

OTAY WATER DISTRICT

BOARD OF DIRECTORS MEETING  
DISTRICT BOARDROOM

2554 SWEETWATER SPRINGS BOULEVARD  
SPRING VALLEY, CALIFORNIA

**WEDNESDAY**  
**August 3, 2016**  
**3:30 P.M.**

**AGENDA**

1. ROLL CALL
2. PLEDGE OF ALLEGIANCE
3. APPROVAL OF AGENDA
4. APPROVE THE MINUTES OF THE SPECIAL BOARD MEETING OF MAY 23, 2016 AND REGULAR MEETING OF JUNE 1, 2016
5. PUBLIC PARTICIPATION – OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO SPEAK TO THE BOARD ON ANY SUBJECT MATTER WITHIN THE BOARD'S JURISDICTION BUT NOT AN ITEM ON TODAY'S AGENDA

**PUBLIC HEARING**

6. PUBLIC HEARING ON THE PUBLIC HEALTH GOAL REPORT

THE BOARD WILL BE HOLDING A PUBLIC HEARING TO CONSIDER APPROVING THE RECOMMENDATIONS IN THE PUBLIC HEALTH GOAL REPORT. THE BOARD INVITES THE PUBLIC TO PROVIDE COMMENTS ON THE REPORT.

- a) APPROVE THE RECOMMENDATIONS IN THE PUBLIC HEALTH GOAL (PHG) REPORT TO TAKE NO FURTHER ACTION IN REDUCING THE LEVELS OF THE SIX (6) CONSTITUENTS LISTED IN THE REPORT TO LEVELS AT OR BELOW THE PHGs (VACLAVEK)

**CONSENT CALENDAR**

7. ITEMS TO BE ACTED UPON WITHOUT DISCUSSION, UNLESS A REQUEST IS MADE BY A MEMBER OF THE BOARD OR THE PUBLIC TO DISCUSS A PARTICULAR ITEM:

- a) AWARD A CONSTRUCTION CONTRACT TO CHARLES KING COMPANY, INC. FOR THE RALPH W. CHAPMAN WATER RECYCLING FACILITY 14-INCH FORCE MAIN REHABILITATION PROJECT IN AN AMOUNT NOT-TO-EXCEED \$1,101,250
- b) AWARD AN AS-NEEDED ELECTRICAL ENGINEERING DESIGN SERVICES CONTRACT TO BSE ENGINEERING, INC. IN AN AMOUNT NOT-TO-EXCEED \$125,000 FOR FISCAL YEARS 2017-2019 (ENDING JUNE 30, 2019)
- c) ADOPT RESOLUTION NO. 4312 FIXING TERMS AND CONDITIONS FOR THE ANNEXATION OF CERTAIN REAL PROPERTY OWNED BY FRED C. SANDERS JR. 2015 REVOCABLE TRUST TO OTAY WATER DISTRICT IMPROVEMENT DISTRICT NO. 18 (APN 498-153-47-00, 11996 PASEO FUERTE, EL CAJON, CA)

#### ACTION ITEMS

#### 8. BOARD

- a) DISCUSSION OF THE 2016 BOARD MEETING CALENDAR

#### INFORMATIONAL ITEM

- 9. THE FOLLOWING ITEMS ARE PROVIDED TO THE BOARD FOR INFORMATIONAL PURPOSES ONLY. NO ACTION IS REQUIRED ON THE FOLLOWING AGENDA ITEMS:
  - a) 2015 INTEGRATED WATER RESOURCES PLAN UPDATE (BEPPLER)
  - b) UPDATE ON FEASIBILITY OF IPR/DPR - RALPH W. CHAPMAN WATER RECYCLING FACILITY PURIFICATION PLANT TO SWEETWATER RESERVOIR TECHNICAL NOTE (BEPPLER)

#### REPORTS

#### 10. GENERAL MANAGER'S REPORT

- a) SAN DIEGO COUNTY WATER AUTHORITY UPDATE

#### 11. DIRECTORS' REPORTS/REQUESTS

#### 12. PRESIDENT'S REPORT/REQUESTS

#### 13. ADJOURNMENT



# AGENDA ITEM 4

**MINUTES OF THE  
SPECIAL MEETING OF THE  
BOARD OF DIRECTORS  
OTAY WATER DISTRICT  
May 23, 2016**

1. The meeting was called to order by President Lopez at 3:09 p.m.

2. ROLL CALL

Directors Present: Croucher (arrived at 3:20 p.m.), Lopez, Robak and Smith

Directors Absent: Thompson (out-of-town on vacation)

Staff Present: General Manager Mark Watton, General Counsel Daniel Shinoff, Asst. GM German Alvarez, Chief Financial Officer Joe Beachem, Chief of Engineering Rod Posada, Chief of Operations Pedro Porras, Chief of Administration and Information Technology Adolfo Segura, Asst. Chief of Operations Jose Martinez, District Secretary Susan Cruz and others per attached list.

3. PLEDGE OF ALLEGIANCE

4. APPROVAL OF AGENDA

A motion was made by Director Smith, seconded by Director Robak and carried with the following vote:

Ayes:	Directors Lopez, Robak and Smith
Noes:	None
Abstain:	None
Absent:	Directors Croucher and Thompson

to approve the agenda.

5. PUBLIC PARTICIPATION – OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO SPEAK TO THE BOARD ON ANY SUBJECT MATTER WITHIN THE BOARD'S JURISDICTION BUT NOT AN ITEM ON TODAY'S AGENDA

No one wished to be heard.

WORKSHOP

6. ADOPT RESOLUTION NO. 4302 TO APPROVE THE FY 2016-2017 OPERATING AND CAPITAL BUDGET; APPROVE FUND TRANSFERS FOR POTABLE, RECYCLED, AND SEWER; APPROVE WATER AND SEWER RATE CHANGES ON ALL BILLINGS THAT BEGIN IN CALENDAR YEAR 2017 (THIS MAY INCLUDE SOME SERVICES PROVIDED IN DECEMBER 2016); ADOPT THE SALARY SCHEDULE; ADOPT ORDINANCE NO. 555 AMENDING THE CODE OF ORDINANCES APPENDIX A WITH THE PROPOSED WATER AND SEWER RATE CHANGES; AND DIRECT STAFF TO SEND RATE INCREASE NOTICES

Chief Financial Officer Beachem reviewed the objectives of the workshop which included:

- Review of the FY 2017 - 2018 Strategic Plan
- Present for approval a \$91.7 million Operating Budget
- Present for approval a \$10.7 million CIP Budget
- Request approval of average rate increases of 5% for water and 3% for sewer effective January 1, 2017
- Request approval of the annual fund transfers
- Request approval of the Salary Schedule

General Manager Watton highlighted some challenges the District will be facing in FY 2017 that included:

- State Water Board's adoption of the California Code of Regulations, Title 23, section 866 and re-adoption of sections 863, 864, 865 on May 5, 2015 mandating that residential users cut back water use by 20% compared to their 2013 water use.
- State Water Board's extension of the mandatory conservation measures on February 2, 2016, with a revised water use cutback from 20% to 12%
  - The State Water Board will allow retail agencies to self-certify through their wholesale water supplier as long as all member agencies agree on the conservation level. It is expected that the San Diego region will most likely self-certify with a 0% conservation level.
- It is estimated that customers' water use will be down 18% in FY 2017 versus the estimated 20% in FY 2016.

General Manager Watton noted that if the region is able to self-certify at 0%, it does not mean that conservation is no longer required, the District will still require that customers use water wisely. He also commented that the District expects that the reduction in water sales is more permanent than in the past, primarily because customers who have changed their landscaping to drought tolerant plants will, thus, continue to use less water. He also reviewed some strengths that has helped enhance the District's efficiency (slide number 8 in the presentation).

He introduced Mr. Gary London of the London Group and indicated that he will be providing an overview of the economic outlook for San Diego County for 2016 and beyond.

Mr. London indicated that the economy has been on a long, slow recovery and most indicators tell us that this year (2016), as well as the past several years, have been banner years by almost all measures, including payroll and the employment rate. He indicated that we are at the lowest levels of unemployment and noted that job growth has been the largest in the construction industry this year.

He reviewed population growth and demographics in the Otay Water District (Otay WD) service area in comparison to San Diego County (County) from 2000 to 2016 (reference slide number 5 in the *Economic Outlook* presentation). Otay WD's growth was much higher from 2000 to 2010 in comparison to the County's with 49.6% growth versus 10% growth for the County. From 2010 to 2016, Otay WD grew 13.2% and the County grew 7%, approximately double the County's rate.

He stated that the residential resale market has been increasing in terms of price throughout the County and sales have been at a fairly robust pace. He indicated with regard to non-residential, there has been a significant drop in the office sector and the retail sector is not adding space, but remodeling existing space. The industrial market is seeing a small increase.

He indicated that foreclosure activity is negligible within the District's service area and the housing market in the City of Chula Vista is continuing the trend towards more multifamily units. There is little single family units being permitted. He noted that much of the multifamily units are townhomes. San Diego's Regional Planning Agency (SANDAG) is reporting that over the next 30 years (their 2050 forecast), it is expected that 82% of new housing construction will be in the multifamily category.

He stated that most of the developable lots in the County are in the Otay WD's service area. However, most of the demand is not in the District's service area; the demand is in the central north city and north county. He stated that the County has a fundamental disconnect between the availability of lots and where the demand is located, but nevertheless, we will see an increase in residential housing construction in the District's service area because this is where developable land is available.

SANDAG is projecting that the County will grow approximately 30,000 persons a year, which it has done each year. Much of the growth will be from new births and the remaining 30% will be from people relocating to this region. He stated that there are more people moving to the County than leaving and the regions service agencies need to be prepared to accommodate the growth each year. The Otay WD, in particular, needs to be prepared as this service area is where much of the growth will take place. He indicated with regard to the economic recovery, we are in about the 7<sup>th</sup> inning.

Director Robak inquired what Mr. London feels will precipitate the next economic downturn. Mr. London indicated that there really is no way of predicting. He stated it would not be an interest rate increase as an increase signals a healthy economy. He stated that there will be an event, but he could not guess what the event would be at this point.

The board thanked Mr. London for his work and presentation.

Chief of Information Technology and Administration Adolfo Segura provided a presentation on the District's 2017-2018 Strategic Plan. He stated that the District is in the second year of the four year plan and the District's mission, vision, statement of values and key challenge remain unchanged (reference slides 14-17 in the presentation). He reviewed the objectives and measures for each department within the fiscal year 2017 (FY 2017) plan (please reference slides 19 to 29). He noted that staff would be deleting three (3) measures based on QualServe information and will replace them with new measures:

1. The injury incident rate will be moved to a national average which targets specific utility industries (water, sewer, treatment plant operations, etc.).
2. The customer accounts per fulltime equivalent (FTE) will be compared with the District's surrounding water agencies and with American Water Works Association's (AWWA's) benchmark for Region 4.
3. Include the trend for the percentage of customers who pay their bills electronically (70% of the District's customers pay their bill electronically).

Director Croucher stepped off the dias at 3:50 p.m.

Chief of Information Technology and Administration Segura clarified, in response to an inquiry from Director Lopez, that the (three) QualServe measures will be removed and replaced with measures that reflect the latest AWWA measures.

Director Croucher returned to the dias at 3:55 p.m.

Director Robak inquired if staff had ever compared the District's measure for customer accounts per FTE with the private water and sewer industry. General Manager Watton indicated that the private industry does not share that information with the public. They consider it as proprietary information. So the District is unable to make that comparison.

Director Smith suggested that the District add an Engineering Objective that focuses on recycled water supply purchases and use. General Manager Watton indicated that he felt that that was an appropriate objective to add to the District's Strategic Plan.

Chief Financial Officer Beachem reviewed the items that are input into the rate model to develop the FY 2017 Operating and Capital Budgets. He noted that a new impact to the six-year rate model is the Governor's mandate for conservation (please reference slide number 32 in the presentation). He indicated that staff is budgeting for an 18% level of conservation.

He reviewed the budget objectives for FY 2017 (please reference slide number 33 in the presentation). He stated that a key to the District's budget is maintaining the debt coverage ratio. The minimum required debt coverage ratio is 125%. The District's current ratio is well above the 125% minimum at 196%, which includes developer capacity fees. He indicated that the District does not control growth and cannot rely on capacity fees, thus staff develops a target, 150%, that excludes capacity fee. The District's debt coverage ratio without growth is above the target at 160%.

Chief Financial Officer Beachem indicated with each budget, staff requests approval for two types of fund transfers. Inter-fund transfers from one reserve fund to another and from the operating budget revenues to the various reserve funds. He reviewed in detail the fund transfers that staff is recommending for the board's approval (please reference slide numbers 35-36 in the presentation).

He presented highlights from the operating budget noting items that are holding rates down (please reference slide number 37 in the presentation) and items that are putting an upward pressure on rates (please reference slide number 38 in the presentation). He reviewed the potable and recycled budget (please reference slide number 39) and indicated that staff is proposing an average rate increase of 5% for potable and recycled water. He also reviewed the sewer budget (please reference slide number 40) and stated that staff is proposing a 3% average rate increase for sewer. The sewer rate increase is due to a slight increase in the sewer CIP which will be funded through the District's cash fund and the issuance of debt.

A slide was also presented showing the rate increases projected last budget cycle for FY 2017 (please reference slide number 41). It was projected last budget cycle (for FY 2017 ) that a rate increase of 6.2% would be required for potable and recycled water and no rate increase (0%) would be needed for sewer last year. The proposed rate increases during this year's budget cycle for FY 2017 is 5% for potable and recycled water and 3% for sewer. It was noted that the debt coverage ratio is also higher at 160% than projected last year at 147%.

Chief Financial Officer Beachem indicated that the entire 5% rate increase for potable and recycled water will go to pay the San Diego County Water Authority (CWA) [92%], City of San Diego [5%] and SDG&E [3%] rate increases.

He presented a slide showing how the District's water rate will compare to all other CWA member agencies following the implementation of the proposed rate increases (please reference slide number 43). Otay WD's average monthly water

bill, based on 11 units of water, will be \$77.18. It is estimated that the District will be the eleventh (11<sup>th</sup>) lowest water cost agency among the 22 agencies. With regard to the District's sewer rate, it will be the fifth (5<sup>th</sup>) lowest among the 28 sewer providers in San Diego County; dropping two (2) positions compared to last year.

Director Croucher stepped off the dias at 4:09 p.m.

Director Smith commented that the District had projected that customers would reduce water use by 12% in response to the Governor's mandate, but customers actual water use was reduced by 18%. He indicated the District needed to increase rates in March as the increase implemented in January was not enough due to customer conservation. Director Smith observed that we missed the customer estimated savings by 6% last year and are projecting customer savings of 18% in FY 2017, he inquired if customers save 3 to 5% more than projected, would the District still be fine financially. He stated he did not want to be in a position where the District must ask for more money again. General Manager Watton indicated that because the District implemented two (2) rate increases last year, those increases provided the District's budget the needed stability. He indicated if projections are missed by 3 to 5% in FY 2017, that it would impact the FY 2018 budget and future rate increases.

Director Croucher returned to the dias at 4:11 p.m.

In response to another inquiry from Director Smith, Finance Manager Kevin Keoppen indicated that in FY 2016 the debt coverage ratio was projected to drop below the target of 150%, but that it would then be built back up. Chief Financial Officer Beachem further explained that the minimum debt coverage ratio, including growth revenues, is 125%. The target is 150%, which allows the District to weather some financial challenges, such as the reduced water use mandate, before dropping below the target level. He stated with a fairly conservative projection of 18% conservation level relative to 2013 water use, the District can handle a good amount of decreased water use before its debt coverage ratio would drop below the target. He indicated that he felt that the proposed rate increase of 5% would be adequate.

Director Croucher stepped off the dias at 4:18 p.m.

Finance Manager Keoppen indicated, in response to an inquiry from Director Robak, that the District has a medium/average debt load compared to other public agencies. General Manager Watton indicated that it depends on each agency; some have growth some do not. An agency may prefer to fund projects with cash; the Otay WD likes to use a mix of debt and cash. There are many different philosophies and each agency has their own philosophy.

Director Croucher returned to the dias at 4:24 p.m.

Director Smith requested if staff could provide information on what other agencies are doing in terms of rate increases and, if there is a rate increase, how much is for water cost increases and how much is for the agencies' internal operations. Staff indicated that they would provide that information once all the agencies have set their rates for the next fiscal year.

Director Robak stepped off the dias at 4:32 p.m.

Chief of Engineering Rod Posada presented the District's projected six (6) year CIP from 2017 to 2022. He stated that staff utilized Mr. London's and the developers' projections to develop the District's growth projections (please reference slide number 46). He indicated that staff expects growth in FY 2017 to be flat, but expects substantial growth from 2018 to 2022. He indicated that 91 units of single-family homes are expected to be built in FY 2017 in contrast to 204 condominiums and 519 apartment units. Multi-family construction will outpace single-family home construction seven (7) to one (1). In the next six years (FY 2017 to 2022), single-family home construction will increase, but will still be outpaced by multi-family construction by two (2) to one (1). It is also projected that there will be approximately \$16 million in permitting revenues for commercial development.

Director Robak returned to the dias at 4:34 p.m.

He reviewed projected meter sales for FY 2017 (please reference slide number 47) and the guidelines used to develop the CIP budget for FY 2017 (please reference slide number 48).

He stated in the development of the CIP budget for FY 2017, staff reprioritized projects based on the District's planning documents, Water Supply Assessment reports, and Developer requests and estimates the CIP Budget requirement for FY 2017 is \$10.7 million. The six-year CIP Budget total for FY's 2017 to 2022 is \$89.2 million. He indicated in preparing the FY 2016 CIP budget last year, staff forecasted the FY 2017 budget needs to be \$20.1 million and over the six-year period (FY 2016 – 2021) to be \$96.2 million. He indicated that staff has pared down the budget as a result of reprioritizing and deferring projects.

Chief of Engineering Posada presented the high profile CIP projects planned for FY 2017 through 2022 (please reference slide numbers 50 and 51). He indicated, of the \$89.2 million projects in the CIP Budget, \$63.2 million (70%) is designated for replacement/renewal projects, \$23.8 million (27%) for capital facility projects (including developer reimbursement projects), and \$2.8 million (3%) for capital purchases. In response to an inquiry from Director Smith, Chief of Engineering Posada indicated that the District was anticipating to start the construction of the Campo Road Sewer Replacement Project. The project has been delayed to FY 2018 as easements still need to be acquired. Also, the 870 Pump Station Project has been delayed due to environmental limitations, which impacts the 571-1 Reservoir improvements project. This reservoir is critical to the service area and it

cannot be taken out of service during the summer months, so the reservoir improvements will be moved to the winter (FY 2017) months along with the 870 Pump Station Project.

Finance Manager Kevin Koeppen presented the details of the FY 2017 Operating Budget and the how the budget was developed. He indicated that the District's water sales projections for FY 2017 are based on FY 2016 projections plus 1% drought recovery. He stated that water use projections were also based on growth rates from The London Group projections. He presented a slide showing potable water sales from FY 2012 to projections for FY 2017 (please reference slide number 57). He reviewed the proposed potable rate which will be based on the California Urban Water Conservation Council's Best Management Practice 1.4 (BMP) that indicates that no more than 30% of revenues can come from fixed revenues. In FY 2016, 36% of revenues came from fixed revenues and staff is proposing that the District rebalance the rate and return to the 30% threshold for fixed revenues. This will shift \$1.1 million from fixed revenues to variable revenues. Staff is also proposing to pass-through, to District customers, the fixed portion of the San Diego County Water Authority's (CWA) and Metropolitan Water District's (MWD) rate increase of \$600,000 (please reference slide number 58).

He indicated that projected potable water sales revenues for FY 2017 is \$2,454,900 where \$1,548,300 will be from the proposed FY 2017 rate increase and \$906,600 from the FY 2016 rate increase and water sales volume changes.

Finance Manager Koeppen also presented that recycled water sales are projected to decrease in FY 2017 and revenues will decrease \$215,700 (or 2.4%). He stated a big portion of the decrease is due to the loss of the CWA and MWD rebates from reduced recycled water sales.

He also reviewed the sewer sales revenues and indicated that sewer revenues will decrease \$287,400. The main driver of the decrease is the completion and elimination of the phase in of the \$1.30 system fee and an overall reduction in the winter average use due to conservation.

He noted the District receives revenues from other sources and indicated:

- Property Tax Revenues will increase \$135,200 (3.5%)
- Capacity Fee Revenues will decrease \$113,400 (10%) due to a decrease in developer activity
- Non-operating revenue increase of \$305,700 (16.3%) from the PIO/PICO expense reimbursements and standard rate increases related to cell site leases.

He stated that the District's water cost is increasing \$1.4 million or 3.1% mainly due to rate increases from the District's wholesale water suppliers (please reference slide number 65).

He lastly shared that power costs will decrease \$174,800 (5.6%) in FY 2017 mainly due to customer conservation exceeding the projected FY 2016 budget.

Director Smith commented that he felt that the District needs to address the take or pay agreement with the City of San Diego as 50% of the recycled water that the District has paid for is not being used.

In response to an inquiry from Director Robak, Finance Manager Rita Bell indicated with regard to customer water billing, not considering the conservation tier, the first tier is the base tier, the next tier is 30% higher than the base tier, and the last tier is 100% higher than the base tier. In response to another inquiry from Director Robak, General Manager Watton indicated that the rates presented were developed with the rate study the District performed before the City of San Juan Capistrano lawsuit. Staff is currently in the process of performing a rate study following the City of San Juan Capistrano lawsuit and the outcome of the study will be presented to the board in a few months.

Chief of Administration and Information Technology Adolfo Segura reviewed the staffing changes. He indicated that each year the Senior Team members conduct an analysis of staff workload requirements and existing vacancies. He indicated that the District has reduced the number of staff members from 174.75 in 2007 to 135 in 2017; a reduction of 39.75 employees or 23%. The cumulative cost savings from the reduction in staffing is approximately \$30,052,900 (including all outside labor services) from 2007 to 2017. From an efficiency standpoint, the customer to employee ratio has increased from 301 customers serviced per employee in 2007 to 406 customers serviced per employee in 2017 or an increase of 35%. He also reviewed labor costs and indicated that salaries and benefits have increased \$518,900 (2.5%) and noted the items impacting labor costs (please reference slide numbers 72 to 73).

Director Smith complimented staff and the board for the years of effort that has gone into accomplishing these efficiencies for the District's ratepayers. He stated that the District somehow needs to get this information to its customers. He indicated that he knows that we have shared it, but it is not always heard and somehow we need to get it heard.

Assistant Chief of Operation Jose Martinez presented on the District's materials and maintenance costs and indicated that the overall costs have decreased \$156,500 (4.3%). He reviewed items that have impacted materials and maintenance costs (please reference slide numbers 75 to 76).

He also highlighted areas where the District has been able to keep costs down that included the reduction of fuel consumption by 39%, reducing the number of vehicles (pool and construction) and equipment (generators, backhoes, vector trucks, etc.) by 17%, the reduction of recycled water DEH charges for inspection fees from

\$40,900 to \$6,000 (or 85%) over the last six (6) years, keeping water loss below the 5% target at 3.1%, and decreasing paving costs by 65% over the last six (6) years.

Finance Manager Koeppen then reviewed the District's Administrative Costs and indicated that the District's overall administrative costs decreased \$237,700 (4.4%). He noted the items that are impacting administrative costs (please reference slide number 83).

He stated that staff is presenting for the board's consideration a potable budget of \$79,822,200, a recycled budget of \$8,909,000 and a sewer budget of \$3,010,300 for a total budget of \$91,741,500. The budget is supported by a 5% average rate increase for water and a 3% average rate increase for sewer. The presented budget also supports the water and sewer needs of the District's customers and the Strategic Plan.

Director Smith inquired about the shifting of staff from the Operations Division to the Engineering Division. Chief of Engineering Posada indicated that the District consolidated recycled inspections with the Engineering inspections group and moved the operations aspects of their jobs to the Operations Division. This will enhance efficiency and allow for the reduction of two (2) FTEs.

Director Lopez stepped off the dias at 5:18 p.m.

