Maximum Range
1. Structural Upgrades	\$1,325,000	\$1,825,000
2. Solids Handling	\$4,663,000	\$5,295,000
3. Aeration	\$1,512,000	\$2,119,000
4. Energy Management	\$0	\$6,184,000
Totals	\$7,500,000	\$15,423,000

Opportunities

1. Depending on packaging, may be advantage to seek SRF funds

Further Steps

1. Recommendations 2 and 4 require Preliminary Design
 - a. SCR
 - b. Fuel Cells
2. Implementation Recommendation No. 6 requires further analysis
 - a. bench-scale testing
 - b. interceptor odor impacts

**South Orange County
Wastewater Authority**

**J.B. Latham Treatment Plant
Facility Plan**

**Engineering Committee
Presentation**

March 10, 2010