In response to another inquiry from Director Smith, staff indicated that the expense for ergonomic office furniture of \$589,000 is expenditures over the life of the Capital Improvement Project for Furniture Capital Purchases. The funds budgeted for office furniture is \$15,000 for FY 2017 and approximately \$50,000 for the next four (4) years.

Director Lopez returned to the dias at 5:21 p.m.

Chief of Administration and Information Technology Segura indicated in response to an inquiry from Director Lopez that the training budgeted in the Administration Services Division is centralized training under the Human Resources Department. Each department has access to a training budget that is specific to the needs of their department.

A motion was made by Director Smith, seconded by Director Lopez and carried with the following vote:

Ayes: Directors Croucher, Lopez, and Smith  
Noes: None  
Abstain: Director Robak  
Absent: Director Thompson

To adopt Resloutionn No. 4302 to approve the FY 2016-2017 Operating and Capital Budget; approve the fund transfers for potable, recycled and sewer; adopt Ordinance No. 555 amending Appendix A with the proposed 5% average water rate increase and 3% average sewer rate increase on all billings that begin in calendar year 2017; adopt the salary schedule; and direct staff to send rate increase notices.

Director Robak indicated that the District implemented a rate increase six (6) months ago due to the City of San Diego recycled water rate increase and stated that he was concerned about that increase and wished to look at the detail for that proposed increase. He also stated that he is not happy with the proposed rate tiers, but respects the fact that the District is making an effort to perform a study in response to the City of San Juan Capistrano lawsuit. He indicated that he believes the board and staff are all on the same page and are looking for efficiencies where we can. However, over the last six (6) months he has not seen any work on the District Optimization Committee and has left a message with President Thompson to discuss the committee. He stated that the reason he voted to abstain is that the District still needs to hold a public hearing on the proposed rate increases and between now and the hearing, he would like to have a meeting of the committee. General Manager Watton explained that the District had adopted a five-year blanket increase under Proposition 218 and a hearing was not required for this fiscal year.

President Lopez thanked staff for the good work they have done on the budget.

7. ADJOURNMENT

With no further business to come before the Board, President Lopez adjourned the meeting at 5:29 p.m.

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President

ATTEST:

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District Secretary

# AGENDA ITEM 4

## MINUTES OF THE BOARD OF DIRECTORS MEETING OF THE OTAY WATER DISTRICT June 1, 2016

1. The meeting was called to order by President Thompson at 3:35 p.m.

2. ROLL CALL

Directors Present: Croucher, Lopez and Thompson

Directors Absent: Robak and Smith (both were out-of-town on preplanned vacation)

Staff Present: General Manager Mark Watton, Attorney Jeanne Blumenfeld, Chief Financial Officer Joe Beachem, Chief of Administration and Information Technology Adolfo Segura, Asst. Chief of Operations Jose Martinez, District Secretary Susan Cruz and others per attached list.

3. PLEDGE OF ALLEGIANCE

4. APPROVAL OF AGENDA

A motion was made by Director Croucher, and seconded by Director Lopez and carried with the following vote:

Ayes: Directors Croucher, Lopez and Thompson  
Noes: None  
Abstain: None  
Absent: Directors Robak and Smith

to approve the agenda.

5. APPROVE THE MINUTES OF THE SPECIAL BOARD MEETINGS OF  
DECEMBER 15, 2015, MARCH 23, 2016 AND APRIL 4, 2016

A motion was made by Director Croucher, seconded by Director Lopez and carried with the following vote:

Ayes: Directors Croucher, Lopez and Thompson  
Noes: None  
Abstain: None  
Absent: Directors Robak and Smith

to approve the minutes of the special board meetings of December 15, 2015, March 23, 2016 and April 4, 2016.

6. PUBLIC PARTICIPATION – OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO SPEAK TO THE BOARD ON ANY SUBJECT MATTER WITHIN THE BOARD'S JURISDICTION BUT NOT AN ITEM ON TODAY'S AGENDA

No one wished to be heard.

PUBLIC HEARING

7. PUBLIC HEARING ON THE DISTRICT'S 2015 URBAN WATER MANAGEMENT PLAN (UWMP)

THE BOARD HELD A PUBLIC HEARING TO CONSIDER APPROVING THE DISTRICT'S 2015 UWMP. THE BOARD INVITED THE PUBLIC TO PROVIDE COMMENTS ON THE UWMP.

a) ADOPT RESOLUTION NO. 4306 APPROVING THE DISTRICT'S 2015 UWMP (COBURN-BOYD)

Environmental Compliance Specialist Lisa Coburn-Boyd indicated that staff is requesting that the board adopt Resolution No. 4306 to approve the District's 2015 UWMP. She indicated that since 1984, the California Urban Water Planning Act has required each urban water supplier in the State to prepare an UWMP. These plans must be updated at least once every five (5) years. Please reference the Committee Action notes attached to staff's report (Attachment A) for the details of Ms. Coburn-Boyd's report.

The public hearing was opened by President Thompson at 3:40 p.m. No one wished to be heard. The public hearing was closed at 3:40 p.m.

In response to an inquiry from Director Lopez, Customer Service Manager Andrea Carey indicated that going forward, any customer who purchases a water meter for a parcel of land greater than an acre must purchase a separate meter for irrigation. Many years ago, the purchase of a separate meter was not required, thus, the District has customers with larger than one acre parcels with multi-use meters that provide service for both irrigation and potable water. She indicated that a study performed several years ago to determine if the services could be separated. The study found that it would be extremely costly to do so and it was determined that it did not make sense to separate the services. Ms. Carey indicated, in response to another inquiry from Director Lopez, that this would not impact the District.

Director Thompson commented that page 4-2 of the UWMP discusses new development and he wondered if the District reflected in the water demand estimates in the plan that single-family lots would be smaller than in the past and, thus, would use less water for irrigation purposes. Engineering Manager Bob Kennedy indicated that, yes, they did factor in that the land plan is changing and single-home foot prints are changing. In response to another inquiry from Director Thompson, Ms. Coburn-Boyd indicated that passive conservation is

basically a proactive approach to conservation where development policies are including mandates to reduce water use, such as, building codes that require the use of water efficient devices.

Director Thompson inquired with regard to chart number 6-4, on page 6-5, of the UWMP, what the reason was for the large jump in recycled irrigation water use from 2015 (4,070 AF) to 2020 (5,385 AF). Environmental Compliance Specialist Coburn-Boyd indicated that recycled water demand projections presented in the UWMP are aligned with the Water Facilities Master Plan projections for recycled water supplies which are based on projected growth and the conversion of more landscapes to utilize recycled water. She indicated that there will be an increase in development during that time, including Village 3, Village 8 and the Millenia development. Staff noted that the developments could be delayed, but this is the best estimate based on the information we have now. Staff also shared that development in the far eastern portion of the County of San Diego, such as Village 13 and 14, cannot utilize recycled water because these developments are upstream from the Otay Reservoir.

A motion was made by Director Croucher, seconded by Director Lopez and carried with the following vote:

Ayes: Directors Croucher, Lopez and Thompson  
Noes: None  
Abstain: None  
Absent: Directors Robak and Smith

to approve staffs' recommendation.

### CONSENT CALENDAR

8. ITEMS TO BE ACTED UPON WITHOUT DISCUSSION, UNLESS A REQUEST IS MADE BY A MEMBER OF THE BOARD OR THE PUBLIC TO DISCUSS A PARTICULAR ITEM:

A motion was made by Director Croucher, seconded by Director Lopez and carried with the following vote:

Ayes: Directors Croucher, Lopez and Thompson  
Noes: None  
Abstain: None  
Absent: Directors Robak and Smith

to approve the following consent calendar items:

- a) AWARD TWO (2) PROFESSIONAL AS-NEEDED ENGINEERING DESIGN SERVICES CONTRACTS TO PSOMAS AND RICK ENGINEERING, EACH IN AN AMOUNT NOT-TO-EXCEED \$500,000. THE TOTAL AMOUNT OF THE TWO CONTRACTS WILL NOT EXCEED

\$500,000 DURING FISCAL YEARS 2017 AND 2018 (ENDING JUNE 30, 2018)

- b) ADOPT ORDINANCE NO. 554 AMENDING SECTION 0, DEFINITIONS AND MISCELLANEOUS PROVISIONS OF THE DISTRICT'S CODE OF ORDINANCES; AND ADOPT RESOLUTION NO. 4307 AMENDING POLICY NO. 26, DISTRICT ADMINISTRATION OF REIMBURSEMENT AGREEMENTS, OF THE DISTRICT'S CODE OF ORDINANCES
- c) ADOPT RESOLUTION NO. 4303 TO ESTABLISH THE TAX RATE FOR IMPROVEMENT DISTRICT NO. 27 AT \$0.004 FOR FISCAL YEAR 2016-2017
- d) ADOPT RESOLUTION NO. 4304 TO CONTINUE WATER AND SEWER AVAILABILITY CHARGES FOR DISTRICT CUSTOMERS FOR FISCAL YEAR 2016-2017 TO BE COLLECTED THROUGH PROPERTY TAX BILLS
- e) ADOPT RESOLUTION NO. 4305 TO REPEAL BOARD POLICY NO. 39, DISCLOSURE OF INFORMATION AND USE OF COMPUTER, ELECTRONIC AND VOICE MAIL, AND INTERNET POLICY, OF THE DISTRICT'S CODE OF ORDINANCES
- f) APPROVE AN AGREEMENT WITH WESTERN PUMP, INC. IN AN AMOUNT NOT-TO-EXCEED \$103,623 TO RETROFIT THE FUEL ISLAND DISPENSING UNITS, UNDER DISPENSER CONTAINMENT UNITS AND UNDERGROUND FUEL PIPING

#### ACTION ITEMS

##### 9. BOARD

- a) DISCUSSION OF THE 2016 BOARD MEETING CALENDAR

Director Croucher indicated that he would be out-of-town on July 6, 2016 and would not be available to attend the board meeting on that day. President Thompson indicated that he would be out-of-town and would be unable to attend the July and October 2016 committee meetings.

There were no changes to the board meeting calendar.

#### INFORMATIONAL ITEM

- 10. THE FOLLOWING ITEM IS PROVIDED TO THE BOARD FOR INFORMATIONAL PURPOSES ONLY. NO ACTION IS REQUIRED ON THE FOLLOWING AGENDA ITEM:

b) THIRD QUARTER OF FISCAL YEAR 2016 CAPITAL IMPROVEMENT PROGRAM UPDATE REPORT

Engineering Manager Dan Martin provided an update on the District's third quarter of FY 2016 Capital Improvement Program. He indicated that the FY 2016 budget is divided into 80 projects totaling \$11.8 million. The overall expenditures through the third quarter are \$7.4 million which is approximately 62% of the FY 2016 budget. Please reference the Committee Action notes attached to staff's report (Attachment A) for the details of Mr. Martin's report.

In response to an inquiry from Director Croucher, Mr. Martin indicated that the District has not deployed any energy capturing devices at the 624 Zone Pressure Reducing Station. General Manager Watton added that staff has looked in the past at installing small generators, however, they have not proven to be a cost benefit for a station of this size. Director Croucher indicated that he just wanted to assure that the District is investigating technological improvements every two (2) years to take advantage of any new technologies.

REPORTS

11. GENERAL MANAGER'S REPORT

CWA Report

General Manager Watton noted that there are two handouts regarding CWA and MWD that were placed on the dias for each member of the board and indicated that CWA is continuing to discuss their Urban Water Management Plan (UWMP).

Director Croucher added that he has just returned from a trip to Sacramento with the San Diego Chamber of Commerce. They met with a few of the legislators and, specifically, with Governor Brown's Chief of Staff to discuss the State Mandates on conservation and to request that restrictions be implemented on a regional basis. He stated that the snowpack is looking good for this year, however, Lake Meade is at its lowest point ever. He indicated with regard to the Colorado River Agreements, there is discussions on what the State of California has a right to versus the states of Arizona and Nevada in terms of restrictions and who has the authority to represent California at the Colorado River discussions. These are issues that they will continue to monitor.

Director Croucher also indicated that he has brought a copy of the videos that CWA had produced from the book, "To Quench a Thirst." He stated that it is a three part video series and he would like to present one or all the parts at today's meeting. They are approximately five (5) minutes each and he indicated that after viewing the videos, he would like to get a copy of the book as it discusses the history of water in San Diego County and California. He indicated that he felt it would be worthwhile for each of the Directors to read the book.

General Manager's Report

General Manager Watton also presented information from his report. He reported on the District's physical security and access control standardization program, recruitments and new hires, the State conservation mandate, the change in insurance procedures for emergency repairs, the Rosarito Beach desalination project, and the main break at Greensview Drive.

In response to an inquiry from President Thompson, Mr. Watton indicated that the District's insurer has not covered the cost of staff time for construction management to coordinate the repair. Staff is looking at possibly retaining a construction consultant to manage the repairs which would then be reimbursable.

Director Lopez indicated that he appreciated all the work Communications Officer Armando Buelna has done for the District and for himself. He stated that he will certainly be missed and wished him well in retirement. President Thompson also indicated his appreciation for the good work Mr. Buelna had done related to the City of San Diego recycled matter.

## 12. DIRECTORS' REPORTS/REQUESTS

Director Lopez indicated that he wanted to thank Director Robak for attending the Metro Commission meeting on his behalf. The Commission is scheduled to meet again tomorrow. He also indicated that Mr. Gary London's report was very well done and informative. He indicated it is a very important document for planning purposes for the District. He also indicated that he attended the District's board and committee meetings.

## 13. PRESIDENT'S REPORT

President Thompson presented his report on meetings he attended during the month of May 2016. His report is attached.

## 14. CLOSED SESSION

The board recessed to closed session at 4:30 p.m. to discuss the following matter:

- a) CONFERENCE WITH LEGAL COUNSEL – PENDING LITIGATION  
[GOVERNMENT CODE §54956.9]

BLALOCK vs. OTAY WATER DISTRICT; CASE NO. 37-2016-00013542-CU-OR-CTL

The board reconvened at 4:55 p.m. and Attorney Jeanne Blumenfeld reported that the board met in closed session and took no reportable actions.

## 15. PRESENTATION OF "TO QUENCH A THIRST" VIDEOS

The "To Quench a Thirst" videos (three [3] parts) were viewed. The videos reviewed the history of the development of reliable water supply services for drinking and irrigation purposes in San Diego County from 1769 to the present.

16. ADJOURNMENT

With no further business to come before the Board, President Thompson adjourned the meeting at 5:17 p.m.

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President

ATTEST:

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District Secretary

**President's Report**  
**June 1, 2016 Board Meeting**

**A) Meetings attended during the Month of May 2016:**

- 1) **May 2: Attended a meeting of the District's Ad Hoc Salt Creek Golf Course Development Committee.** Attendees: Director Lopez, General Manager Watton, Asst. General Manager Alvarez, Chief Financial Officer Beachem, Chief of Administration and Information Technology Segura, Accounting Manager Koeppen and Mr. Gary London, The London Group Realty Advisors.
- 2) **May 3: Attended Mayor Salas' State of the City Address.** Attendees: Director Lopez and General Manager Watton
- 3) **May 4: OWD Regular Board Meeting**
- 4) **May 6: Attended the Chicano Federation Annual Unity Luncheon.** Attendees: Director Lopez and General Manager Watton
- 5) **May 12: Committee Agenda Briefing.** Met with General Manager Watton to review items that will be presented at the May committee meetings. Director Lopez also attended.
- 6) **May 18: Attended the District's Finance, Administration and Communications Committee.** Reviewed, discussed, and made recommendation on items that will be presented at the June board meeting.
- 7) **May 19: Attended the CSDA Quarterly Dinner Meeting.** Christine DiDonato, Career Revolution, presented on **New Workforce IQ: 5 Trends Shaping the Future of Your Workforce.** Attendees: General Manager Watton
- 8) **May 28: Board Agenda Briefing.** Met with General Manager Watton and General Counsel Dan Shinoff to review items that will be presented at the June 1 Board Meeting. Director Lopez also attended.

# AGENDA ITEM 6a



## STAFF REPORT

TYPE MEETING:	Regular Board	MEETING DATE:	August 3, 2016
SUBMITTED BY:	Jake Vaclavek, System Operations Manager	DIV. NO.	All
APPROVED BY:	<input checked="" type="checkbox"/> Jose Martinez, Asst. Chief of Water Operations <input checked="" type="checkbox"/> Pedro Porras, Chief of Water Operations <input checked="" type="checkbox"/> German Alvarez, Assistant General Manager <input checked="" type="checkbox"/> Mark Watton, General Manager		
SUBJECT:	Approval of Public Health Goal Report Recommendations		

### **GENERAL MANAGER'S RECOMMENDATION:**

That the Otay Water District (District) Board of Directors (Board) approve the recommendations in the Public Health Goal (PHG) Report to take no further action in reducing the levels of the six constituents listed in the report to levels at or below the PHGs.

### **COMMITTEE ACTION:** \_\_\_\_\_

Please see Attachment A.

### **PURPOSE:**

To present the July 1, 2016 PHG Report to the Board and to obtain approval for the recommendation that no action be taken to reduce the levels of the six constituents listed in the report to the PHG or below. The Board meeting will also meet the requirement to have a public hearing to accept and respond to public comment.

### **ANALYSIS:**

California Health and Safety Code §116470 specifies that larger water utilities (>10,000 service connections) prepare a special report every three years prior to July 1 if their water quality measurements have exceeded any Public Health Goals (PHGs). This

report was completed in June 2016 (see Attachment B). PHGs are non-enforceable goals established by the Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goals (MCLGs) adopted by USEPA. Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.

PHGs are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the State Water Resources Control Board (SWRCB) in setting Maximum Contaminant Levels (MCLs) are considered in setting the PHGs. These factors include analytical detection capability, available treatment technology, benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to the state's PHGs.

If a constituent was detected in the District's distribution system or in the treated water the District purchases from other agencies, between 2013 and 2015, at a level exceeding an applicable PHG or MCLG, the PHG report provides the information required by the regulation. Included in the report is the numerical public health risk associated with the MCL and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level and an estimate of the cost to install that treatment if it is appropriate and feasible.

The purpose of the report is to provide customers with information on health-related contaminants detected in the water supply, even when detected below the enforceable MCLs, so customers are aware of whatever risks might be posed by the presence of these contaminants. MCLs are set at very conservative levels that provide very low to negligible risk and are considered the regulatory definition of what is safe. PHGs and MCLGs are set at the theoretical level where there is no health risk. MCLGs are set at zero for many contaminants, such as radiologicals and carcinogens, even though it is understood that zero is an unattainable goal and cannot be measured analytically. Most PHGs and MCLGs are set far below the required Detection Levels for Reporting (DLR) which is the minimum level that SWRCB has determined can be accurately reported.

Below is a table summarizing the six constituents detected above the PHG or MCLG in calendar years 2013, 2014, and/or 2015. For additional details please see Attachment B, the 2016 PHG Report.

Constituent	Units	MCL	PHG/MCLG	DLR	Levels Detected
Arsenic	ppb	10	0.004	2	ND - 3.4
Gross Alpha	pCi/L	15	0	3	ND - 5
Gross Beta	pCi/L	50	0	4	ND - 5
Uranium	pCi/L	20	0.43	1	ND - 2.3
Bromate	ppb	10	0.1	5.0	ND - 5.9
Copper	ppm	1.3	0.3	0.05	0.3 - 0.32

MCL = Maximum Contaminant Level

PHG = Public Health Goal

MCLG = Maximum Contaminant Level Goal

DLR = Detection Limits for Reporting

Levels Detected = Levels detected either in the Otay distribution system (copper only) or in water supplied to the District for 2013 through 2015.

ND = Not Detected at or above the DLR

This table shows that the PHG or MCLG for 5 of the 6 constituents listed is lower than the DLR. This means that even if additional treatment is performed to reduce the levels of these constituents, the effectiveness of the treatment to reduce the levels to the PHG or MCLG cannot be accurately determined by analytical methods.

The regulation also requires a cost estimate of using the Best Available Technology (BAT) for reducing the level of the constituents to below the PHGs. For copper, which can leach into the water from plumbing fixtures or copper lines, the BAT is optimized corrosion control, which is already done, so no further treatment is required.

The BAT for the other five constituents is reverse osmosis (RO). According to the Association of California Water Agencies (ACWA) cost estimates for a treatment BAT, would cost approximately \$1.68 - \$3.22 per 1000 gallons to further remove these constituents using RO treatment. The District's average annual demand for the three year period was 10,084 million gallons per year. Therefore, RO treatment installed and operated by the District or the District's water suppliers to meet the District's water demands would cost from \$17 to \$30 million per year, which translates to an average monthly cost increase of \$28.32 - \$54.28 per District customer (using the January 2016 meter count of 49,849 meters). These estimates include all costs including capital, land, construction, engineering, planning, environmental, contingency and O&M costs for the life of the facilities.

Staff's recommendation is that no action be taken for the District to install RO treatment or request suppliers to install RO treatment for the following reasons:

- Water served by the District during this three year period met or exceeded all SWRCB and USEPA drinking water standards set to protect public health. SWRCB considers water that meets these standards as safe to drink.
- To reduce the levels of the constituents identified in this report that are already significantly below the health-based MCLs established that already provide safe drinking water, costly treatment processes would be required, translating to an average monthly cost increase of \$28.32 - \$54.28 per District customer.
- The effectiveness of the treatment processes to provide any significant reductions in constituent levels to the PHGs is difficult, if not impossible to determine since the analytical DLR is higher than the PHG.
- The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable.

**FISCAL IMPACT:**         Joe Beachem, Chief Financial Officer

None.

**STRATEGIC GOAL:**

To meet the District's Mission of providing high quality and reliable water and wastewater services to the customers of the Otay Water District, in a professional, effective and efficient manner.

**LEGAL IMPACT:**

None.

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**General Manager**

Attachment A, Committee Action

Attachment B, Otay Water District Public Health Goals Report on Water Quality



## ATTACHMENT A

<b>SUBJECT/PROJECT:</b>	Approval of Public Health Goal Report Recommendations
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### **COMMITTEE ACTION:**

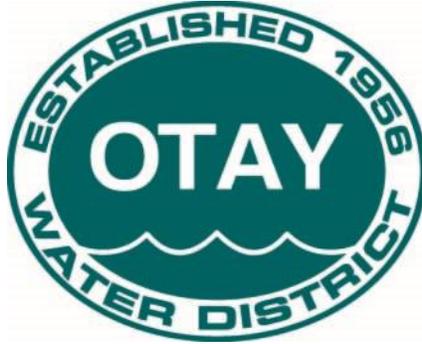
The Engineering, Operations, and Water Resources Committee reviewed this item at a meeting held on July 19, 2016, and the following comments were made:

- Staff recommended that the Board approve the recommendations in the Public Health Goal (PHG) Report to take no further action in reducing the levels of the six constituents listed in the report to levels at or below the PHGs.
- Staff indicated that PHG reports are required by the State for larger water utilities every three (3) years if their water quality measurements have exceeded PHGs. It was noted that the last report was submitted to and approved by the board in 2013.
- The 2016 PHG report contains data from the District's 2013 to 2015 annual water quality reports, which can be found in the Consumer Confidence Reports.
- Staff noted that Public Health Goals (PHGs) and Maximum Contaminant Level Goals (MCLGs) are not enforceable nor are they required to be met by any public water system.
- Staff also noted that since the District does not treat raw water, all of the values shown in the table on page 3 of the staff report (with the exception of copper) are values seen from some of the treatment plants that serve water to the District; which are the Twin Oaks, Carlsbad Desal, Helix, and Skinner plants.
- Staff discussed reasons for taking no further action in reducing the levels of the six constituents listed in the PHG Report. Those reasons are listed on page 4 of the staff report.

- In response to a question from the Committee, staff stated that lead and copper samples were taken from the inside of customers' homes as required by law every three (3) years. Staff indicated that the result of the lead sample indicated non-detection, and the highest result for the copper samples indicated a level of .26 to .28. All values were below the State's MCL and the PHG's maximum levels.
- The Committee inquired if there have been any issues with the Uranium values in the District's water. Staff stated that there are no issues as Uranium levels in the District's water are either non-detected or up to 2.3 picoCuries per liter (pCi/L). It was noted that 20 pCi/L is the maximum allowable level for Uranium in water.
- In response to a question from the Committee, staff stated that the Helix Water District and the Padre Dam Municipal Water District are required to provide a PHG Report.
- Staff indicated that a public hearing is required to accept and respond to public comments in relation to the PHG Report.

Following the discussion, the Committee supported staffs' recommendation and presentation to the full board as a public hearing item and afterwards approve the recommendations in the Public Health Goal (PHG) Report to take no further action in reducing the levels of the six constituents listed in the report to levels at or below the PHGs.

Attachment B



**OTAY WATER DISTRICT  
Public Health Goals  
Report on Water Quality**

June 2016

**OTAY WATER DISTRICT**

**PUBLIC HEALTH GOALS REPORT ON WATER QUALITY**

**OTAY WATER DISTRICT** ..... 8

**PUBLIC HEALTH GOALS REPORT ON WATER QUALITY** ..... 8

**SECTION 1: BACKGROUND INFORMATION** ..... 9

**Background:** ..... 9

**What Are Public Health Goals (PHGs)?** ..... 9

**Reporting Requirements:** ..... 10

**Water Quality Data Considered:** ..... 10

**Best Available Treatment Technology and Cost Estimates:** ..... 11

**SECTION 2: CONSTITUENTS DETECTED THAT EXCEED A PHG** ..... 11

**Arsenic:** ..... 11

**Bromate:** ..... 12

**Radiological: Gross Alpha & Uranium:** ..... 13

**SECTION 3: RECOMMENDATIONS FOR FURTHER ACTION** ..... 15

## **SECTION 1: BACKGROUND INFORMATION**

### **Background:**

California Health and Safety Code Health and Safety Code §116470 specifies that larger water utilities (>10,000 service connections) prepare a special report by July 1, 2016 if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goals (MCLGs) adopted by USEPA. Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these required reports. The ACWA guidelines were used in the preparation of our report. No guidance was available from state regulatory agencies.

If a constituent was detected in the Otay Water District's (District's) distribution system or in the treated water the District purchases from other agencies, between 2013 and 2015 at a level exceeding an applicable PHG or MCLG, this report provides the information required by the law. Included is the numerical public health risk associated with the Maximum Contaminant Level (MCL) and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment if it is appropriate and feasible.

### **What Are Public Health Goals (PHGs)?**

PHGs are set by California OEHHA, which is part of Cal-EPA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the State Water Resources Control Board (SWRCB) in setting drinking water standards (MCLs) are considered in setting the PHGs. These factors include analytical detection capability, available treatment technology, benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to the state's PHGs.

## **Reporting Requirements:**

The purpose of this report is to inform consumers of the District's drinking water PHGs that were exceeded during 2013, 2014 and 2015, pursuant to California Health and Safety Code Section 116470(b). In addition, this report provides information about the cost of achieving a water quality level that does not exceed the PHGs. For general information about the quality of the water delivered by the District, please refer to the Consumer Confidence Report, also known as the Annual Water Quality Report. An online version of these annual reports can be found at [www.otaywater.gov](http://www.otaywater.gov).

Included in this report is information regarding the public health risk associated with the MCL and the PHG, such as the possible type of health risk associated with each constituent, the best available treatment technology that may reduce the constituent level, and an estimate of the cost to install such treatment.

## **Water Quality Data Considered:**

All of the water quality data collected by our water system between 2013 and 2015 for purposes of determining compliance with drinking water standards was considered. This data was summarized in our 2013, 2014, and 2015 Consumer Confidence Reports which is made available to all of our customers annually in June.

For each regulated contaminant, DHS establishes Detection Limits for the purposes of Reporting (DLR). DLRs are the minimum levels at which any analytical result must be reported to the State Water Resources Control Board (SWRCB). Results indicated below the DLRs cannot be quantified with any certainty. In some cases, PHGs are set below the DLRs making them impossible to achieve analytically. Any contaminant reported below the DLR will be considered zero for the purpose of this report, which is accepted by the State Water Resources Control Board.

## **Best Available Treatment Technology and Cost Estimates:**

Both the USEPA and SWRCB adopt what are known as Best Available Technologies (BATs), which are the best methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHGs and MCLGs are set much lower than the MCL, it is not always possible nor feasible to determine what treatment is needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at zero. Estimating the costs to reduce a constituent to zero is difficult, if not impossible because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

## **SECTION 2: CONSTITUENTS DETECTED THAT EXCEED A PHG**

The following is a discussion of constituents that were detected in the Districts distribution system, or one or more of our drinking water treated water sources at levels above the PHG, or MCLG (if no PHG has been established).

### **Arsenic:**

Arsenic is a naturally occurring element in the earth's crust and is very widely distributed in the environment. All humans are exposed to microgram quantities of arsenic (inorganic and organic) largely from food (25 to 50 µg/day) and to a lesser degree from drinking water and air. In certain geographical areas, natural mineral deposits may contain large quantities of arsenic and this may result in higher levels of arsenic in water. Waste chemical disposal sites may also be a source of arsenic contamination of water supplies. The main commercial use of arsenic in the U.S. is in pesticides, herbicides and in wood preservatives. Misapplication or accidental spills of these materials could result in contamination of nearby water supplies. Arsenic does not have a tendency to accumulate in the body at low environmental exposure levels.

Studies in humans have shown considerable individual variability in arsenic toxicity. The levels of arsenic that most people ingest in food and water (up to 50 µg/day) have not usually been considered to be of health concern for non-cancer effects.

The MCL for arsenic is 10 parts per billion (ppb), the PHG and MCLG for arsenic is .004 ppb. The DLR, which is the lowest level that SWRCB has determined can be measured

with certainty, is 2 ppb. Arsenic levels in water that the District purchases from other agencies from 2013 – 2015 ranged from <2 ppb – 3.4 ppb. The health risk associated with arsenic, and the reason that a drinking water standard was adopted for it, is that people who drink water containing arsenic above the MCL of 10 ppb throughout their lifetime could experience an increased risk of getting cancer. The PHG of .004 ppb is estimated on a level that will result in not more than 1 additional cancer case in a population of 1 million people who drink 2 liters of water daily for 70 years. The actual cancer risk may be lower or zero. Because the DLR for arsenic (2 ppb) is greater than the PHG (.004 ppb), it would be difficult to assess the effectiveness of any treatment technique on reaching the PHG level.

The best available technology (BAT) cited in literature to remove arsenic is reverse osmosis. All costs including capital, land, construction, engineering, planning, environmental, contingency and O&M costs are included but only general assumptions can be made for these items. According to the Association of California Water Agencies (ACWA) cost estimates for a treatment technology BAT, would cost approximately \$1.68-\$3.22 per 1000 gallons to treat arsenic using RO treatment. The District's average annual demand for the three year period was 10,084 million gallons per year. Therefore, RO treatment installed and operated by the District's water suppliers to meet the District's water demands would cost from \$17 to \$32 million per year, which translates to an average monthly cost increase of \$28.32 - \$54.28 per District customer.

### **Bromate:**

Bromate in water is formed when water containing naturally occurring bromide is disinfected with ozone. Bromate also has a long history of use as a food additive in flour.

The MCL for bromate is 10 ppb, the PHG is 0.1 ppb and the MCLG is zero based on a running annual average (RAA). The DLR is 5 ppb. The RAA of bromate levels in water that the District purchases from other agencies from 2013 – 2015 averaged from <5 ppb to 5.9 ppb.

The SWRCB and USEPA have determined that bromate is a health concern at certain levels of exposure. The category of health risk associated with bromate, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer. The PHG of 0.1 ppb is estimated on a level that will result in not more than 1 additional cancer case in a population of 1 million people who drink 2 liters of water daily for 70 years. The actual cancer risk may be lower or zero. The SWRCB and USEPA set the drinking water standard for bromate at 10 ppb to reduce the risk of cancer or other adverse health effects.

One of the most effective treatment BATs for bromate reduction is reverse osmosis (RO). RO treatment reduces the natural occurring bromide in source water, therefore reducing bromate formation when ozone is applied. Because the DLR for bromate (5 ppb) is greater than the PHG (0.1ppb), it would be difficult to assess the effectiveness of RO treatment on reaching the PHG level. According to the Association of California Water Agencies (ACWA) cost estimates for a treatment BAT, would cost approximately \$1.68-\$3.22 per 1000 gallons to treat bromate using RO treatment. The District's average annual demands for the three year period were 10,084 million gallons per year. Therefore, RO treatment installed and operated by the District's water suppliers to meet the District's water demands would cost from \$17 to \$30 million per year, which translates to an average monthly cost increase of \$28.32 - \$54.28 per District customer.

### **Copper:**

There is no MCL for copper. Instead the 90th percentile value of all samples from household taps in the distribution system cannot exceed an Action Level of 1.3 parts per million (ppm). The PHG for copper is 0.30 ppm and the DLR is 0.05 ppm. The category of health risk for copper is gastrointestinal irritation. Numerical health risk data on copper has not yet been provided by OEHHA, the State agency responsible for providing that information.

Based on extensive sampling of our distribution system in 2011, our 90th percentile value for copper was 0.32 ppm. Our water system is in full compliance with the Federal and State copper regulation and we are deemed by SWRCB to have "optimized corrosion control" for our system. In general, optimizing corrosion control is considered to be the best available technology to deal with corrosion issues and with any copper findings.

Since the water distributed by the District meets the "optimized corrosion control" requirements, it is not prudent to initiate additional corrosion control treatment as it involves the addition of other chemicals and there could be additional water quality issues raised. Therefore, no estimate of cost has been included.

### **Radiological: Gross Alpha & Uranium:**

Gross alpha particle activity detections are typically due to uranium. Uranium is a naturally-occurring radioactive element that is ubiquitous in the earth's crust. Uranium

is found in ground and surface waters due to its natural occurrence in geological formations.

The requirement for radiological monitoring, including uranium, is four consecutive quarters every four years. The California MCL for uranium is 20 pCi/L. Uranium levels in water that the District purchases from other agencies from 2013 – 2015 ranged from <1 pCi/L – 2.3 pCi/L.

The Public Health Goal for uranium is 0.43 pCi/L and the DLR is 1 pCi/L. The numerical health risk for uranium based on the California PHG is  $1 \times 10^{-6}$ . This means one additional cancer case per million population. The health risk category for uranium is carcinogenicity. Carcinogenic risk means capable of producing cancer.

The best available technology (BAT) cited in literature to remove gross alpha particle activity and uranium is reverse osmosis. All costs including capital, land, construction, engineering, planning, environmental, contingency and O&M costs are included but only general assumptions can be made for these items. According to the Association of California Water Agencies (ACWA) cost estimates for a treatment BAT, would cost approximately \$1.68-\$3.22 per 1000 gallons to treat Alpha and Uranium using RO treatment. The District's average annual demands for the three year period were 10,084 million gallons per year. Therefore, RO treatment installed and operated by the District's water suppliers to meet the District's water demands would cost from \$17 to \$30 million per year, which translates to an average monthly cost increase of \$28.32 - \$54.28 per District customer.

### **Gross Beta:**

Certain minerals are radioactive and may emit a form of radiation known as photons and beta radiation. The MCL is 50 pCi/L and the DLR is 4 pCi/L. There is no PHG for gross beta particle activity and the MCLG is zero pCi/L.

Gross beta levels in water that the District purchases from other agencies from 2013 – 2015 ranged from <4 pCi/L – 5 pCi/L. The SWRCB and USEPA, which set drinking water standards, have determined that gross beta particle activity is a health concern at certain levels of exposure. This radiological constituent is a naturally occurring contaminant in some groundwater and surface water supplies. The category of health risk associated with gross beta particle activity, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer. The numerical health risk for the MCLG of zero pCi/L is zero. The SWRCB and USEPA set the drinking water standard for gross beta particle activity at 50 pCi/L to reduce the risk of cancer or other adverse health effects.

The Best Available Technologies (BATs) identified to treat gross beta particle activity are ion exchange and reverse osmosis (RO). The most effective method to consistently remove beta and photon emitters to the MCLG is to install RO treatment. All costs including capital, land, construction, engineering, planning, environmental, contingency and O&M costs are included but only general assumptions can be made for these items. According to the Association of California Water Agencies (ACWA) cost estimates for a treatment BAT, would cost approximately \$1.68-\$3.22 per 1000 gallons to treat gross beta using RO treatment. The District's average annual demands for the three year period were 10,084 million gallons per year. Therefore, RO treatment installed and operated by the District's water suppliers to meet the District's water demands would cost from \$17 to \$30 million per year, which translates to an average monthly cost increase of \$28.32 - \$54.28 per District customer.

### **SECTION 3: RECOMMENDATIONS FOR FURTHER ACTION**

All water served by the District met all SWRCB and USEPA drinking water standards set to protect public health during this three year period. The SWRCB considers water that meets all standards as safe to drink. To further reduce the levels of the constituents identified in this report that are already significantly below the health-based Maximum Contaminant Levels established to provide safe drinking water, additional costly treatment processes would be required, translating to an average monthly cost increase of \$28.32 - \$54.28 per District customer.

The effectiveness of the treatment processes to provide any significant reductions in constituent levels to the PHGs is difficult, if not impossible to determine since the analytical DLR is much higher than the PHG in most cases. The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no further action is recommended.



# AGENDA ITEM 7a

## STAFF REPORT

TYPE MEETING:	Regular Board	MEETING DATE:	August 3, 2016	
SUBMITTED BY:	Jeff Marchioro Senior Civil Engineer	PROJECT:	R2116- 001102 P2508- 001102	DIV. 3 NO.
	Bob Kennedy Engineering Manager			
APPROVED BY:	<input checked="" type="checkbox"/> Rod Posada, Chief, Engineering <input checked="" type="checkbox"/> German Alvarez, Assistant General Manager <input checked="" type="checkbox"/> Mark Watton, General Manager			
SUBJECT:	Award of a Construction Contract to Charles King Company, Inc. for the 14-Inch Force Main Rehabilitation Project			

### **GENERAL MANAGER'S RECOMMENDATION:**

That the Otay Water District (District) Board of Directors (Board) award a construction contract to Charles King Company, Inc. (Charles King) and to authorize the General Manager to execute an agreement with Charles King for the Ralph W. Chapman Water Recycling Facility (RWCWRF) 14-Inch Force Main Rehabilitation Project in an amount not-to-exceed \$1,101,250 (see Exhibit A for Project locations).

### **COMMITTEE ACTION:**

Please see Attachment A.

### **PURPOSE:**

To obtain Board authorization for the General Manager to enter into a construction contract with Charles King in an amount not-to-exceed \$1,101,250 for the 14-Inch Force Main Rehabilitation Project.

### **ANALYSIS:**

The District owns and operates the RWCWRF 14-inch cement mortar lined, coal-tar epoxy coated steel force main. The 1980 era, 3.1 mile long steel force main, which has pressures up to 400 psi, conveys reclaimed water from the RWCWRF to a hydraulic structure (Junction Box) north of the Salt Creek Golf Course. At the Junction

Box, the force main transitions to a gravity main and the pipe material transitions from steel to asbestos-cement pipe.

The entire force main traverses an environmentally sensitive area designated as an environmental preserve. The preserve contains an active river (Sweetwater River) which drains to the Sweetwater Reservoir through very rough/steep terrain.

District staff are concerned that RWCWRF chlorine residuals could shorten the force main's life expectancy. The force main was refitted with all new air-vacuum valves and in-line section valves in 2008. Two (2) leaks in the upper (lower pressure) portions of the steel force main were repaired in 2013 and 2014. The 2014 repair resulted in another leak when a blow off valve failed during an attempt to drain the force main. All original blow off valves have been deemed unreliable and have not been operated since 2014.

In October 2014, the District entered into a professional services agreement with Pipeline Inspection & Condition Analysis Corporation (PICA) to perform inspection and condition assessment of the force main. PICA, teamed with Charles King as PICA's subcontractor, inspected the upper 4,000 feet in January 2015 and found localized defects rather than global degradation of the force main. At each of four (4) field verification digs (excavation and dissection of the pipe) completed by District staff, the steel immediately adjacent to the localized defects visually appeared in perfectly good condition. A local material testing laboratory (Decisive Testing) performed several tests on a single sample of the force main steel, including a single yield strength test, which suggested that the Class 200 pressure rating for the upper portion of the force main is conservative.

Award of the construction contract to Charles King includes the following main components:

- **Replacement of Fifteen (15) Blow Off Valves.** With the exception of the single blow off replaced by District staff in 2014, all blow off valves have been deemed unreliable and have not been operated for many years. Functional blow offs are needed for routine operation, maintenance, and repair of the force main. PICA is contracted to complete their work without the benefit of functional blow offs; however, functional blow offs would facilitate PICA's inspection of the lower 12,000 feet of the force main.
- **New Flow Metering Vault.** A new flow metering vault in the use area will improve District staff's ability to monitor the force main for major leaks. The District's SCADA system will compare the new flow meter to an existing flow meter at the treatment plant and trigger an alarm if flow rates differ more than anticipated accuracy. The automation is anticipated to reduce District staff time currently spent patrolling the force main.

- **Access Road Repairs.** The District's existing gravel access road regularly requires repairs as it traverses very steep (35-40%) and rough terrain. Road repairs are needed to remove deep ruts which are challenging to negotiate in District F250 4x4s.
- **Cathodic Protection System Rehabilitation.** The existing galvanic anode cathodic protection (GACP) system is no longer functional as only twelve (12) of the original thirty (30) test stations can be located. The entire GACP system will be rehabilitated with new test stations and anodes. Cathodic protection facilities will be co-located with other larger facilities (e.g.; in-line valve vaults, air-vac vaults, blow off valves) to minimize environmental impacts.
- **Work Window for PICA.** A work window is needed to provide PICA with access to the force main.
- **Removal and Reinstallation of In-line Valves.** Removal and reinstallation of existing in-line 14-inch butterfly valves was included as a bid alternative with the intent of deleting the work from PICA's agreement. Consolidating the construction work into Charles King's construction contract will simplify coordination and execution of PICA's agreement and Charles King's construction contract.

Staff prepared the contract documents in-house together with assistance from the District's As-Needed Corrosion and Electrical Consultants. Mayer Reprographics (Mayer) distributed the bid documents electronically through Mayer's online plan room. The Project was advertised for bid on April 28, 2015 on the District's website and several other publications, including the San Diego Union Tribune. A Pre-Bid Meeting was held on June 2, 2016, which was attended by two (2) contractors. Two (2) addendum were sent out to all bidders and plan houses on June 3 and June 7, 2016 to address questions asked during the bidding period. Staff reached out to eleven (11) prime contractors to encourage them to submit a bid.

Bids were publicly opened on June 14, 2016, with the following results:

CONTRACTOR	BASE BID AMOUNT	BID ALTERNATE NO. 1 AMOUNT	TOTAL BID AMOUNT
1. Charles King Signal Hill, CA	\$1,066,250	\$35,000	\$1,101,250
2. Piperin Corporation Vista, CA	\$1,268,425	\$45,500	\$1,313,925

The Engineer's Estimate is \$1,000,000 for the base bid and \$42,000 for the Bid Alternate for a total of \$1,042,000.

The evaluation process included reviewing all bids submitted for conformance to the contract documents. The lowest bidder, Charles King, submitted a responsible bid and holds a Class A Contractor's License which expires on July 31, 2017. Staff checked the references provided with Charles King's bid indicating a good performance record on similar past projects. The proposed Project Manager has experience throughout southern California on similar projects and received good references. A background search of the company was performed via the internet and revealed no outstanding issues. Charles King submitted the Company Background and Company Safety Questionnaires, as required by the Contract Documents.

Staff verified that the bid bond provided by the Ohio Casualty Insurance Company is valid. Once Charles King signs the contract, they will furnish the performance bond and labor and materials bond. Staff will verify both bonds prior to executing the contract.

**FISCAL IMPACT:**             Joe Beachem, Chief Financial Officer

The total budgets, as approved in the FY 2017 budget, are \$2,500,000 and \$725,000 for CIPs R2116 and P2508, respectively. Total expenditures, plus outstanding commitments and forecast, including this contract, are \$1,727,030 and \$477,411 for CIPs R2116 and P2508, respectively. See Attachments B and C for budget details.

Based on a review of the financial budgets, the Project Manager anticipates that the budgets for CIPs R2116 and P2508 are sufficient to support the Project.

Finance has determined that, under the current rate model, 100% of the funding will be available from the Betterment Fund.

**STRATEGIC GOAL:**

This Project supports the District's Mission statement, "To provide high value water and wastewater services to the customers of the Otay Water District in a professional, effective, and efficient manner" and the General Manager's Vision, "A District that is at the forefront in innovations to provide water services at affordable rates, with a reputation for outstanding customer service."

**LEGAL IMPACT:**

None.

JM/BK:jf

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Attachments:    Attachment A - Committee Action  
                  Attachment B - Budget Detail R2116  
                  Attachment C - Budget Detail P2508  
                  Exhibit A - Location Map



## ATTACHMENT A

<b>SUBJECT/PROJECT:</b> R2116-001102 & P2508- 001102	Award of a Construction Contract to Charles King Company, Inc. for the 14-Inch Force Main Rehabilitation Project
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### COMMITTEE ACTION:

The Engineering, Operations, and Water Resources Committee (Committee) reviewed this item at a meeting held on July 19, 2016, and the following comments were made:

- Staff recommended that the Board award a construction contract to Charles King Company, Inc., for the Ralph W. Chapman Water Recycling Facility (RWCWRF) 14-Inch Force Main Rehabilitation Project in an amount not-to-exceed \$1,101,250.
- Staff reviewed the information presented in the staff report, which included an analysis and bid process of the project.
- Staff stated that the District received two (2) bids on June 7, 2016, and indicated that both bids were deemed responsive. Charles King submitted the lowest, responsive bid.
- The Committee inquired if this project is connected to or will impact the Technical Note on Feasibility of Indirect Potable Reuse/Direct Potable Reuse (IPR/DPR) - Ralph W. Chapman Water Reclamation Facility Purification Plant to Sweetwater Reservoir. Staff stated no as the project is unrelated to the feasibility study of IPR/DPR.
- The Committee inquired about the location of the new and existing flow meters. Staff mentioned that the location of the new flow meter will be at the top of the hill where the 14-inch force main transitions to a 12-inch gravity main. The existing flow meter is located at the bottom of the hill, at the RWCWRF Plant. The two flow meters will be automatically compared to each other via SCADA to notify staff of any pipeline leaks and avoid spills into the Sweetwater River watershed.
- In response to a question from the Committee, staff stated that Pipeline Inspection & Condition Analysis (PICA) Corporation's

contract will include a \$35,000 deduction/adjustment once negotiations are completed.

Following the discussion, the Committee supported staffs' recommendation and presentation to the full board as a consent item.



## ATTACHMENT B – Budget Detail

<b>SUBJECT/PROJECT:</b> R2116-001102	Award of a Construction Contract to Charles King Company, Inc. for the 14-Inch Force Main Rehabilitation Project
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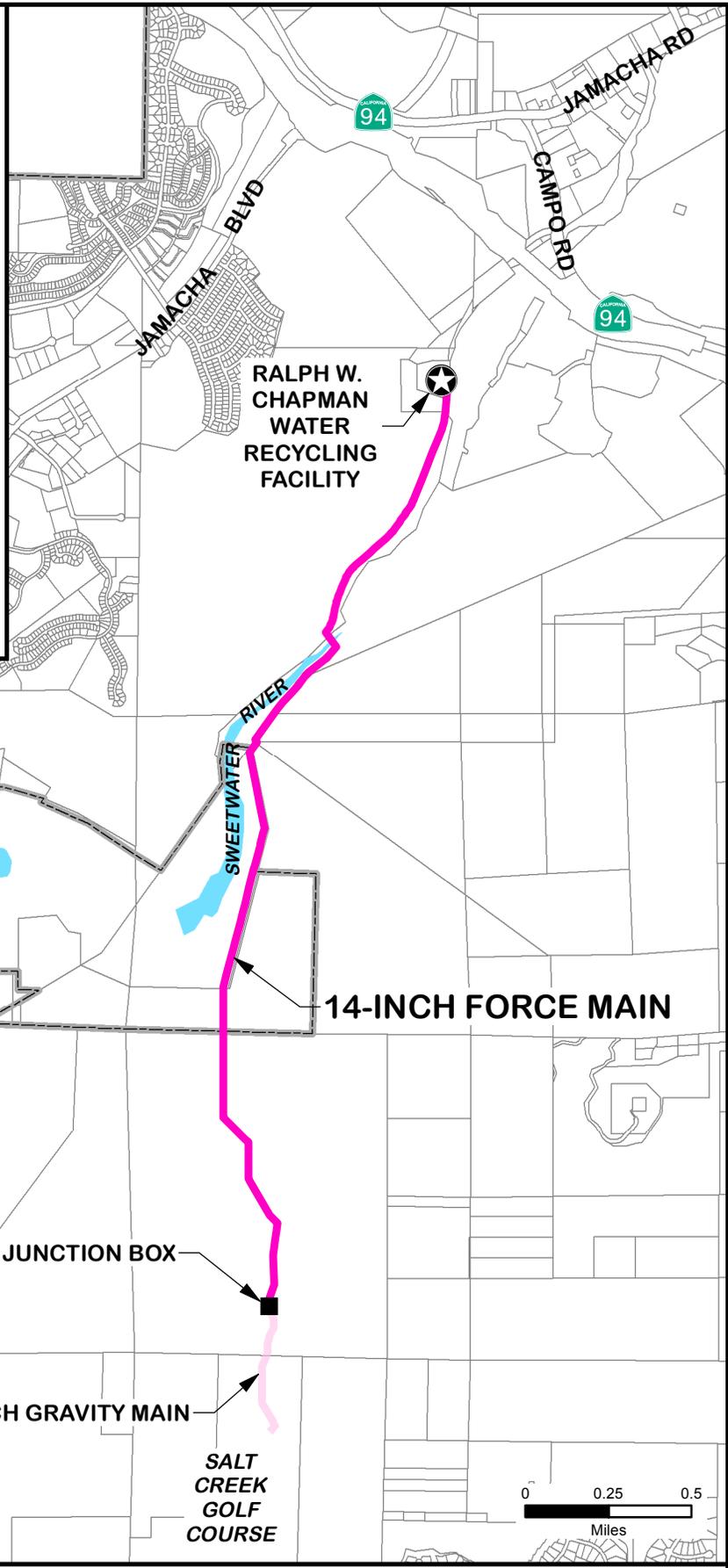
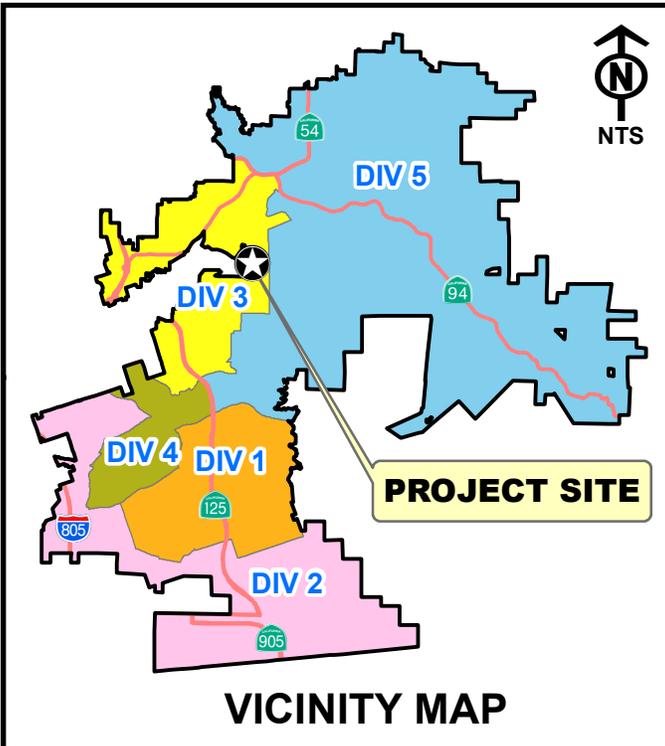
Otay Water District					Date Updated: 6/28/2016
R2116 - RecPL - 14-Inch, 927 Zone, Force Main Improvements					
Budget	Committed	Expenditures	Outstanding Commitment & Forecast	Projected Final Cost	Vendor/Comments
<b>2,500,000</b>					
<b>Planning</b>					
Consultant Contracts	76,785	76,785	-	76,785	ICF JONES & STOKES INC
	320,092	105,500	214,592	320,092	PICA PIPELINE INSPECTION
For Ops Only - Contracted Service	1,956	1,956	-	1,956	RICK POST WELD & WET TAPPING
Professional Legal Fees	680	680	-	680	STUTZ ARTIANO SHINOFF
Regulatory Agency Fees	200	200	-	200	CALIFORNIA REGIONAL WATER
	50	50	-	50	PETTY CASH CUSTODIAN
Service Contracts	525	525	-	525	DECISIVE TESTING
Standard Salaries	116,373	116,373	40,000	156,373	
<b>Total Planning</b>	<b>516,661</b>	<b>302,069</b>	<b>254,592</b>	<b>556,661</b>	
<b>Design</b>					
Consultant Contracts	3,768	3,768	-	3,768	HDR ENGINEERING INC
	7,968	7,968	-	7,968	AIRX UTILITY SURVEYORS INC
Service Contracts	377	377	-	377	THE SAN DIEGO UNION-TRIBUNE
	9,200	9,200	-	9,200	INLAND AERIAL SURVEYS INC
	152	152	-	152	SAN DIEGO DAILY TRANSCRIPT
	1,855	1,465	390	1,855	MAYER REPROGRAPHICS INC
Standard Salaries	112,827	112,827	40,000	152,827	
Supplier Contracts	16,709	16,558	151	16,709	SOUTHWEST VALVE & EQUIPMENT
<b>Total Design</b>	<b>152,856</b>	<b>152,315</b>	<b>40,541</b>	<b>192,856</b>	
<b>Construction</b>					
Consultant Contracts	4,000	-	4,000	4,000	DOWNSTREAM SERVICES INC
	10,270	10,270	-	10,270	ALYSON CONSULTING
Equipment Rental	90	90	-	90	TREBOR SHORING RENTALS
For Ops Only - Contracted Service	235	235	-	235	PENHALL COMPANY
	188	188	-	188	TC WELDING & ENGINEERIN
INFRASTRUCTURE EQUIPMENT	12,048	12,048	-	12,048	FERGUSON ENTERPRISES INC
	1,686	1,686	-	1,686	PACIFIC PIPELINE SUPPLY
	32	32	-	32	PB/DIXIELINE #12
	395	395	-	395	IN *AMERICAN HYDRAULIC CO
	1,575	1,575	-	1,575	RICK POST WELD & WET TAPPING
	570	570	-	570	SUPERIOR READY MIX LP
Standard Salaries	145,476	145,476	-	145,476	
Supplier Contracts	13,500	13,500	-	13,500	J&R CONCRETE PRODUCTS INC
	<b>867,450</b>	<b>-</b>	<b>867,450</b>	<b>867,450</b>	<b>Charles King Construction Contract</b>
			80,000	80,000	CM & Inspection
			50,000	50,000	Staff Time
			50,000	50,000	Contingency
			500,000	500,000	Future Spot Repairs Construction Contract
<b>Total Construction</b>	<b>1,057,514</b>	<b>186,064</b>	<b>1,551,450</b>	<b>1,737,514</b>	
<b>Grand Total</b>	<b>1,727,030</b>	<b>640,448</b>	<b>1,846,583</b>	<b>2,487,030</b>	



## ATTACHMENT C – Budget Detail

<b>SUBJECT/PROJECT:</b> P2508- 001102	Award of a Construction Contract to Charles King Company, Inc. for the 14-Inch Force Main Rehabilitation Project
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Otay Water District					Date Updated: 6/28/2016
p2508-Pipeline Cathodic Protection Repl Prog					
<i>Budget</i>	<i>Committed</i>	<i>Expenditures</i>	<i>Outstanding Commitment &amp; Forecast</i>	<i>Projected Final Cost</i>	<i>Vendor/Comments</i>
<b>725,000</b>					
<b>Planning</b>					
Consultant Contracts	17,733	17,733	-	17,733	HDR ENGINEERING INC
	13,382	13,382	-	13,382	ICF JONES & STOKES INC
Standard Salaries	86,207	86,207	-	86,207	
<b>Total Planning</b>	117,323	117,323	-	117,323	
<b>Design</b>					
Consultant Contracts	5,380	5,380	-	5,380	RFYEAGER ENGINEERING LLC
	49,789	49,789	-	49,789	HDR ENGINEERING INC
Standard Salaries	71,120	71,120	-	71,120	
<b>Total Design</b>	126,289	126,289	-	126,289	
<b>Construction</b>					
	233,800	-	233,800	233,800	Charles King Construction Contract
			20,000	20,000	CM & Inspection
			15,000	15,000	Staff Time
			10,000	10,000	Contingency
			200,000	200,000	Future CP Rehab Projects
<b>Total Construction</b>	233,800	-	478,800	478,800	
<b>Grand Total</b>	<b>477,411</b>	<b>243,611</b>	<b>478,800</b>	<b>722,411</b>	



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**OTAY WATER DISTRICT  
INSPECTION AND CONDITION ASSESSMENT  
OF THE RWCWRF 14-INCH FORCE MAIN**



# AGENDA ITEM 7b



## STAFF REPORT

TYPE MEETING:	Regular Board	MEETING DATE:	August 3, 2016		
SUBMITTED BY:	Kevin Cameron Associate Civil Engineer	PROJECT:	Various	DIV. NO.	All
	Bob Kennedy Engineering Manager				
APPROVED BY:	<input checked="" type="checkbox"/> Rod Posada, Chief, Engineering				
	<input checked="" type="checkbox"/> German Alvarez, Assistant General Manager				
	<input checked="" type="checkbox"/> Mark Watton, General Manager				
SUBJECT:	Award of As-Needed Electrical Engineering Design Services Contract for Fiscal Years 2017-2019				

### **GENERAL MANAGER'S RECOMMENDATION:**

That the Otay Water District (District) Board of Directors (Board) award an As-Needed Electrical Engineering Design Services contract and to authorize the General Manager to execute an agreement with BSE Engineering, Inc. (BSE Engineering) in an amount not-to-exceed \$125,000 for Fiscal Years 2017-2019 (ending June 30, 2019).

### **COMMITTEE ACTION:**

Please see Attachment A.

### **PURPOSE:**

To obtain Board authorization for the General Manager to enter into a professional As-Needed Electrical Engineering Design Services agreement with BSE Engineering in an amount not-to-exceed \$125,000 for Fiscal Years 2017-2019. The termination date for the professional services agreement will be June 30, 2019.

**ANALYSIS:**

The District will require the services of a professional electrical engineering consultant to provide electrical and instrumentation designs in support of CIP projects for Fiscal Years 2017 through 2019. It is more efficient and cost effective to issue an as-needed contract for the electrical engineering services which will provide the District with the ability to obtain consulting services in a timely and efficient manner. This concept has also been used in the past for other disciplines such as civil engineering, geotechnical, traffic, and environmental services.

The District will issue task orders to the consultant for specific projects during the contract period. The consultant will then prepare a detailed scope of work, schedule, and fee estimate for each task order assigned under the contract. Upon written task order authorization from the District, the consultant shall then proceed with the project as described in the scope of work.

The anticipated CIP projects that are estimated to require electrical engineering design services for Fiscal Years 2017-2019 are listed below:

<b>CIP</b>	<b>DESCRIPTION</b>	<b>ESTIMATED COST</b>
P2555	Administration and Operations Parking Lot Improvements	\$10,000
P2405/ P2554	624/340 PRSs at Energy Way/Nirvana Avenue and Heritage Road/Hard Rock Road	\$20,000
R2110	RecPS - 944-1 Optimization and Pressure Zone Modifications	\$10,000
R2117	RWCWRF Disinfection System Improvements	\$10,000
R2119	RWCWRF Automation & Security Upgrades	\$40,000
S2046	RWCWRF - Aeration Panels Replacement	\$10,000
	<b>TOTAL:</b>	<b>\$100,000</b>

The contract is for an amount not-to-exceed \$125,000 for all task orders. Fees for professional services will be charged to the CIP projects for which the electrical engineering design services are performed. Staff believes that a \$125,000 cap on the As-Needed Electrical Engineering Design Services contract is adequate, while still providing for any unanticipated work that may become necessary.

This As-Needed Electrical Engineering Design Services contract does not commit the District to any expenditure until a task order is approved to perform work on a CIP project. The District does not

guarantee work to the consultant, nor does the District guarantee that it will expend all of the funds authorized by the contract on professional services.

The District solicited electrical engineering design services by placing an advertisement on the Otay Water District's website and the San Diego Union Tribune on May 5, 2016. Six (6) firms submitted a letter of interest and a statement of qualifications. The Request for Proposal (RFP) for As-Needed Electrical Engineering Design Services was sent to all six (6) firms resulting in four (4) proposals received on June 9, 2016. They are as follows:

- BSE Engineering Inc. (San Diego , CA)
- Engineering Partners Inc. (San Diego, CA)
- GLUMAC (Irvine, CA)
- TTG (San Diego, CA)

Elen Consulting and Syska Hennessy Group chose not to propose.

In accordance with the District's Policy 21, staff evaluated and scored all written proposals. BSE Engineering received the highest score for their services based on their experience, understanding of the scope of work, proposed method to accomplish the work, and their composite hourly rate. BSE Engineering was the most qualified consultant with the best overall proposal. They are a highly rated company and are readily available to provide the services required. A summary of the complete evaluation is shown in Attachment B.

As the previous As-needed Electrical Engineering consultant, BSE Engineering has completed a number of successful District projects, including the Operations Parking Lot Extension Lighting (P2537) and the RAS Pumps Replacement at the R. W. Chapman Water Recycling Facility (R2111).

BSE Engineering submitted the Company Background Questionnaire, as required by the RFP, and staff did not find any significant issues. In addition, staff checked their references and performed an internet search on the company. Staff found the references to be excellent and did not find any outstanding issues with the internet search.

**FISCAL IMPACT:**             Joe Beachem, Chief Financial Officer

The funds for these contracts will be expended on a variety of projects, as previously noted above. These contracts are for as-needed professional services based on the District's need and schedule, and expenditures will not be made until a task order is

approved by the District for the consultant's services on a specific CIP project.

Based on a review of the financial budget, the Project Manager anticipates that the budgets will be sufficient to support the professional as-needed consulting services required for the CIP projects noted above.

The Finance Department has determined that the funds to cover these contracts will be available as budgeted for these projects.

**STRATEGIC GOAL:**

This Project supports the District's Mission statement, "To provide high value water and wastewater services to the customers of the Otay Water District in a professional, effective, and efficient manner" and the General Manager's Vision, "A District that is at the forefront in innovations to provide water services at affordable rates, with a reputation for outstanding customer service."

**LEGAL IMPACT:**

None.

KC/BK:jf

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Attachments: Attachment A - Committee Action  
Attachment B - Summary of Proposal Rankings



## ATTACHMENT A

<b>SUBJECT/PROJECT:</b> Various	Award of As-Needed Electrical Engineering Design Services Contract for Fiscal Years 2017-2019
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### COMMITTEE ACTION:

The Engineering, Operations, and Water Resources Committee (Committee) reviewed this item at a meeting held on July 19, 2016, and the following comments were made:

- Staff recommended that the Board award an As-Needed Electrical Engineering Design Services contract to BSE Engineering, Inc. (BSE Engineering) in an amount not-to-exceed \$125,000 for Fiscal Years 2017-2019 (ending June 30, 2019).
- It was highlighted that the As-Needed Electrical Engineering Design Services contract will provide the District with the ability to obtain consulting services in a timely and efficient manner on an as-needed basis.
- Page 2 of the staff report provides a list of the proposed CIP projects for As-Needed Electrical Engineering Services. Staff noted that \$25,000 is included in the contract amount for future unanticipated work.
- Staff discussed the selection process in accordance with District Policy 21 and indicated that BSE Engineering received the highest score from the panel based on experience, proposed method to accomplish the work, and composite hourly rate. The proposal rating details are provided on Attachment B of the staff report.
- In response to a question from the Committee, staff stated that according to the Company Background Questionnaire that BSE Engineering completed, the company has not changed their name in the past 10 years.
- The Committee inquired if the RWCWRF - Aeration Panels Replacement in the amount of \$10,000 included engineering of all

wiring for the project. Staff stated yes, any power or SCADA modifications.

- In response to a question from the Committee, staff stated that BSE Engineering's prior contract included a 2-year term and was extended twice (2 consecutive years) resulting in a total contract term of 4 years in an amount that did not exceed \$100,000. Staff is now recommending a 3-year contract in an amount not-to-exceed \$125,000. Staff may request the General Manager to extend the term of the contract in order to complete existing task orders, however, no additional funds will be added to the contract. Staff indicated that they have been happy with BSE Engineering's services.

Following the discussion, the Committee supported staffs' recommendation and presentation to the full board on the consent calendar.

**ATTACHMENT B  
SUMMARY OF PROPOSAL RANKINGS  
As-Needed Electrical Engineering Design Services**

		WRITTEN							REFERENCES	
MAXIMUM POINTS		Qualifications of Team	Responsiveness and Project Understanding	Technical and Management Approach	INDIVIDUAL SUBTOTAL - WRITTEN	AVERAGE SUBTOTAL - WRITTEN	Proposed Rates*	Consultant's Commitment to DBE		TOTAL SCORE
<b>MAXIMUM POINTS</b>		<b>30</b>	<b>25</b>	<b>30</b>	<b>85</b>	<b>85</b>	<b>15</b>	<b>Y/N</b>	<b>100</b>	<b>Poor/Good/Excellent</b>
<b>BSE Engineering</b>	<i>Bob Kennedy</i>	27	23	27	77	79	13	Y	92	EXCELLENT
	<i>Steve Beppler</i>	29	24	28	81					
	<i>Jeff Marchioro</i>	28	23	28	79					
	<i>Kent Payne</i>	28	24	27	79					
	<i>Don Anderson</i>	26	24	27	77					
<b>Engineering Partners, Inc</b>	<i>Bob Kennedy</i>	26	23	26	75	75	15	Y	90	
	<i>Steve Beppler</i>	27	23	26	76					
	<i>Jeff Marchioro</i>	27	23	26	76					
	<i>Kent Payne</i>	27	23	26	76					
	<i>Don Anderson</i>	24	23	24	71					
<b>GLUMAC</b>	<i>Bob Kennedy</i>	24	21	24	69	68	5	Y	73	
	<i>Steve Beppler</i>	25	18	24	67					
	<i>Jeff Marchioro</i>	25	18	23	66					
	<i>Kent Payne</i>	24	23	25	72					
	<i>Don Anderson</i>	24	21	21	66					
<b>TTG</b>	<i>Bob Kennedy</i>	23	21	23	67	68	1	Y	69	
	<i>Steve Beppler</i>	26	20	25	71					
	<i>Jeff Marchioro</i>	25	19	24	68					
	<i>Kent Payne</i>	23	22	25	70					
	<i>Don Anderson</i>	24	21	20	65					

RATES SCORING CHART				
Firm	BSE	EPI	GLUMAC	TTG
Fee	\$718	\$695	\$835	\$897
Score	13	15	5	1

Notes:

1. Review Panel does not see or consider proposed fee when scoring other categories. The proposed fee is scored by the PM, who is not on the Review Panel.
2. The fees were evaluated by comparing rates for six (6) positions. The sum of these rates are noted in the above table.

# AGENDA ITEM 7c



## STAFF REPORT

TYPE MEETING:	Regular Board	MEETING DATE:	August 3, 2016
SUBMITTED BY:	Dan Martin Engineering Manager	PROJECT NO:	D0966-090262 DIV. NO. 5
		FILE NO:	ENG70-10-145
APPROVED BY:	<input checked="" type="checkbox"/> Rod Posada, Chief, Engineering <input checked="" type="checkbox"/> German Alvarez, Assistant General Manager <input checked="" type="checkbox"/> Mark Watton, General Manager		
SUBJECT:	Adopt Resolution No. 4312 Approving the Sewer Annexation of Property Owned by Fred C. Sanders Jr. 2015 Revocable Trust to Otay Water District Improvement District No. 18 (APN 498-153-47-00, 11996 Paseo Fuerte, El Cajon, CA)		

### **GENERAL MANAGER'S RECOMMENDATION:**

Adopt Resolution No. 4312 approving the annexation of the property owned by The Fred C. Sanders Jr. 2015 Revocable Trust to Improvement District (ID) No. 18 (see Exhibit A for Location Map).

### **COMMITTEE ACTION:**

Please see Attachment A.

### **PURPOSE:**

The proposed annexation is to provide sewer service to the parcel located at 11996 Paseo Fuerte, El Cajon, in an unincorporated area of the County of San Diego California 92020 (APN 498-153-47-00).

### **ANALYSIS:**

A written request and Petition signed by Fred C. Sanders, has been received for annexation of APN 498-153-47-00, located at 11996 Paseo Fuerte, in the City of El Cajon and County of San

Diego, for sewer service. The total acreage to be annexed is 1.01 acres. The property is within the jurisdictional boundary of the Otay Water District and following the Board's approval, it will become part of ID No. 18.

The parcel contains an existing 8-inch Otay Water District sewer main located at the south east corner of the parcel within a 20-foot easement. This parcel is part of the District's Wastewater Master Plan.

**FISCAL IMPACT:**             Joe Beachem, Chief Financial Officer

The property owner will pay the District's annexation processing fee of \$776.30, sewer annexation fees (current fee is \$1,056.76 per EDU) and sewer capacity fees for parcels located outside the sewer ID (current fee is \$6,643.65) in effect at the time the sewer service is provided, and any additional fees, including the availability fee, as established in the attached Resolution No. 4312.

**STRATEGIC GOAL:**

Provide enhanced sewer service to meet customer needs.

**LEGAL IMPACT:**

No legal impact.

DM/RP:jf

P:\Public-s\Annexation Requests\2016\Sanders Sewer Annex Request - 11996 Paseo Fuerte d0966-090262\Staff Report Sewer Annexation ID 18- Sanders Sewer Annex Request - 1199\_djm.doc

Attachments: Attachment A - Committee Action  
Attachment B - Resolution No. 4312  
Exhibit A- Legal Description  
Exhibit B- Legal Map  
Exhibit A - Location Map



## ATTACHMENT A

<b>SUBJECT/PROJECT:</b> D0966-090262 ENG70-10-145	Adopt Resolution No. 4312 Approving the Sewer Annexation of Property Owned by Fred C. Sanders Jr. 2015 Revocable Trust to Otay Water District Improvement District No. 18 (APN 498-153-47-00, 11996 Paseo Fuerte, El Cajon, CA)
---	---

### COMMITTEE ACTION:

The Engineering, Operations, and Water Resources Committee (Committee) reviewed this item at a meeting held on July 19, 2016, and the following comments were made:

- Staff stated that the proposed annexation is to provide sewer service to the property owned by Fred C. Sanders Jr. 2015 Revocable Trust. The property is located in the unincorporated area of El Cajon, immediately west of the Superior Quarry along Jamacha Road.
- Staff indicated that the annexation area totals 1.01 acres and is located within the jurisdictional boundary of the District and it is proposed to become part of Improvement District (ID) 18 in accordance with Section 9 of the District's Code of Ordinances.
- It was discussed that on March 3, 2016, a written request was received from Mr. Fred Sanders on behalf of The Fred C. Sanders Jr. 2015 Revocable Trust for annexation of the parcel into the District's ID No. 18 for sewer service.
- Staff noted that the parcel contains the District's sewer main within an easement located in the south east corner. It was also noted that the sewer main is part of the Rancho San Diego Basin and a new sewer lateral will be required to connect to the system.
- The parcel will also be served with potable water from the District.
- Staff highlighted that as part of the proposed residential construction under permit with the County of San Diego, the County has required that the property be tied into the

District's sewer system. It was also highlighted that the parcel is part of the District's Wastewater Master Plan.

- In response to a question from the Committee, staff believes that the property owner plans to demolish the tennis court and building on the parcel in order to build a driveway access from the street.

Following the discussion, the Committee supported staffs' recommendation and presentation to the full board on the consent calendar.

RESOLUTION NO. 4312

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE OTAY WATER DISTRICT FIXING TERMS AND CONDITIONS FOR THE ANNEXATION OF CERTAIN REAL PROPERTY OWNED BY THE FRED C. SANDERS, JR. 2015 REVOCABLE TRUST, APN: 498-153-47-00 (11996 PASEO FUERTE, EL CAJON, CA), TO THE OTAY WATER DISTRICT'S IMPROVEMENT DISTRICT NO. 18 (FILE NO. ENG70-10-145/DIVISION 5)

WHEREAS, a letter has been submitted by THE FRED C. SANDERS, JR. 2015 REVOCABLE TRUST, the owner and party that has an interest in the land described in Exhibit "A," attached hereto, for annexation of said land to Otay Water District Sewer Improvement District No. 18 pursuant to California Water Code Section 72670 et seq.; and

WHEREAS, pursuant to Section 72680.1 of said Water Code, the Board of Directors may proceed and act thereon without notice and hearing.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE OTAY WATER DISTRICT FINDS, RESOLVES, ORDERS AND DETERMINES as follows:

1. A depiction of the area proposed to be annexed, and the boundaries of ID 18 following the annexation, is set forth on a map in Exhibit "B" filed with the Secretary of the District, which map shall govern for all details as to the area proposed to be annexed.

2. The purpose of the proposed annexation is to make sewer service available to the area to be annexed, which availability constitutes a benefit to said area.

3. The Board finds and determines that the area proposed to be annexed to ID 18 will be benefited by such annexation and that the property currently within ID 18 will also be benefited

and not injured by such annexation because after the annexation a larger tax base will be available to finance the sewer facilities and improvements of ID 18.

4. The Board of Directors hereby declares that the annexation of said property is subject to the owners complying with the following terms and conditions:

(a) The petitioner for said annexation shall pay to Otay Water District the following:

- (1) The annexation processing fee at the time of application;
- (2) State Board of Equalization filing fees in the amount of \$3,500;
- (3) The sewer annexation fees at the time of connection to the Otay Water District water system;
- (4) Yearly assessment fees will be collected through the County Tax Assessor's office in the amount of \$30 for APN 498-153-47-00;
- (5) In the event that sewer service is to be provided, Petitioners shall pay all applicable sewer fees per Equipment Dwelling Unit (EDU) at the time the sewer connection is purchased; and
- (6) Payment by the owner of APN 498-153-47-00 of all other applicable local or state agency fees or charges.

(b) The property to be annexed shall be subject to taxation after annexation thereof for the purposes of the improvement district, including the payment of principal and interest on bonds and other obligations of the improvement district, authorized and outstanding at the time of annexation, the same as if the annexed property had always been a part of the improvement district.

5. The Board hereby declares the property described in Exhibit "A" shall be considered annexed to ID 18 upon passage of this resolution.

6. The Board of Directors further finds and determines that there are no exchanges of property tax revenues to be made pursuant to California Revenue and Taxation Code Section 95 et seq., as a result of such annexation.

7. The annexation of APN 498-153-47-00 to the District's Sewer Improvement District 18 is hereby designated as the "11996 PASEO FUERTE, EL CAJON, CA SEWER ANNEXATION".

8. Pursuant to Section 57202(a) of the Government Code, the effective date of the 11996 PASEO FUERTE, EL CAJON, CA SEWER ANNEXATION shall be the date this Resolution is adopted by the Board of Directors of the Otay Water District.

9. The General Manager of the District and the Secretary of the District, or their respective designees, are hereby ordered to take all actions required to complete this annexation.

PASSED, APPROVED AND ADOPTED by the Board of Directors of the Otay Water District at a regular meeting held this 3<sup>rd</sup> day of August, 2016.

---

President

ATTEST:

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District Secretary

EXHIBIT "A"  
GEOGRAPHIC DESCRIPTION  
APN: 498-153-47  
ANNEXATION INTO OTAY WATER DISTRICT IMPROVEMENT DISTRICT NO. 18  
OTAY WATER DISTRICT

BEING A PORTION OF THE SOUTHWEST QUARTER OF SECTION 24, TOWNSHIP 16 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 24, TOWNSHIP 16 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE MERIDIAN; THENCE

COURSE 1. SOUTH 0°16'18" EAST 360.29 FEET TO THE NORTHEAST CORNER OF THAT CERTAIN PROPERTY RECORDED NOVEMBER 25, 1981, IN BOOK 1981 AS FILE/PAGE NUMBER 81-372415 OF OFFICIAL RECORDS OF SAN DIEGO COUNTY, SAID CORNER BEING THE TRUE POINT OF BEGINNING; THENCE ALONG THE BOUNDARY LINES OF SAID CERTAIN PROPERTY

COURSE 2. SOUTH 0°16'18" EAST 305.01 FEET, TO THE SOUTHEAST CORNER, THENCE

COURSE 3. SOUTH 88°32'16" WEST 135.63 FEET TO THE SOUTHWEST CORNER, THENCE

COURSE 4. NORTH 0°16'18' WEST 233.39 FEET TO AN ANGLE POINT, THENCE

COURSE 5. NORTH 70°42'19" WEST 103.46 FEET TO THE NORTHWEST CORNER, THENCE

COURSE 6. NORTH 77°31'45" EAST 70.00 FEET TO AN ANGLE POINT, THENCE

COURSE 7. NORTH 70°00'00" EAST 74.06 FEET TO AN ANGLE POINT, THENCE

COURSE 8. NORTH 89°43'42' EAST 94.96 FEET TO THE NORTHEAST CORNER OF SAID CERTAIN PROPERTY AND THE TRUE POINT OF BEGINNING.

CONTAINING 1.01 ACRES

VICTOR RODRIGUEZ-FERNANDEZ, LS 5335



DATED: MAY 24, 2016

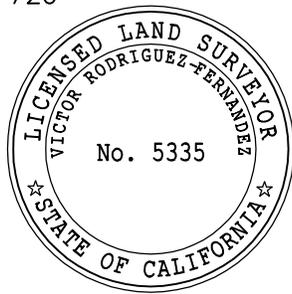
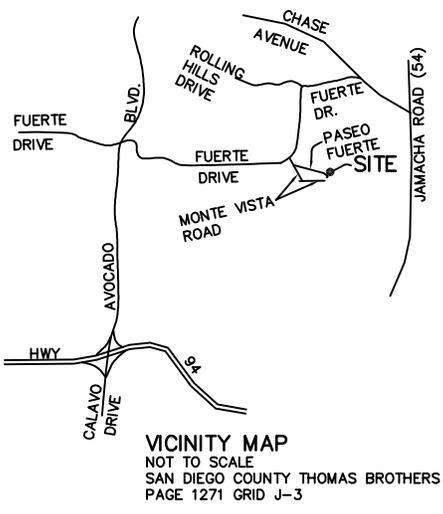
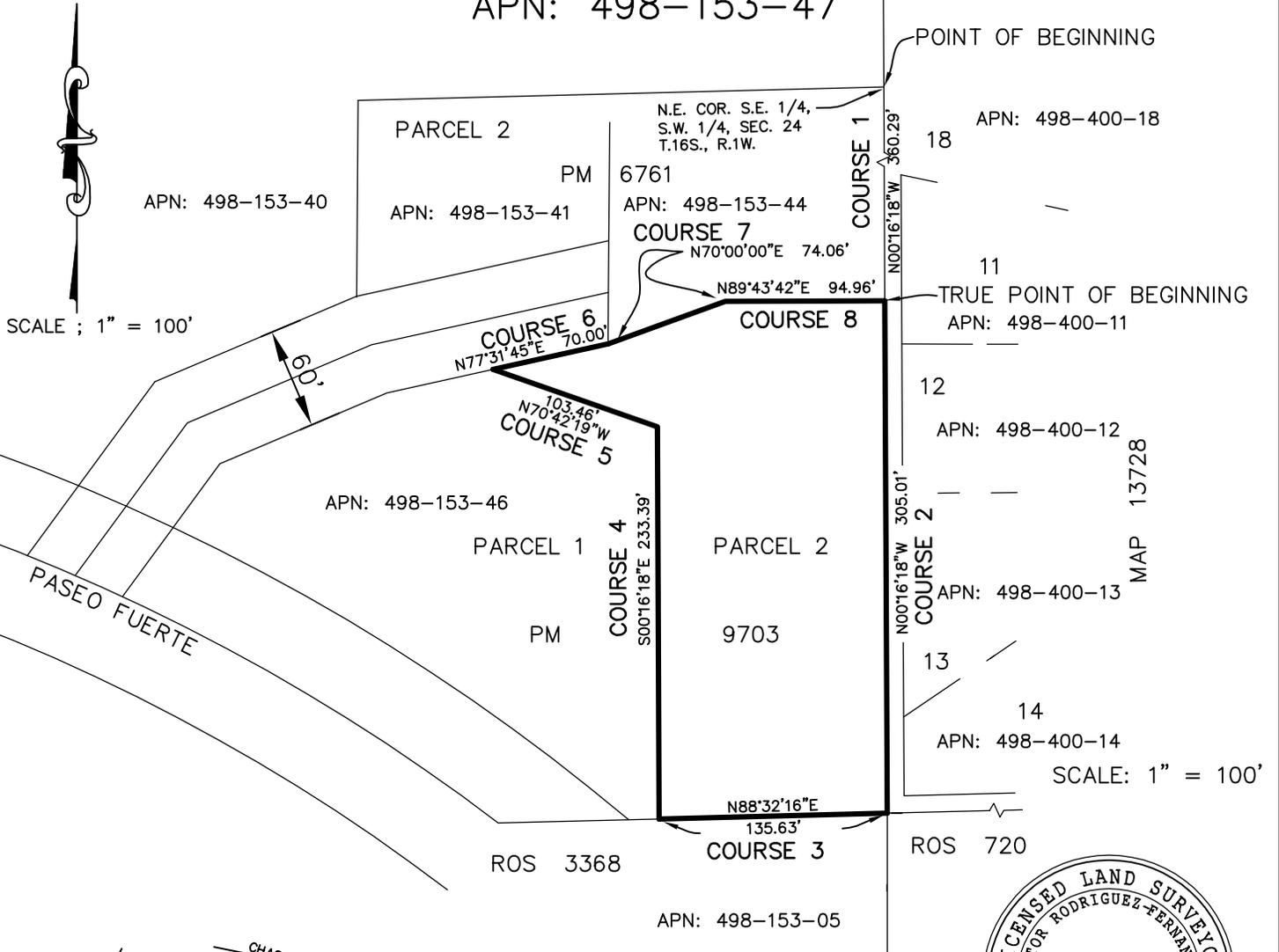
SEE ATTACHED EXHIBIT "B"

DISCALIMER: FOR ASSESSMENT PURPOSES ONLY. THE DESCRIPTION OF LAND IS NOT A LEGAL DESCRIPTION AS DEFINED BY THE SUBDIVISION MAP ACT AND MAY NOT BE USED AS A BASIS FOR AN OFFER FOR SALE OF THE LAND DESCRIBED.

# EXHIBIT "B"

ANNEXATION INTO OTAY WATER DISTRICT IMPROVEMENT DISTRICT NO. 18

APN: 498-153-47



BY: 

VICTOR RODRIGUEZ-FERNANDEZ LS 5335  
Expires 12-31-17

DISCLAIMER:  
FOR ASSESSMENT PURPOSES ONLY. THE DESCRIPTION OF LAND IS NOT A LEGAL DESCRIPTION AS DEFINED BY THE SUBDIVISION MAP ACT AND MAY NOT BE USED AS A BASIS FOR AN OFFER FOR SALE OF THE LAND DESCRIBED.



**EXHIBIT A**  
**11996 PASEO FUERTE,**  
**EL CAJON, CA 92020**  
**SEWER**  
**ANNEXATION**

**PROJECT#:** D0966-090262

**APN:** 498-153-47-00

**AREA:** 1.01 ACRES

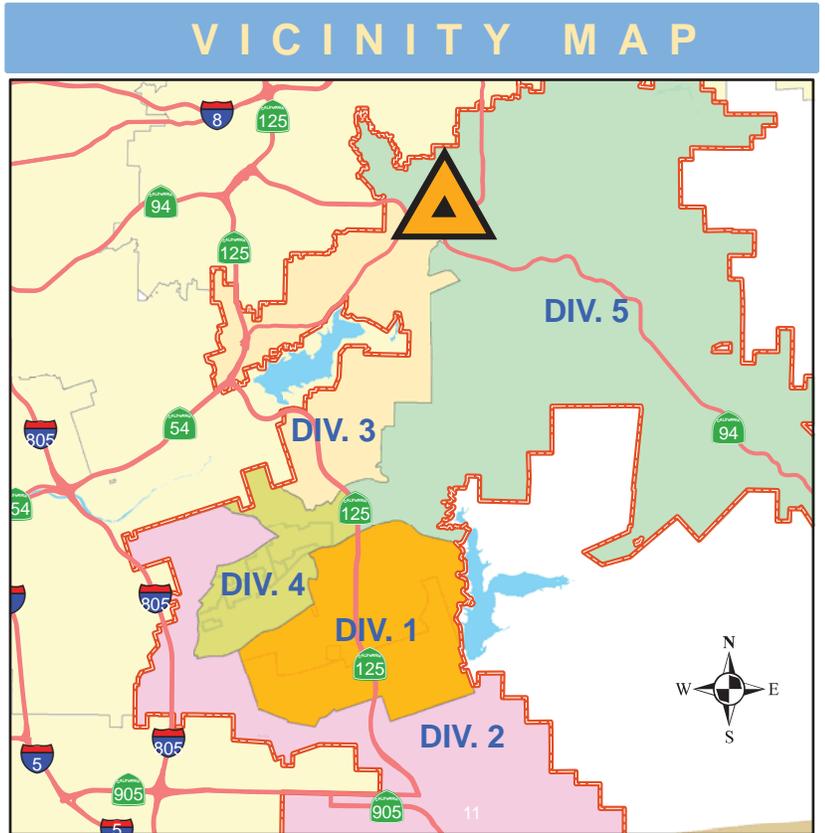
**ADDRESS:** 11996 PASEO FUERTE,  
EL CAJON, CA 92020

**OWNER:** THE FRED C. SANDERS, JR.  
2015 REVOCABLE TRUST

**DIR:** DIV. 5

**SEWER ID:** 18

**DATE:** 7/11/2016



**LOCATION MAP**





# AGENDA ITEM 8a

## STAFF REPORT

TYPE MEETING:	Regular Board Meeting	MEETING DATE:	August 3, 2016
SUBMITTED BY:	Mark Watton, General Manager	W.O./G.F. NO:	DIV. NO.
APPROVED BY:	<input checked="" type="checkbox"/> Susan Cruz, District Secretary <input checked="" type="checkbox"/> Mark Watton, General Manager		
SUBJECT:	Board of Directors 2016 Calendar of Meetings		

### **GENERAL MANAGER'S RECOMMENDATION:**

At the request of the Board, the attached Board of Director's meeting calendar for 2016 is being presented for discussion.

### **PURPOSE:**

This staff report is being presented to provide the Board the opportunity to review the 2016 Board of Director's meeting calendar and amend the schedule as needed.

### **COMMITTEE ACTION:**

N/A

### **ANALYSIS:**

The Board requested that this item be presented at each meeting so they may have an opportunity to review the Board meeting calendar schedule and amend it as needed.

### **STRATEGIC GOAL:**

N/A

### **FISCAL IMPACT:**

None.

### **LEGAL IMPACT:**

None.

Attachment: Calendar of Meetings for 2016

**Board of Directors, Workshops  
and Committee Meetings  
2016**

**Regular Board Meetings:**

January 6, 2016  
February 3, 2016  
March 2, 2016  
April 6, 2016  
May 4, 2016  
June 1, 2016  
July 6, 2016  
August 3, 2016  
**September 7, 2016**  
October 5, 2016  
November 2, 2016  
December 7, 2016

**Special Board or Committee Meetings (3<sup>rd</sup>  
Wednesday of Each Month or as Noted)**

January 20, 2016  
February 17, 2016  
March 16, 2016  
April 20, 2016  
May 18, 2016  
June 15, 2016  
July 20, 2016  
**August 23, 2016**  
September 21, 2016  
October 19, 2016  
November 16, 2016  
December 21, 2016

**SPECIAL BOARD MEETINGS:**

# AGENDA ITEM 9a



## STAFF REPORT

TYPE MEETING:	Regular Board	MEETING DATE:	August 3, 2016
SUBMITTED BY:	Stephen Beppler Senior Civil Engineer	PROJECT:	P1210- 005000
	Bob Kennedy Engineering Manager	DIV. NO.	ALL
APPROVED BY:	<input checked="" type="checkbox"/> Rod Posada, Chief, Engineering <input checked="" type="checkbox"/> German Alvarez, Assistant General Manager <input checked="" type="checkbox"/> Mark Watton, General Manager		
SUBJECT:	Informational Item - 2015 Integrated Water Resources Plan Update and Presentation		

### **GENERAL MANAGER'S RECOMMENDATION:**

No recommendation. This is an informational item only.

### **COMMITTEE ACTION:**

Please see Attachment A.

### **PURPOSE:**

To present to the Board of Directors (Board) the completed 2015 Integrated Water Resources Plan (IRP) Update (see Attachment C) that identifies and evaluates current and potential water supplies for the District.

### **ANALYSIS:**

The original Integrated Water Resources Plan (IRP) was presented to the Board on April 4, 2007. The plan identified potential potable water and recycled water supply sources required to serve our customers at build-out conditions. The Board awarded the professional services contract for the 2015 IRP Update to Carollo

Engineers on November 5, 2014. The purpose of the 2015 IRP Update is to incorporate the significant changes the District has experienced to water demands and reflect the investigations and implementations made into many of the short-term and long-term water supply recommendations identified in the plan.

The attached presentation (Attachment B) summarizes the most viable water supplies identified for future actions. The final 2015 IRP Update completed in June 2016 (Attachment C) is also attached.

**FISCAL IMPACT:**             Joe Beachem, Chief Financial Officer

No fiscal impact as this is an informational item only.

**STRATEGIC GOAL:**

This Project supports the District's Mission statement, "To provide high value water and wastewater services to the customers of the Otay Water District in a professional, effective, and efficient manner" and the General Manager's Vision, "A District that is at the forefront in innovations to provide water services at affordable rates, with a reputation for outstanding customer service."

**LEGAL IMPACT:**

None.

SB/BK:jf

P:\WORKING\CIP 00210 WMP & PEIR\Integrated Water Resources Plan\2015 IRP Update\Staff Report\BD 08-03-16 Staff Report - 2015 IRP Update Presentation (SB-BK).docx

Attachments:    Attachment A - Committee Action  
                  Attachment B - Presentation  
                  Attachment C - 2015 IRP Update



## ATTACHMENT A

<b>SUBJECT/PROJECT:</b> P1210-005000	Informational Item - 2015 Integrated Water Resources Plan Update and Presentation
---	---

### COMMITTEE ACTION:

The Engineering, Operations, and Water Resources Committee (Committee) reviewed this item at a meeting held on July 19, 2016, and the following comments were made:

- Staff indicated that a presentation of the District's Integrated Water Resource Plan (IWRP) was previously provided to the Board in March 2016.
- Staff provided a PowerPoint presentation that included updated information of the following:
  - Integrated Water Resources Plan's Objective and Purpose; staff noted that the purpose of the IWRP is to identify local water supplies that can provide high reliability with lower costs and provide some measure of rate stability.
  - Water Supply Opportunities include Conservation, Imported Water for Potable Use, Ocean Desalination, Groundwater, Indirect/Direct Potable Reuse Local Supply, and Recycled Water for Non-Potable Use.
- Staff stated that there is insufficient data at this time to recommend alternatives to pursue with commitments as many of the water supply opportunities are at their early stages of development. Staff will continue to monitor these water supply opportunities as they mature.
- The Committee inquired if the City of San Diego's Pure Water supply opportunity noted in the staff report needed to be discussed in closed session. Staff stated the report only includes information about supply opportunities and that there was nothing in the report that would lend itself to a closed session.

- Staff commented that the District continues to stay in close contact with the County Water Authority on planning documents to ensure the reliability of water supply and resources.
- In response to a question from the Committee, staff stated that the Rancho del Rey Groundwater supply opportunity continues to be dormant because it is not cost efficient for the District to operate it for only 600 AFY. The Groundwater continues to stay on the report as it is an alternative water supply.

Following the discussion, the Committee supported staffs' recommendation and presentation to the full board as an informational item.

# Integrated Water Resources Plan Update 2015



Otay Water District Board Presentation  
August 3, 2016

# Integrated Water Resources Plan Objective & Purpose

- *Objective*
  - *Update the 2007 IRP*
  - *Identify new sources of supply*
  - *Integrate water supplies with other District planning documents*
- *Purpose*
  - *Leverage District water supply options between dependency on SDCWA with expanding local water supplies that can provide high reliability with lower costs and rate stability*

# Water Supply Opportunities

- Conservation
  - 2015 was ~15,000 AFY < 2006 and ~5,000 AFY < 2013
- Imported Water for Potable Use
  - Cadiz Valley (5,000 AFY)
- Ocean Desalination
  - Rosarito Desal (20,000 AFY)
- Groundwater
  - Rancho del Rey (600 AFY) & Lot 7 (320 AFY)

# Water Supply Opportunities

- Indirect/Direct Potable Reuse Local Supply
  - Padre Dam MWD AWP
  - City of San Diego Pure Water
  - RWCWRF / Spring Valley AWP
- Recycled Water for Non-Potable Use
  - South Bay WRP Continuation and Expansion
  - Chula Vista / Spring Valley AWP

Insufficient data at this time to recommend which alternatives to pursue with commitments, will need to continue to monitor each for District opportunities

**Questions?**



OTAY WATER DISTRICT



# 2015 Integrated Water Resources **Plan Update**

FINAL | June 2016



Otay Water District

## 2015 INTEGRATED RESOURCES PLAN UPDATE



## ACKNOWLEDGEMENTS



Stephen Beppler, Senior Civil Engineer

Rod Posada, Chief, Engineering

Bob Kennedy, Engineering Manager



Inge Wiersema – Project Manager

Megan Brown – Project Engineer

Risa Guysi

Kevin Christensen

Stacy Fuller

Matthew Parrot

# Contents

## Executive Summary

### Section 1: Introduction

1.1 Project Background	1-1
1.1.1 District Service Area	1-1
1.1.2 District Land Use Characteristics	1-2
1.1.3 Population and Growth	1-2
1.1.4 Climate	1-2
1.1.5 District's Water Supply	1-2
1.2 Problem Statement	1-3
1.3 Purpose of the Integrated Water Resources Plan	1-3

### Section 2: Existing Water Supply

2.1 Water Supply Systems	2-1
2.2 Potable Water Supply Delivery	2-2
2.2.1 North System	2-2
2.2.2 Central Area System	2-3
2.2.3 Otay Mesa System	2-3
2.3 Recycled Water Supply Delivery	2-3
2.4 Emergency Supply Deliveries	2-3
2.5 Potable Water Supply	2-4
2.5.1 San Diego County Water Authority Imported Supply	2-4
2.5.2 City of San Diego's Otay WTP	2-5
2.5.3 Helix Water District's Levy WTP	2-5
2.5.4 Ralph W. Chapman WRF	2-5
2.5.5 City of San Diego South Bay WRP	2-6
2.6 Summary of Existing Supply	2-6

### Section 3: Projected Water Supply GAP

3.1 Future Water Demands	3-1
3.1.1 Annual Average Demand Projections	3-1
3.1.2 Weather Impacts and Peaking	3-3
3.2 Supply Gap Analysis	3-5

## Section 4: Water Supply Projects

4.1 Water Conservation	4-3
4.2 Groundwater Projects	4-3
4.2.1 Middle Sweetwater Conjunctive Use	4-4
4.2.2 Lower Sweetwater Brackish Groundwater Demineralization	4-6
4.2.3 Santee/El Monte Basin	4-7
4.2.4 San Diego Formation Brackish Groundwater Demineralization	4-9
4.2.5 Rancho Del Rey Well	4-10
4.2.6 Lot 7 Well	4-11
4.2.7 Other Groundwater Wells	4-11
4.3 Imported Raw Water for Potable Use (Cadiz Project)	4-11
4.4 Indirect/Direct Potable Reuse with Local Supply	4-12
4.4.1 Partnership with PDMWD’s Advanced Water Purification Project	4-12
4.4.2 Advanced Water Purification at RWCWRF or Spring Valley Stripping Plant	4-14
4.4.3 Pure Water San Diego Program	4-14
4.5 Ocean Desalination	4-14
4.5.1 Rosarito Desalination Plant	4-15
4.6 Recycled Water For Non-Potable Use	4-16
4.6.1 Chula Vista Stripping Plant	4-16
4.6.2 Additional Purchases from and Expansion of South Bay WRP	4-17
4.7 Recommended Water Supply Options	4-17

## Appendices

Appendix A     References

## Tables

Table ES.1 Water Facility Capacities and Agreements	ES-2
Table ES.2 2015 IRP Recommended Water Supply Projects	ES-4
Table 2.1 Water Facility Capacities and Agreements	2-6
Table 3.1 Potable and Recycled Water Demand Projections	3-1
Table 3.2 Projected Demand Distributions by System for Potable Water	3-3
Table 3.3 Projected Monthly Potable Water Peaking Factors	3-4

## Figures

Figure ES.1 Otay Water District Service Area	ES-1
Figure 1.1 Otay Water District Service Area	1-1
Figure 2.1 North, Central Area, and Otay Mesa Systems	2-1
Figure 2.2 Baseline System Schematic	2-2
Figure 2.3 SDCWA Supply Diversification	2-4
Figure 3.1 Historical and Projected Potable Water Demands (AFY)	3-2
Figure 3.2 Otay Water District Projected Annual Demands	3-3
Figure 3.3 Monthly Seasonal Recycled Demand Factors	3-5
Figure 3.4 Projected Baseline Supply Mix over Time	3-5
Figure 4.1 Supply Project Locations	4-2
Figure 4.2 SDCWA High-Low Rate Forecast	4-2
Figure 4.3 Residential Per Capita Water Usage	4-3
Figure 4.4 OWD Groundwater Basin Study Area	4-4
Figure 4.5 Middle Sweetwater Conjunctive Use Project Schematic	4-5
Figure 4.6 Lower Sweetwater Brackish Groundwater Demineralization Project Schematic	4-6
Figure 4.7 Santee/El Monte Conjunctive Use Project Schematic	4-7
Figure 4.8 Santee/El Monte Brackish Groundwater Demineralization Project Schematic	4-8
Figure 4.9 San Diego Formation Brackish Groundwater Desalination Project Schematic	4-9
Figure 4.10 Cadiz Project Schematic: Imported Raw Water for Potable Use	4-12
Figure 4.11 Proposed Advanced Water Purification Infrastructure	4-13
Figure 4.12 Santee Groundwater Recharge Program Concept	4-13
Figure 4.13 Proposed Route for Desalination Pipeline	4-16

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## Abbreviations

AECOM	AECOM Technical Services, Inc.
AFY	acre-feet per year
AWP	advanced water purification
AWPF	advanced water purification facility
AWTP	advanced water treatment plant
CEA	Comisión Estatal del Agua de Baja California
cfs	cubic feet per second
CILA	Comisión Internacional de Limites y Agua
CRA	Colorado River Aqueduct
DPR	direct potable reuse
ECRWIP	East County Regional Treated Water Improvement Program
ESP	Emergency Storage Project
FCF	flow control facilities
gpcd	gallons per capita per day
HWD	Helix Water District
IBWC	International Boundary and Water Commission
IPR	indirect potable reuse
IPR/DPR	Indirect/Direct Potable Reuse
IRP	Integrated Water Resources Plan
LSME	La Mesa Sweetwater Extension
MCL	maximum contaminant level
METRO	City of San Diego's Metropolitan Sewerage System
mgd	million gallons per day
MWD	Municipal Water District of Southern California
OWD	Otay Water District
PDMWD	Padre Dam Municipal Water District
RO	reverse osmosis
RSWRF	Ray Stoyer Water Reclamation Facility
RWCWRF	Ralph W. Chapman Water Reclamation Facility
SBWRP	South Bay Water Reclamation Plant
SDCWA	San Diego County Water Authority

SIDUE	Secretaria de Infraestructura y Desarrollo Urbano del Estado
SPI	Separation Processes, Inc.
SWP	State Water Project
TDS	total dissolved solids
UWMP	Urban Water Management Plan
WFMP	Water Facilities Master Plan
WRF	water recycling facility
WTP	Water Treatment Plant

## EXECUTIVE SUMMARY

### Background

The Otay Water District (OWD) provides potable water, recycled water, and sewer service to approximately 217,000 customers within 125.5 square miles of southeastern San Diego County. Figure ES.1 provides a map of the area serviced by OWD, including Bonita, Chula Vista, Eastlake, El Cajon, Jamul, La Mesa, Otay Mesa, Rancho San Diego, and Spring Valley.



Figure ES.1 Otay Water District Service Area

The region experiences minimal precipitation to provide local water sources and depends on imported water to meet the potable and non-potable demands. The majority of imported water is supplied by the State Water Project (SWP) and the Colorado River Aqueduct (CRA) purchased through the Municipal Water District of Southern California (MWD) and San Diego County Water Authority (SDCWA).

This dependence on imported water poses challenges to meet water demands reliably and cost-effectively in the coming years. The continuing drought in the region has adversely affected the reliability of imported water supplies and created a need to examine potential future supply options. The uncertainty of available imported water supplies due to drought, or emergency seismic conditions, as well as the rising costs of imported water, the OWD is moving towards less

dependence on imported water and need to examine a wide variety of supply options that will best diversify the supply portfolio to meet changing conditions in the future.

This 2015 update to the 2007 Integrated Water Resources Plan (IRP) serves to examine alternative supply options and their potential to meet the needs of the OWD under a wide variety of future conditions through 2040.

**Introduction**

Several factors contribute to the need for increased local water supplies. The population that the OWD serves is estimated to increase from approximately 217,000 in 2015 to 307,877 by 2050. The average annual rainfall is near 10 inches but prolonged drought conditions have resulted in consecutive years of less than normal precipitation affecting the groundwater available locally and from the SWP and the CRA.

The OWD currently relies on imported water to meet all of its potable and some of its non-potable demands. This reliance translates to a greater risk from drought and seismic events that can affect the availability of imported water. The development of local water sources to meet the long-term demands of a growing population is required to reduce dependence on water supplies with uncertain futures.

**Existing Water Supply**

The OWD is separated into three service systems, the North, Central, and Otay Mesa Systems. The potable water supply is supplied to all systems by imported water sources. The SDCWA provides water through Pipeline #4 and the Helix Water District's (HWD) Levy WTP. Recycled water is only delivered to the Central Area System following treatment at the Ralph W. Chapman Water Reclamation Facility (RWCWRF) and the South Bay Water Reclamation Plant (SBWRP).

Table ES.1 provides the water facility capacities and agreements in place for the 2015 IRP Update.

Table ES.1 Water Facility Capacities and Agreements

Supply Source	Baseline Capacity <sup>(1)</sup>	Notes
<b>Imported</b>		
SDCWA's treated water through Pipeline # 4	121.5 mgd	[Capacity]
City of San Diego's Otay WTP	10 mgd	[Agreement]
Helix's Levy WTP	12 mgd On-Peak, 16 mgd Off-Peak	[Agreement]
<b>Total Imported Supply</b>	<b>143.5 - 147.5 mgd</b>	
<b>Recycled</b>		
OWD's Ralph W. Chapman WRF	1.3 mgd	[Capacity]
City of San Diego's South Bay WRP	6 mgd	[Agreement]
<b>Total Recycled Supply</b>	<b>7.3 mgd</b>	

Note:

(1) Data from OWD Water Resource Master Plan, May 2013

## Projected Water Supply Gap

The OWD historical demands were evaluated to determine the water demand forecast. The projected demands for the 2015 IRP are significantly lower for 2050 than projected in prior reports. This decrease is a result of reduction in growth projections, drought tolerant landscaping trends, and water conservation by OWD customers.

Per the 2015 WFMP, the current demand of 37,000 acre-feet per year (AFY) is anticipated to increase to approximately 52,000 AFY by 2050. There is no potable water supply gap if all future demands are met through the purchase of SDCWA imported water. The continued reliability of these supplies remains uncertain. The seasonal variations affecting the demands for recycled water create a supply gap during the summer months. Production limits at SBWRP are inadequate to offset this gap even with over 40 MG of recycled water storage.

## Water Supply Projects

The OWD objectives for this IRP update place an emphasis on reliability, flexibility, and diversity which can be met by development of additional water supplies in an effort to reduce dependence on imported water.

Projects include conservation, groundwater, imported water for potable use, Indirect/Direct Potable Reuse (IPR/DPR), potable water treatment options, ocean desalination, and recycled water for non-potable use. The projects are described in detail in Section 4 and are evaluated based on their potential to further the mission statement of OWD:

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*"To provide high value water and wastewater services to the customers of the Otay Water District, in a professional, effective, and efficient manner"*  
(Otay, 2015).

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Table ES.2 provides recommended water supply projects that will contribute to the long-term goals of the OWD in moving away from reliance on imported water.

Table ES.2 2015 IRP Recommended Water Supply Projects

Source Type	Supply Project	Description
IPR/DPR with Local Supply	PDMWD's Advanced Water Purification Project	Contribute funds for construction of AWWP
	Advanced Purification at RWCWRF or Spring Valley Plant	Upgrade RWCWRF to advanced purification facility or construct a new AWWP where more sewer flows are available, augment supplies in Sweetwater Reservoir
	City of San Diego's Pure Water Program	Contribute to AWWP at South Bay WRP that would augment water supplies in Otay Reservoir
Ocean Desalination	Rosarito Desalination Project	Purchase water from Rosarito's planned ocean desalination plant
Imported Water for Potable Use	Cadiz Water Conservation, Recovery, and Storage	Purchase 5,000 AFY from Cadiz Valley
Groundwater	Rancho del Rey Well	Produce up to 600 AFY (requires treatment and brine disposal)
	Lot 7 Well	Produce up to 320 AFY (requires treatment and brine disposal)
Recycled Water for Non-potable Use	City of San Diego's South Bay WRP	Increase amount of recycled water purchased at SBWRP
	Chula Vista MBR	Joint City of Chula Vista/OWD tertiary treatment facility to produce Title 22 recycled water

## Section 1

# INTRODUCTION

### 1.1 Project Background

The primary purpose of an IRP is to identify and conceptually develop a diverse range of water supply projects to meet long range water supply needs. This IRP is an update of the 2007 IRP and begins with a presentation of the OWD service area and existing supply and demand characteristics. Demand projections from the 2015 Water Facilities Master Plan (WFMP) through planning year 2050 were utilized to identify the future water supply gap. The results of exploring the various supply options recommended in the 2007 IRP are reflected herein. Potential water supply sources were updated and new sources were identified to meet OWD established planning objectives. The OWD objectives for this IRP place emphasis on reliability, flexibility, affordability, and diversity aimed at decreasing dependence on imported SDCWA supplies.

#### 1.1.1 District Service Area

The OWD is located within San Diego County, east of the City of San Diego on the U.S. – Mexican border in Southern California. The OWD has a service area of 126 square miles. The OWD provides water and wastewater service to parts of the following communities: Chula Vista, Eastlake, Jamul, Otay Mesa, Rancho San Diego, La Presa, and Spring Valley. Figure 1.1 shows the OWD service area.



Figure 1.1 Otay Water District Service Area

### 1.1.2 District Land Use Characteristics

According to OWD's 2015 WFMP, approximately 64 percent of OWD's customers are single-family residences, while much of the anticipated development will be both single and multifamily residential. The relative composition of OWD's customers is expected to remain constant, since the commercial, industrial, and institutional sectors will grow proportionally in order to support the residential development.

### 1.1.3 Population and Growth

The OWD was formed in 1956 by local residents and landowners in response to the need to address declining quality and quantity of water supplies in the arid region of San Diego County. Since that time, OWD has been managing water and wastewater services to meet the needs of its growing population of customers.

OWD provides potable water, recycled water, and sewer service to approximately 217,000 residents within its service area (Otay, 2015). The 2015 WFMP estimates that the population served by OWD in the year 2050 will be approximately 307,877.

The long term population growth rate has historically been about 3 percent per year. However in recent years, growth has occurred at a reduced rate due to the downturn in the economy. The updated SANDAG forecast shows a long term growth rate of 1 to 1.5 percent per year through 2050. Growth is expected to slow as the availability of developable land decreases over time.

### 1.1.4 Climate

The climate in San Diego County is characterized as Mediterranean, with mild temperatures and low annual rainfall. Temperatures are mild on the pacific coast year-round, and tend to be slightly more extreme inland at OWD – with warmer temperatures in the summer and cooler temperatures in the winter. Average annual rainfall for OWD is approximately 10 inches.

### 1.1.5 District's Water Supply

The OWD is a member agency of the SDCWA, which is in turn a member of the MWD, the regional water wholesaler for Southern California, providing supplemental water to over 17 million people in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. Together, SDCWA and MWD provide imported water from Northern California and the Colorado River to their member agencies throughout Southern California. MWD augments its imported water supplies with water transfers and groundwater banking programs. SDCWA augments its imported water supplies with water transfers, seawater desalination, additional water transfers, and groundwater programs.

Currently, the OWD relies on imported water to meet all of its potable water demands and some of its non-potable demands. This imported supply is delivered both treated and untreated (raw) through the SDCWA aqueducts. The raw water is treated at either MWD's R.A. Skinner WTP, SDCWA's Twin Oaks Valley WTP, or HWD R.M. Levy WTP. The treated water is provided through agreements with neighboring water agencies and delivered to the OWD.

#### 1.1.5.1 Water Supply Reliability

Because the OWD relies on imported water to meet a large portion of its water demands, it has greater risk in terms of potential droughts and seismic events that could reduce or terminate the amount of imported water available. Although both SDCWA and MWD have long-range water

supply plans that indicate they will be able to meet full-service water demands of their member water agencies through 2040, these plans make a number of assumptions.

In 2016, MWD released its update to its 2010 IRP. This 2015 IRP update concluded that the existing supplies and storage resources are insufficient to meet future demands through 2040 without new investment. The 2010 MWD IRP update stated that MWD has enough water to meet full service demands through 2025. However, many of MWD's assumptions have been invalidated by the unprecedented drought.

Eight of the ten years from 2006 to 2015 saw runoff levels of below normal, dry, or critically dry conditions. The drought has affected the reliability of imported water from the SWP and the CRA. Groundwater levels are also lower than projected due to the drought, with groundwater recharge unable to keep up with pumping.

While the latest update projects that future demands will be lower than expected due to slower than predicted population growth and continued conservation, the supply is not as robust as estimated in the 2010 MWD IRP. The difficulty in predicting future hydrology increases the need for diverse and flexible resources to ensure performance under a wide range of future conditions.

Therefore, it is prudent for OWD to explore development of local water sources as a way to hedge against the supply risk for imported water. In addition to reducing reliance on imported water, local waters supplies may be more cost-effective long term. This is especially important because imported water costs are expected to increase significantly due to the investments being made by MWD and SDCWA to improve supply reliability.

## 1.2 Problem Statement

Given the uncertainties surrounding imported water supplies as a result of potential on-going drought shortages, or emergency seismic conditions, as well as the rising costs of imported water, the reliance of OWD on imported water as their main supply source potentially poses challenges to fulfilling their organizational mission statement as stated below:

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*"To provide high value water and wastewater services to the customers of the Otay Water District, in a professional, effective, and efficient manner"  
(Otay, 2015).*

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The OWD, like many similar agencies in Southern California, is looking to reduce their dependence on imported water, and in doing so, to reduce operational costs and provide greater local control over their water resources and water management systems. To do this, OWD needs to evaluate a number of supply options and define the best supply portfolio for the future.

## 1.3 Purpose of the Integrated Water Resources Plan

This IRP developed for the OWD is intended to provide a flexible, long-term strategy for the evaluation and implementation of water supply alternatives, management, and inter-agency agreements needed to expand and operate the OWD water system consistent with the OWD's mission and values. The 2015 IRP Update provides an overview of water supply alternatives identified in the 2007 IRP and presents findings from recent studies on some of the alternatives

previously identified. New supply alternatives will also be summarized and ultimately, the 2015 IRP provides recommendations for future studies and evaluations of preferred water supply alternatives.

An IRP involves the identification of the values and objectives of an organization, and then looks at possible supply-side and demand-side water management options in a consensus-building process to develop a comprehensive plan to meet the defined objectives. The result is a defensible plan for the future development and management of the OWD that considers important objectives such as reliability, environmental protection, and water quality and that provides flexibility for changes and adaptation in the future.

In previous IRP updates, supply options were grouped into portfolios for evaluation against the objectives through specific performance measures. The portfolios were evaluated using commercial software that used models to simulate water demands and supplies under different hydrologic and operating scenarios, converting raw performance into standardized scores in order to rank portfolios. The IRP planning team used this process to determine the top performing portfolios.

The grouping of supply options into portfolios was not used in this IRP update. Supply options were instead evaluated individually for their ability to meet the OWD long term water management objectives.

## Section 2

# EXISTING WATER SUPPLY

Supply for OWD primarily comes from imported water provided by the SDCWA. Currently, OWD does not use any other local water sources, such as groundwater or seawater, to meet potable customer demands. Recycled water is supplied from OWD's RWCWRF and from the City of San Diego's SBWRP.

### 2.1 Water Supply Systems

The OWD service area is considered to be divided into three systems: North, Central Area, and Otay Mesa. As shown on Figure 2.1, these systems are geographically separated and operationally distinct. Each system receives imported water from one or more flow control facilities (FCF) on the SDCWA aqueduct. Each has its own storage and pumping facilities, as well as its own demands to serve.

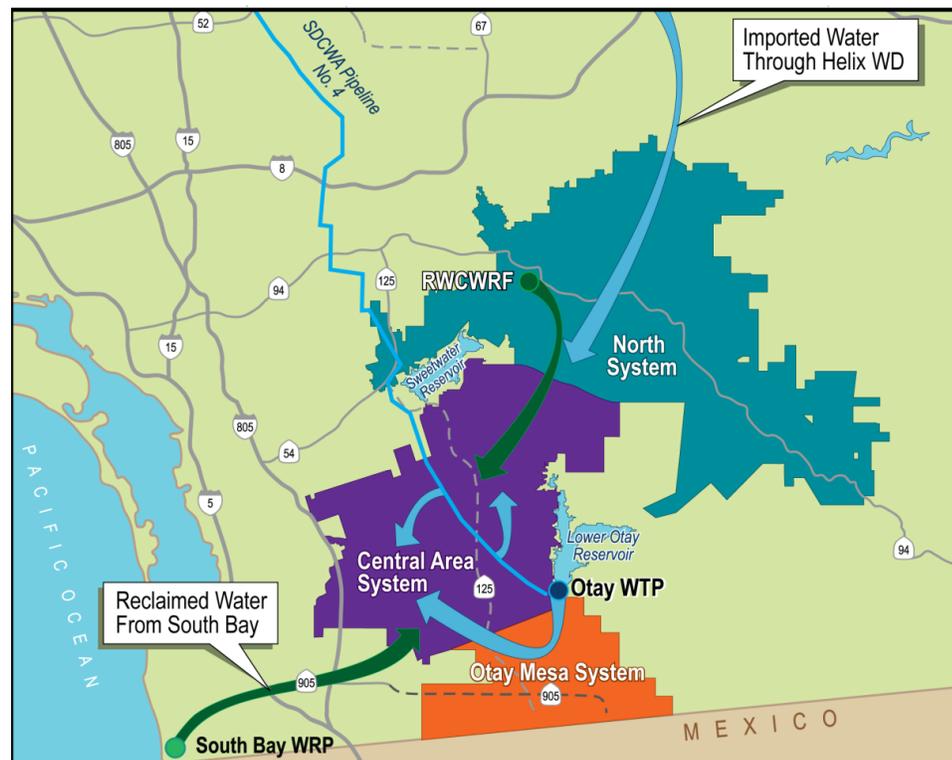


Figure 2.1 North, Central Area, and Otay Mesa Systems

The OWD service area is divided into five subsystems. These systems are known as La Presa System, the Regulatory System, the Hillsdale System, the Central Area System, and the Otay Mesa System. La Presa, Regulatory, and Hillsdale systems are grouped together into what is

known as the North District. The Central Area and Otay Mesa systems make up the South District.

A schematic of the entire OWD system is shown on Figure 2.2. This schematic represents the major water facilities and conveyance infrastructure from the source to system demands. For purposes of the IRP, details of the facilities associated with the distribution system are not shown on this schematic.

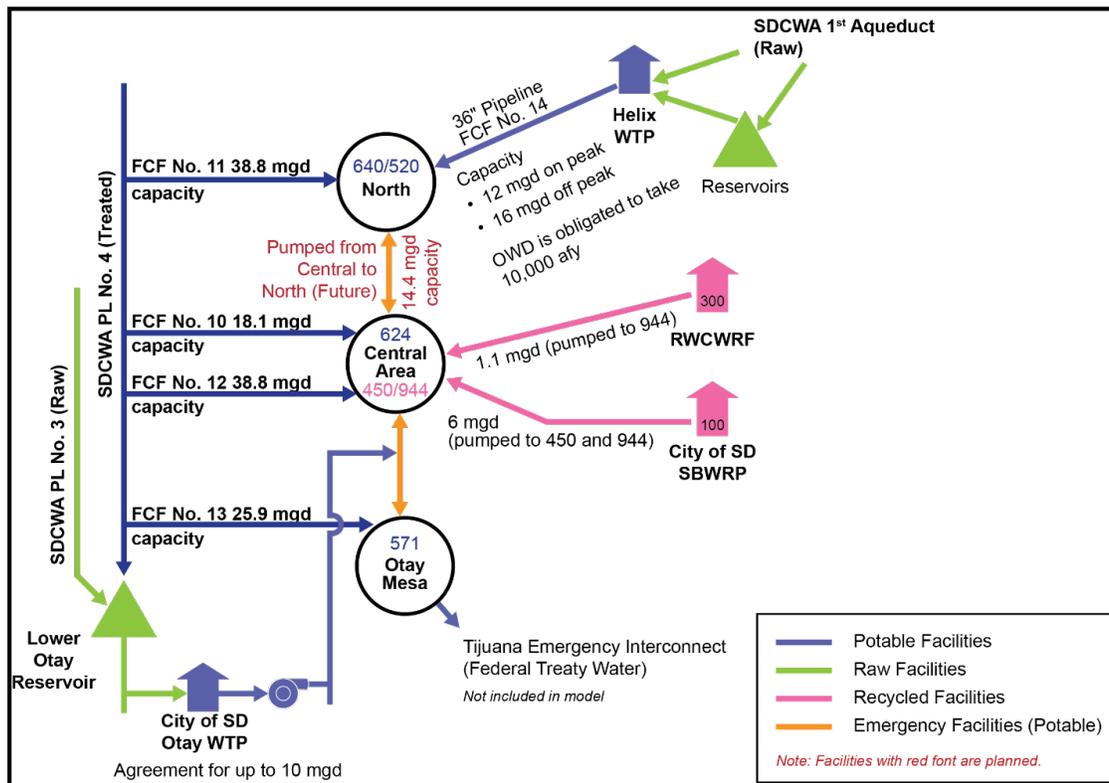


Figure 2.2 Baseline System Schematic

## 2.2 Potable Water Supply Delivery

### 2.2.1 North System

The North System primarily receives treated water from Helix Water District's Levy Water Treatment Plant. The water is supplied through a 36-inch diameter water transmission main with a total conveyance capacity of 16 mgd. The District's agreement with Helix Water District and SDCWA is for a water supply delivery of 12 mgd on-peak and 16 mgd off-peak.

In addition to receiving treated water from Helix Water District, the North System can use FCF No. 11 to divert a supplemental supply of water by gravity from SDCWA Pipeline No. 4 to the 640 and 520 reservoirs. Water then flows by gravity or is pumped from the reservoirs to La Presa, the Regulatory, and the Hillsdale systems of the service area. Flow Control Facility No. 11 has a meter capacity of 38.8 million gallons per day (mgd), or 60 cubic feet per second (cfs).

### 2.2.2 Central Area System

The Central Area System receives treated water from FCF No. 10 and FCF No. 12 on Pipeline No. 4 which is delivered to the 624 reservoirs. FCF No. 10 has a capacity of 18.1 mgd (or 28 cfs), and FCF No. 12 has a capacity of 38.8 mgd (or 60 cfs).

In addition, water treated at the City of San Diego's Otay WTP can be delivered to the Central Area System. OWD has an agreement with the City of San Diego to treat 10 mgd of raw water purchased from the SDCWA at the Otay WTP. This agreement is discussed in more detail later in this section.

### 2.2.3 Otay Mesa System

The Otay Mesa System receives treated imported water from FCF No. 13 on Pipeline No. 4. This water flows by gravity into the 571 storage reservoir from which it is pumped to reservoirs at a higher elevation to serve water demands. FCF No. 13 has a capacity of 25.9 mgd (or 40 cfs).

Similar to the Central Area System, the Otay Mesa System can also receive water treated at the City of San Diego's Otay WTP.

## 2.3 Recycled Water Supply Delivery

In addition to the potable water infrastructure described above, recycled water supplies are also delivered to the Central Area through pipelines from the RWCWRF and the SBWRP. The recycled water system is also shown on the schematic in Figure 2.2. Currently there is no system for recycled water in the North System and Otay Mesa System.

## 2.4 Emergency Supply Deliveries

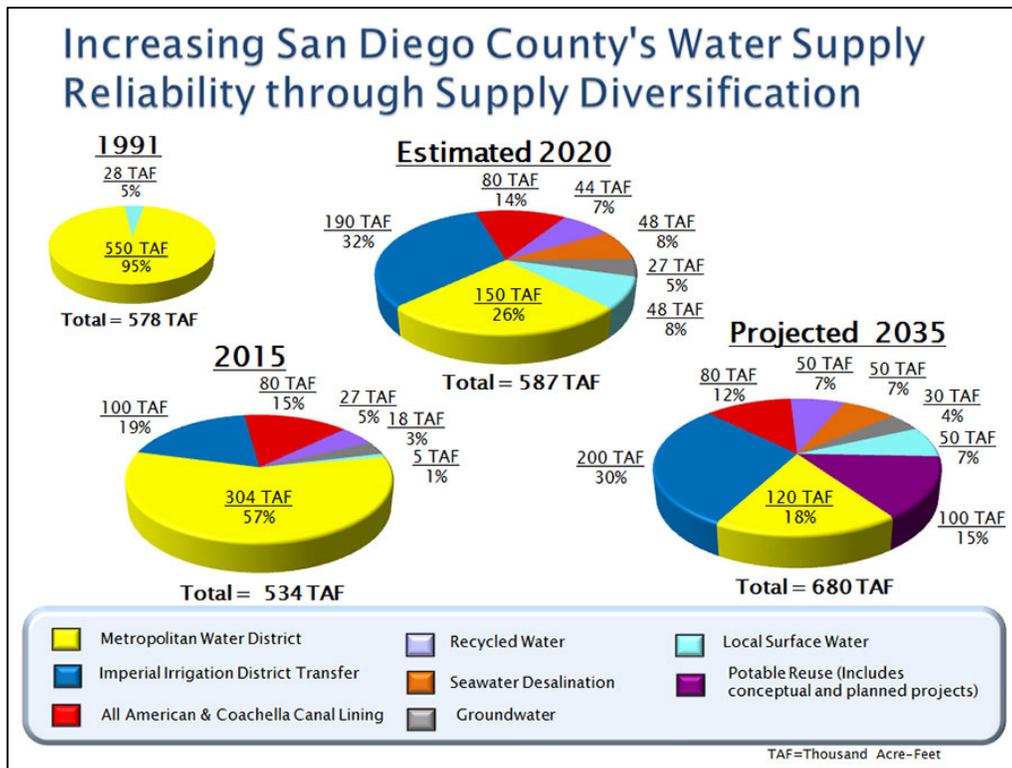
An interconnection pipeline between the Central Area and Otay Mesa Systems currently exists, and an interconnection between the Central Area and North District is currently in the planning and preliminary design stage. These interconnections allow transfer of potable water between systems and provide flexibility in the management of demands in the case of an emergency, such as an earthquake, that disrupts the normal operation of the SDCWA aqueduct. The interconnections are not intended for normal operating conditions. Additionally there exists a 13 mgd emergency interconnect between OWD and the City of Tijuana in Mexico. This interconnect can be used to deliver international treaty waters to Mexico, but was not evaluated in the IRP.

OWD has established a goal to sustain a 10-day outage of supply from the SDCWA Pipeline No. 4 at any time of the year without a reduction in service level. For emergency events longer than the 10-day aqueduct shutdowns noted previously, OWD will utilize emergency supplies provided by SDCWA's Emergency Storage Project (ESP). The ESP is designed to provide treated water service to all SDCWA member agencies during a two-month interruption in service of imported water deliveries into San Diego County. The ESP is sized to deliver up to 75 percent of each agency's peak two-month summer demand. The key facilities of the ESP include the Olivenhain Dam and Conveyance System, the Lake Hodges Interconnect, the San Vicente-Miramar Pipeline, and the expansion of San Vicente Reservoir.

## 2.5 Potable Water Supply

### 2.5.1 San Diego County Water Authority Imported Supply

Imported water from SDCWA is the primary source of water for OWD. OWD takes both treated water and raw water (indirectly) from SDCWA. Treated water from SDCWA is directly delivered to OWD’s reservoirs through four flow control facilities on Pipeline No. 4. Raw water from SDCWA is first delivered to the Helix Water District’s Levy WTP or the City of San Diego’s Otay WTP for treatment and then it is conveyed to the OWD service area. The SDCWA supply diversification for 2015 is presented in Figure 2.3.



(Source: "Enhancing Water Supply Reliability." San Diego County Water Authority. N.p., n.d. Web. 16 June 2016. <<http://www.sdcwa.org/enhancing-water-supply-reliability>>.)

Figure 2.3 SDCWA Supply Diversification

The figure also shows the supply diversification estimated for 2020 and projections for 2035, which both include the increased local water supply provided by seawater desalination in Carlsbad. The Claude "Bud" Lewis Carlsbad Desalination Plant is producing approximately 50 mgd of water for San Diego County, reducing vulnerability to drought conditions. The plant meets about 7 percent of the region’s water demand, decreasing the historical dependence on imported water. SDCWA is also investigating the potential of a desalination plant at Camp Pendleton.

MWD owns and operates the CRA, along with major reservoirs such as Diamond Valley Lake and Lake Skinner, 5 regional water treatment plants, and large transmission pipelines to move imported water to its 26 public member agencies. Over the last few years CRA supply,

historically providing over 1.2 million AFY to the region, has been severely cut. This was due to the development of the California Plan for Colorado River, which forces California to live within a limited entitlement of Colorado River. MWD does have programs in place and is working on others in order to maximize supplies from the CRA and in certain years get back to the 1.2 million AFY level.

MWD is also the largest State Water Contractor, with a contract of 2.0 million AFY for SWP supply. The SWP is subject to extreme variability in hydrology due to a lack of storage. Although MWD has a contract for 2.0 million AFY, it rarely has received that (only in the very wettest of years). Average deliveries have been closer to 1.2 million AFY. In severe droughts, SWP supplies to MWD have been less than 0.5 million AFY.

MWD augments its imported water from the CRA and SWP with stored water in water banks such as Semitropic and Arvin-Edison, conjunctive use storage in local basins, and voluntary water transfers during certain dry years. MWD's IRP (2010) indicated that MWD would have the supplemental water to meet all of its member agencies' water needs through 2025, even during drought conditions. In 2014, MWD received only 5 percent of the contracted amount from the SWP. The IRP Update (2015) reflects the changing reliability of CRA and SWP as four consecutive years of drought have affected allocations from these supplies.

### **2.5.2 City of San Diego's Otay WTP**

The City of San Diego's Otay WTP has an effective capacity of 34 mgd; however, currently operates at an average capacity of 15 mgd (Eric Rubalcava, personal communication, April 21, 2015). The City of San Diego uses approximately 8.5 mgd while Cal American Water is supplied an average of 6.5 mgd from the Otay WTP. The City will increase production from Otay WTP to supply an anticipated 2 mgd to the City of San Diego's service area located north of Highway 54.

OWD purchases raw water from the SDCWA for treatment at the Otay WTP. In 1999, OWD entered into an agreement with the City of San Diego to be provided 10 mgd of treatment capacity from the Otay WTP, if such surplus is available. Typically, OWD receives water from the City only during winter SDCWA shutdowns due to the costs being higher than SDCWA rates.

### **2.5.3 Helix Water District's Levy WTP**

In 2010, a 36-inch diameter pipeline was constructed with a conveyance capacity of 16 mgd. The pipeline construction project also included an upgrade at Otay FCF No. 14 to a capacity of 16 mgd. Per the terms of the 2006 agreement between SDCWA and OWD regarding implementation of the East County Regional Treated Water Improvement Program (ECRTWIP), the Levy WTP supplies water to OWD via FCF No. 14 and the pipeline, up to 12 mgd during peak demands and 16 mgd during non-peak demands.

Per the terms of the ECRTWIP, OWD must purchase a minimum of 10,000 AFY of treated water from Helix's Levy WTP. Recycled Water Supply

### **2.5.4 Ralph W. Chapman WRF**

OWD owns and operates the RWCWRF. The RWCWRF provides tertiary treatment for up to 1.3 mgd of wastewater, although in terms of water quality, the reliable continuous treatment capacity of this facility is 1.1 mgd. This facility provides tertiary treated wastewater effluent that meets Title 22 requirements, primarily for landscape irrigation. Wastewater treated at RWCWRF

comes from the sewer collection systems of OWD and the County of San Diego. Effluent from this plant that is not put to beneficial reuse is disposed of via the Rancho San Diego Outfall.

**2.5.5 City of San Diego South Bay WRP**

The SBWRP is owned and operated by the City of San Diego’s Metropolitan Wastewater Department. The plant became operational in May 2002, and has a rated treatment capacity of 15 mgd. The effluent receives either secondary treatment for discharge into the Pacific Ocean, or tertiary treatment to meet Title 22 requirements for reclaimed water use. The design allows for tertiary treatment of all flows; of which up to 6 mgd is available for reclaimed use.

In 2003, OWD entered into an agreement with the City of San Diego to receive up to 6 mgd of treated effluent from the SBWRP. In addition, the agreement presents a minimum purchase schedule for OWD on an annual basis. For purposes of this analysis, the supply from SBWRP to OWD was assumed to be limited to 6 mgd. This agreement expires in 2026.

Due to the seasonal fluctuation in reclaimed water demands, it should be noted that the supply from SBWRP will need to exceed 6 mgd during peak summer months in order to satisfy the minimum purchase agreement on an annual basis. However, any supply exceeding 6 mgd is not reliable for planning purposes. Supply from SBWRP was limited to the minimum of reclaimed water demands or 6 mgd, whichever was lower.

**2.6 Summary of Existing Supply**

A breakdown of the current water supplies available to OWD is shown in Table 2.1. As shown, OWD’s supply is 100 percent imported water, with water from Otay WTP and Levy WTP being limited by agreement, and the remaining water being imported via Pipeline No 4 from SDCWA. Recycled supplies are from the RWCWRF and from the SBWRP.

Table 2.1 Water Facility Capacities and Agreements

Supply Source	Baseline Capacity <sup>(1)</sup>	Notes
<b>Imported</b>		
SDCWA's treated water through Pipeline # 4	121.5 mgd	[Capacity]
City of San Diego’s Otay WTP	10 mgd	[Agreement]
Helix’s Levy WTP	12 mgd On-Peak, 16 mgd Off-Peak	[Agreement]
<b>Total Imported Supply</b>	<b>143.5 - 147.5 mgd</b>	
<b>Recycled</b>		
OWD’s Ralph W. Chapman WRF	1.3 mgd	[Capacity]
City of San Diego’s South Bay WRP	6 mgd	[Agreement]
<b>Total Recycled Supply</b>	<b>7.3 mgd</b>	

Note:  
(1) Data from 2015 WFMP

## Section 3

# PROJECTED WATER SUPPLY GAP

### 3.1 Future Water Demands

Future water demand projections provide the context for the evaluation of water supply alternatives and support the development of the IRP. In addition, water demand projections can be used to schedule the timing of water supply investments in order to minimize unnecessary costs. The following is a description of the projected demands used for this IRP for the North, Central Area, and Otay Mesa Systems within OWD's service area.

#### 3.1.1 Annual Average Demand Projections

The total OWD water demand projections for potable and recycled uses are based on projections from the 2015 WFMP, and summarized in Table 3.1. These demands were prepared by Atkins using the SANDAG Series 13 Regional Growth Forecast (2014) for projections in population, housing, and employment. The demand forecast also applies unit use adjustments to account for various factors that may drive reductions and increases in unit water use. As shown in Table 3.1, the total water demand projected for 2050 is 52,000 AFY, with an estimated recycled water demand of 6,200 AFY. Recycled water is projected to account for approximately 12 percent of the total water demand by year 2050.

Table 3.1 Potable and Recycled Water Demand Projections

Forecast Year	Potable Water Demand (AFY)	Recycled Water Demand (AFY)	Total Water Demand (AFY)
2014	33,000	4,400	36,500
2020	37,000	5,400	42,400
2025	38,200	5,600	43,900
2030	39,500	5,700	45,200
2035	40,700	5,900	46,700
2040	42,400	6,000	48,500
2045	44,100	6,100	50,200
2050	45,800	6,200	52,000

Notes:

- (1) Projections for 2020, 2035, and 2050 are from the 2015 Water Facilities Master Plan (Draft Median Projections 01/13/2015).
- (2) Projections for remaining years in table were calculated using linear interpolation between 2015 WFMP median projections.

OWD’s historical and projected potable water demands are presented in Figure 3.1. The projected high, median, and low rates were obtained from the 2015 WFMP. For purposes of this IRP, the median demand projection was used. As shown in Figure 3.1, the water demand forecast prepared for the 2015 WFMP is significantly less for 2050 than the projections from the 2008 Water Resources Master Plan and 2010 Urban Water Management Plan (UWMP). The decrease in demands is a result of a reduction in growth due to the economic downturn that occurred between 2007 and 2010 and increased water conservation by OWD customers.

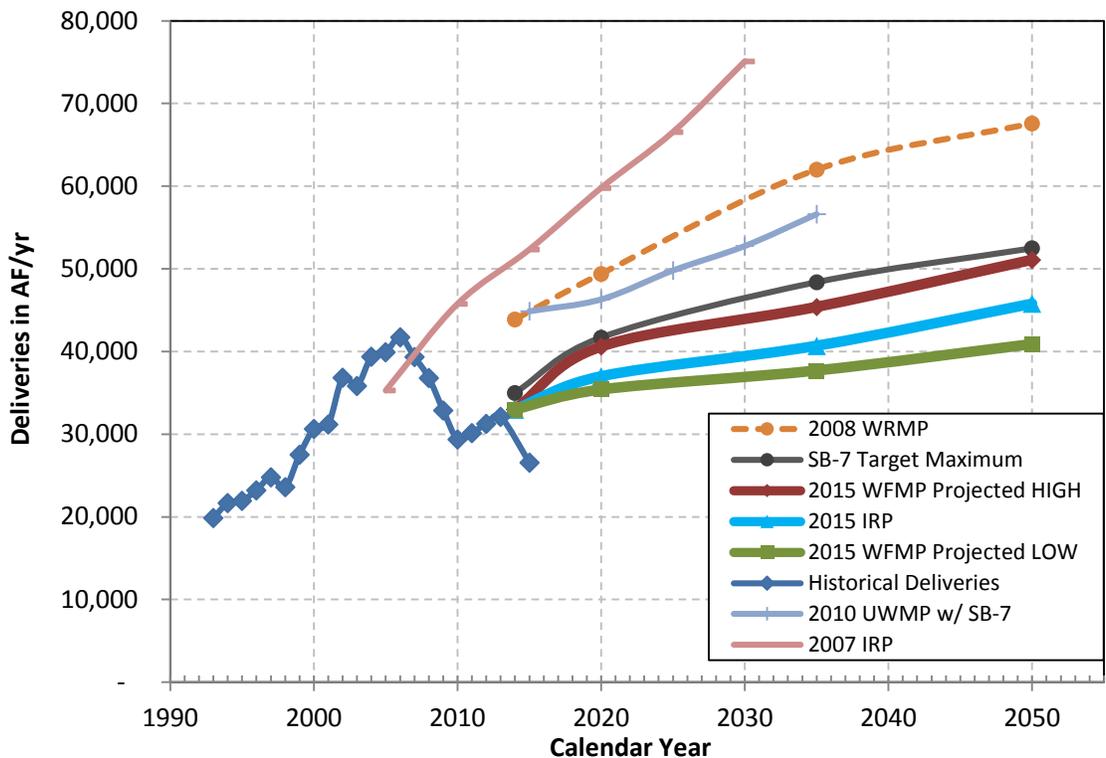


Figure 3.1 Historical and Projected Potable Water Demands (AFY)

For purposes of the IRP, the total OWD demands were divided into demands for the North, Central Area, and Otay Mesa Systems (described in Section 2) based on demand distributions delineated in the 2015 Water Facilities Master Plan. The projected distribution of potable water demand for each system for the years 2015 through 2050 are shown in Table 3.2.

Projected demands for each system (North, Central Area, and Otay Mesa) and total recycled water demands used for the IRP are shown in Figure 3.2. As shown in Figure 3.2, total OWD demands are anticipated to increase in the next 35 years from approximately 37,000 AFY to 52,000 AFY. The increase in demands is expected because the current population of approximately 217,000 persons is expected to grow to approximately 307,877 persons by 2050 (Atkins, 2015).

As shown in Figure 3.2, the Central Area System represents the majority of demands, and has the largest increase in demands over time. According to the 2015 UWMP, the Central area is comprised primarily of major residential developments, while the Otay Mesa area is expected to develop almost exclusively as industrial with small commercial and residential land uses.

Table 3.2 Projected Demand Distributions by System for Potable Water

Forecast Year	Potable Water <sup>1</sup>					
	North		Central Area		Otay Mesa	
	AFY	%	AFY	%	AFY	%
2014	10,000	32%	18,400	58%	3,200	10%
2020	10,300	28%	22,600	61%	4,100	11%
2035	10,600	26%	24,700	61%	5,400	13%
2050	11,100	24%	25,700	56%	9,000	20%

Note:

(1) Source: 2015 WFMP Update (Atkins, 2015)

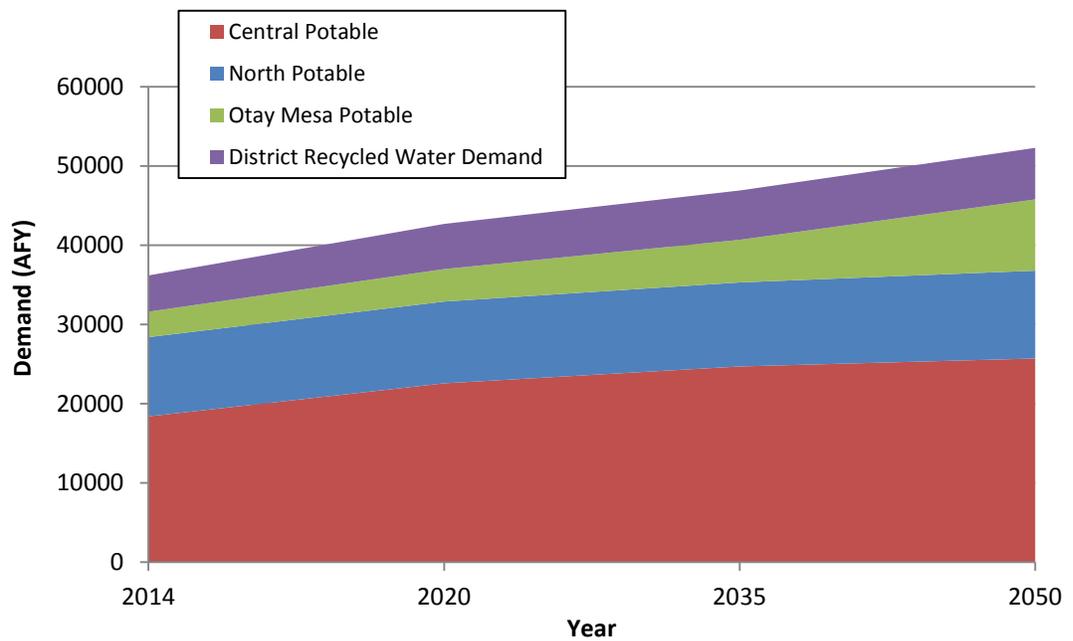


Figure 3.2 Otay Water District Projected Annual Demands

### 3.1.2 Weather Impacts and Peaking

Water demands are not uniform over time. Rather, water demands at nearly all municipal water agencies exhibit variability on an annual and monthly basis. Annual and seasonal changes in weather affect water demands, and people’s lifestyles and business habits affect water demand throughout the year. This variability is subject to random processes, but inherent patterns can be observed over time and used in the planning and management of water supply systems. Annual and monthly water use patterns can be described; and although weather is unpredictable, understanding its range of effects can improve management of water resources.

### 3.1.2.1 Annual Weather Impacts

When projecting future water demands, it is important to recognize that demands fluctuate year-to-year based on local weather. Water demands are higher in dry-weather years than in average-weather years due to increased landscape irrigation needs and other uses. Additionally, there is uncertainty due to weather and hydrology regarding the amount of imported water available from year to year.

Imported water from the SDCWA and MWD is one of the most variable sources of water supply. This variation is mainly due to hydrology in northern California, which is not always correlated to hydrology in San Diego County. The imported water variability from the Colorado River is tempered by the massive storage within the system (which has over 10 times the storage as the SWP system).

### 3.1.2.2 Seasonal (Monthly) Impacts

Water demands not only vary from year-to-year, but also from season-to-season. For example, water demands increase during dry summer months as customers irrigate outdoor landscaping more frequently. To account for these seasonal fluctuations in demand, monthly peaking factors were developed by Atkins for the 2015 WFMP. The projected monthly potable water peaking factors for the planning years are shown in Table 3.3.

Table 3.3 Projected Monthly Potable Water Peaking Factors

Service Area	Monthly Peaking Factor			
	2013	2020	2035	2050
North District	1.35	1.33	1.30	1.28
South District	1.29	1.26	1.24	1.21
Total District	1.31	1.28	1.26	1.23

Note:

(1) Source: 2015 WFMP Update (Atkins, 2015)

The factors shown in Table 3.3 are multipliers to be applied to the base demand projections (average annual value). These factors account for fluctuations in demand related to seasonal water use patterns. As shown in Table 3.3, the monthly peaking factors for the total district are expected to decrease from 1.31 to 1.23 over the planning period of 35 years.

Monthly seasonal factors for recycled water demands were given in the 2002 Water Resources Master Plan, and are shown in Figure 3.3. These seasonal variations for recycled water demand originated from the City of San Diego Clean Water Program Reports.



Figure 3.3 Monthly Seasonal Recycled Demand Factors

### 3.2 Supply Gap Analysis

There is currently sufficient capacity to meet all OWD future demands through purchases of imported water from SDCWA. In that sense, there is no projected supply gap. The projected supply mix for OWD assuming the baseline water supply as discussed in Section 2 is shown in Figure 3.4. It is assumed that imported water purchases are increased to meet system demands.

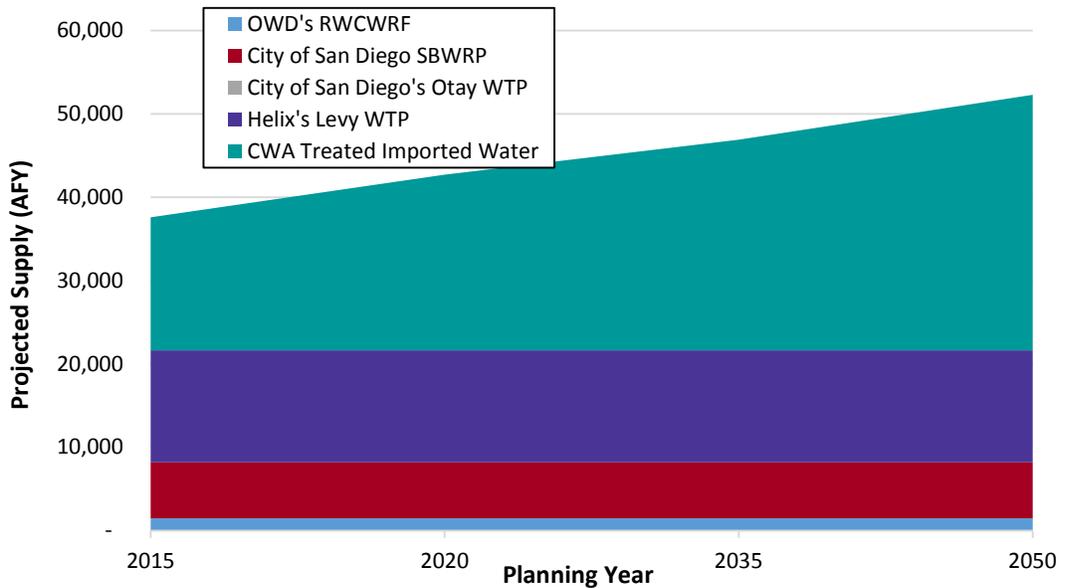


Figure 3.4 Projected Baseline Supply Mix over Time

As can be seen with this baseline case, most of the water used by OWD in the future will come from imported SDCWA water. The OWD objectives for this IRP, however, place emphasis on reliability, flexibility, and diversity and point toward decreasing the dependence on imported SDCWA water supplies. These three objectives and the potential issues associated with the reliability of imported supply (discussed in Section 1), create an opportunity for OWD to develop a more diverse water supply portfolio.

Seasonal variations for recycled water demand create a supply gap during peak summer months. Projections for 2050 place the average daily demand for recycled water at 6,200 AFY and the supply at 7,840 AFY. The SBWRP provides a maximum of 6,725 AFY of the recycled water supply, with the balance coming from the RWCWRF. Using monthly seasonal recycled demand factors from Figure 3.3, a recycled water supply gap is expected in July, August, and September, varying between 1,500 AFY and 6,000 AFY per month. The system has over 40 million gallons of available recycled water storage to supplement the supply during peak demand. Under the highest recycled water demand months, the stored recycled water supply will be depleted in about a week.

## Section 4

# WATER SUPPLY PROJECTS

In the 2007 IRP, water supply projects were identified that could be used by OWD to meet their long term water management objectives. Additional water supply projects are also being introduced as part of this 2015 IRP Update. Developing supply projects was an iterative process with assistance from OWD personnel. Potential projects were identified through discussion and refinement. Supply projects can be projects, programs, or contractual arrangements with other agencies. The potential projects can be broken down into categories based on the source of the water and the processes required before the water can be used. The categories of supply projects include:

- Conservation;
- Groundwater;
- Imported Water for Potable Use;
- Indirect/Direct Potable Reuse from Local Supply;
- Potable Water Treatment Options;
- Ocean Desalination; and
- Recycled Water for Non-Potable Use.

It should be noted that the characteristics of all supply projects are only intended for planning level evaluations. Although an attempt was made to obtain detailed information and data, in some cases, certain assumptions had to be made based on prior studies and/or professional engineering judgment. The cost estimate for alternatives is not included at this stage of planning because of too many unknowns associated with the projects. Before any supply project is actually implemented, a more detailed investigation may be required.

Since the development of the 2007 IRP, the District has completed preliminary studies for some of the water supply projects identified. Updated information based on these studies is provided herein, including a determination as to whether the supply option is considered viable or not.

In the following sections, the potential supply projects are described. Figure 4.1 provides a map of the locations where each potentially viable water supply source will enter the OWD's service area. The section concludes with a summary of water supply options that are recommended for further evaluation.

The cost of SDCWA water has grown substantially since 2009, as shown in Figure 4.2, with drought conditions as a primary driver of the rate increases. Rates are projected to climb further with the inclusion of the Carlsbad desalination plant expenses.

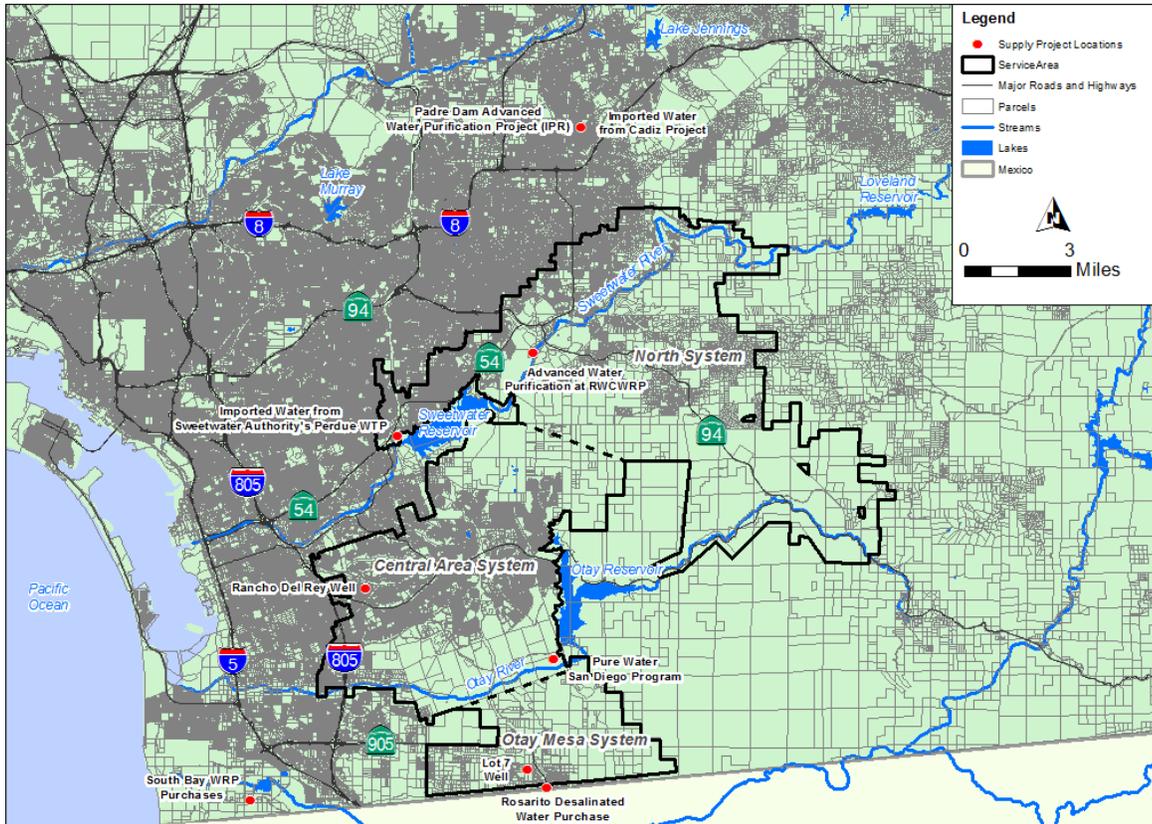
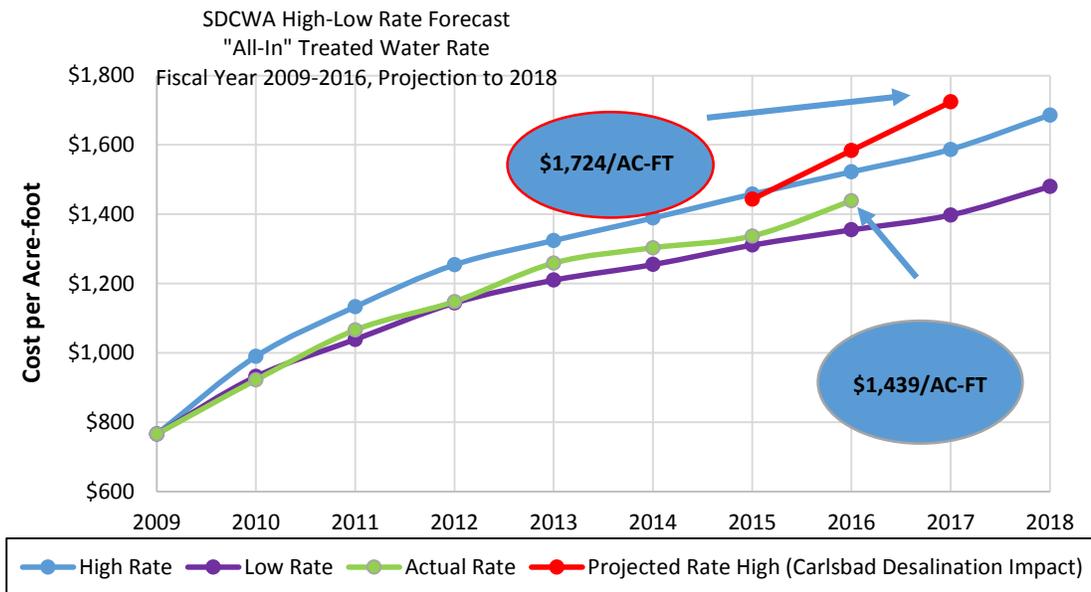


Figure 4.1 Supply Project Locations



(Source: San Diego County Water Authority Proposed Calendar Year 2016 Rates and Charges, Administrative and Finance Committee Meeting, May 28, 2015)

Figure 4.2 SDCWA High-Low Rate Forecast

## 4.1 Water Conservation

Since 2007, the District has seen a greater interest in water conservation by its customers. This peaked in 2015 with the severe drought when the State Water Resources Control Board adopted mandatory water-use regulations that require immediate reductions in urban water use statewide. These regulations were implemented in May 2015 and required that OWD customers reduce water usage by 20 percent from 2013 demands; the conservation mandate has since been lifted. OWD customer's existing water usage is already well below the SBX 7-7 2020 goal established in the 2010 UWMP. OWD has made great strides in encouraging customers to continue long-term conservation efforts and will continue to include water conservation efforts as part of the water supply planning. Figure 4.3 presents the trend in residential water usage from 1990 through 2015.

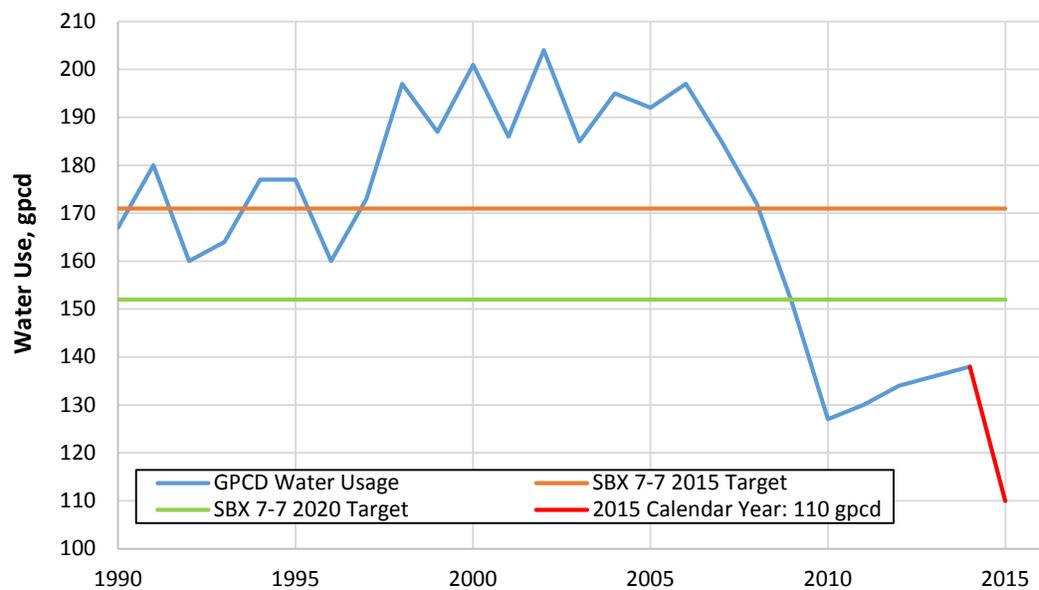


Figure 4.3 Residential Per Capita Water Usage

The OWD has seen a plateau in conservation from the drought declaration and it is unlikely that a further decrease in gallons per capita per day (gpcd) will occur unless conditions worsen.

## 4.2 Groundwater Projects

Groundwater resources are a potential local supply project, providing more localized control and potentially lower treatment and conveyance costs.

Two general types of groundwater projects were considered:

- Safe-yield groundwater extraction with demineralization
- Conjunctive-use storage of imported water providing a dry year supply.

Groundwater extraction and demineralization could provide OWD with a new local water source, improve system reliability, and contribute toward a gradual improvement in the quality of the basin. Conjunctive use consists of recharging imported water during periods of high availability

and recovery during high-demand periods (i.e., summer months), drought, or emergency conditions. This type of project will enhance the reliability of the OWD system.

Several basins were considered for potential groundwater projects because of their proximity to OWD's service area. These include:

- Middle Sweetwater basin
- Lower Sweetwater basin
- Santee/El Monte basin
- San Diego Formation aquifer

Figure 4.4 shows the location of the groundwater basins in relation to the OWD service area. Additionally, a number of small groundwater well projects were considered. These include the Rancho del Rey Well and the Lot 7 Well.

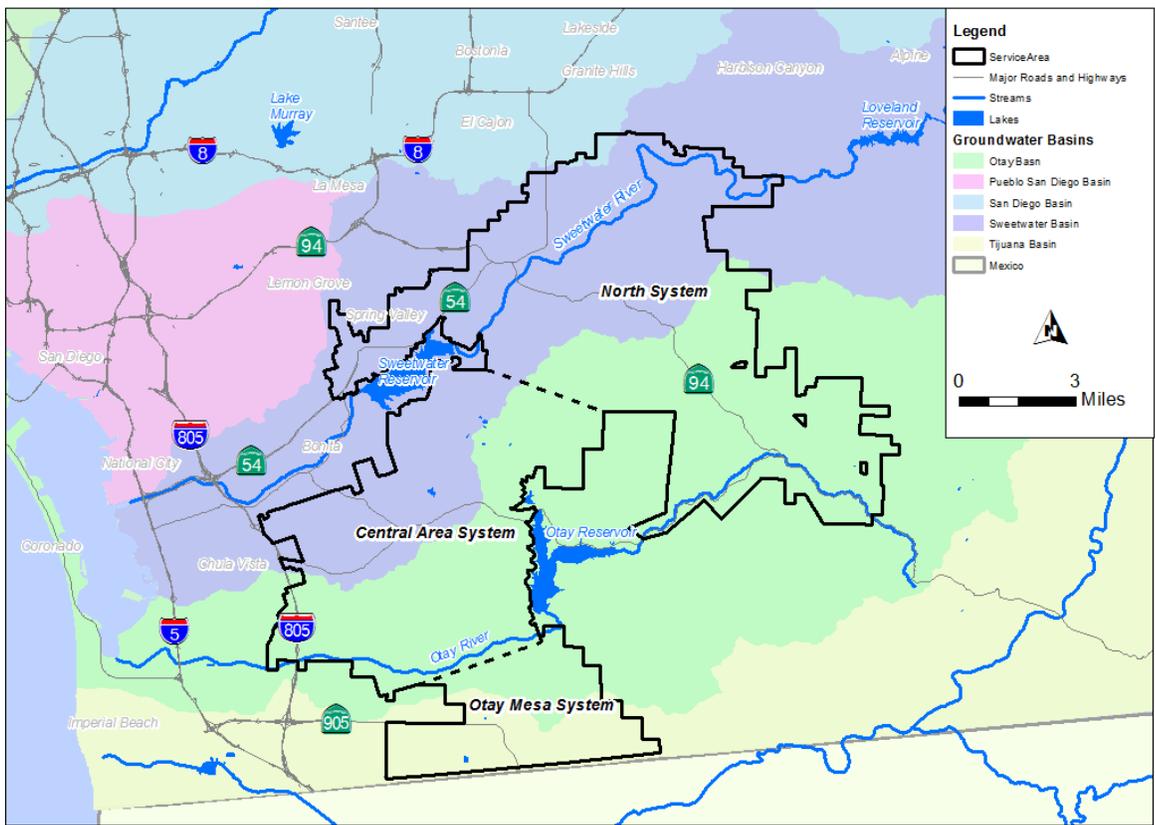


Figure 4.4 OWD Groundwater Basin Study Area

#### 4.2.1 Middle Sweetwater Conjunctive Use

The Middle Sweetwater basin is defined as the 17-mile reach of the Sweetwater River between Loveland and Sweetwater Reservoirs. The basin is located mostly within the OWD service area. This is an alluvial aquifer with a thickness of 20-30 feet in the upstream section, 60 to 150 feet in the middle section, and 10-20 feet in the downstream sections. The depth to the water table is shallow. Its tributary system includes additional alluvial aquifers. The alluvial sediments in the basin are coarse sand and gravel having moderate to high permeability. The alluvium is bordered by slightly-fractured crystalline bedrock which is generally impermeable.

Alluvial storage is approximately 29,000 acre-ft; with approximately 17,000 AF above Singing Hills Golf Course, and 12,000 AF downstream.

Groundwater recharge to the basin is from surface water, such as the Sweetwater River (approx. 2,000 AFY) as well as stormwater and irrigation return flows (approx. 1,600 AFY). Historical water quality data shows that the groundwater in the basin has high concentrations of total dissolved solids (TDS).

The 2007 IRP identified a potential project in which groundwater extraction would occur during dry years to help OWD meet demands in drought conditions. During this time, the water table would be allowed to drop so that the aquifer could be recharged with imported water at a later time.

Figure 4.5 presents the conceptual schematic of this project. For planning purposes in 2007, it was assumed that a 5,000 AFY project may be implemented. The water extracted from the basin would be delivered to the OWD's North System. Filtered replenishment water may be obtained from the abandoned La Mesa-Sweetwater Extension (LSME), as it would require less infrastructure and most likely be less expensive. Alternatively, unfiltered replenishment water may be obtained from the San Diego Aqueduct Pipeline No. 3. For analysis of this project, it was assumed that recovered groundwater quality is sufficient for delivery without demineralization.

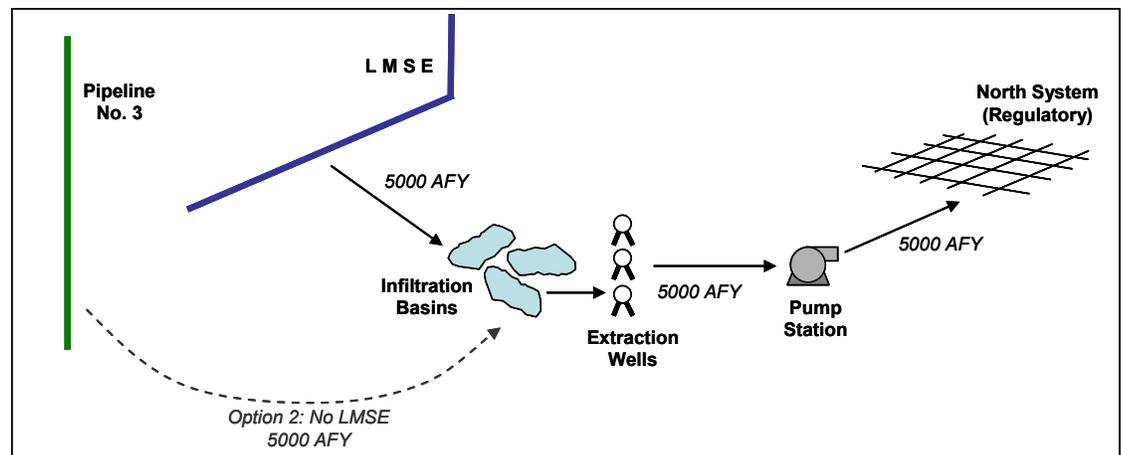


Figure 4.5 Middle Sweetwater Conjunctive Use Project Schematic

As shown in Figure 4.5, the Middle Sweetwater Conjunctive Use project supplies water from either the abandoned LMSE or CWA Pipeline No. 3 to a series of infiltration basins in Sweetwater basin. This water would then be extracted for use in the North System.

The facilities/project components required for this project include:

- Conveyance of water to Middle Sweetwater Basin for recharge
- Infiltration basins
- Extraction wells
- Monitoring wells
- Conveyance of recovered water (pipeline and pumping)
- Land acquisition
- Imported raw water purchases from SDCWA (at the groundwater replenishment rate)

To implement this project, OWD would need to coordinate with the Sweetwater Authority to verify that adverse impacts are not created, and potentially to discuss partnering opportunities. In addition, OWD would need to coordination with SDCWA for delivery of replenishment water at replenishment rates. As this project requires imported water from SDCWA to be stored in the Sweetwater Basin, it should not be considered as a new source of water supply. With the recent improvements completed by SDCWA to raise the dam at San Vicente Reservoir, "dry weather" storage by OWD may not be needed. This water supply option from the 2007 IRP is not recommended as a viable source of supply.

#### 4.2.2 Lower Sweetwater Brackish Groundwater Demineralization

The Lower Sweetwater basin is defined as the 8-mile reach of the Sweetwater River between Sweetwater Reservoir and San Diego Bay, and is located outside of the OWD service area. The basin consists of an alluvial aquifer and the underlying San Diego Formation. There is approximately 13,000 acre-ft of storage in the basin, including the underlying San Diego Formation. The alluvial aquifer consists of sand and gravel, and the depth to groundwater is in the range of 0-20 ft. The net recharge to the alluvial aquifer is estimated to be approximately 1,100 AFY.

Salinity in the alluvial aquifer varies from 1,700 to 3,100 mg/L, while TDS concentrations in the urban runoff recharge water is approximately 2,500 mg/L.

For this project, 1,500 AFY of brackish groundwater would be extracted and treated with reverse osmosis (RO). Assuming a treatment efficiency of 85 percent, 1,275 AFY of treated water would be conveyed to the Central Area System. The RO treatment would generate 275 AFY of brine which could be disposed of in the San Diego County's Spring Valley Trunk Sewer, which ultimately flows to the Point Loma Wastewater Treatment Plant. A conceptual schematic of this project is shown on Figure 4.6.

The facilities/project components required for this project include:

- Extraction wells
- Monitoring wells
- RO treatment plant
- Conveyance for treated water (pipeline and pumping)
- Conveyance for brine disposal
- Land acquisition

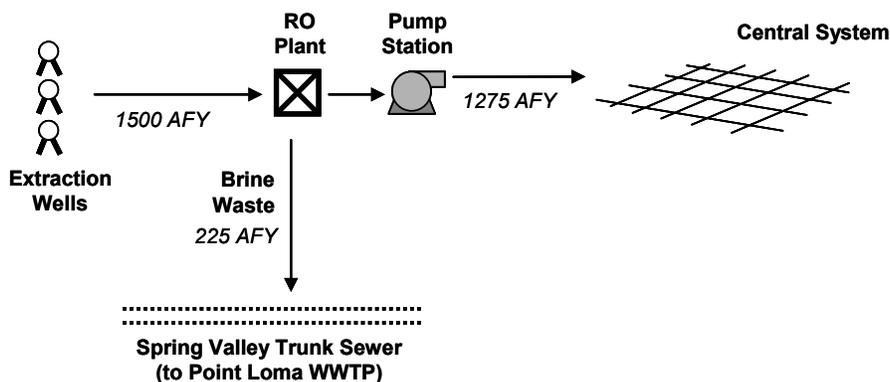


Figure 4.6 Lower Sweetwater Brackish Groundwater Demineralization Project Schematic

Potential issues for the implementation of this project include the need to coordinate with Sweetwater Authority and possibly the City of Chula Vista to obtain access to the basin and locate the required facilities. In the past, Sweetwater Authority has indicated that it would not be interested in pursuing this project. In addition, OWD needs to coordinate with the City of San Diego and the County of San Diego for the use of the sewer system for brine disposal. Brine disposal may in turn impact the salinity of Point Loma effluent and the City of San Diego Pure Water Program and require significant environmental review. Due to these reasons, this project is not recommended for further consideration as a viable water supply project.

#### 4.2.3 Santee/El Monte Basin

The Santee/El Monte basin is located outside of OWD's service area along the San Diego River and mostly in the City of Santee and Lakeside (Padre Dam Municipal Water District). The basin includes an alluvial unit with total storage volume of 55,000 AF, composed of gravel, sand, silt, and clay. This unit is capable of storing and transmitting large quantities of water. The thickness of the aquifer is estimated to range from 50 to 230 feet. The water table is shallow (between 15 and 30 feet below the surface).

The most recent water quality information obtained (1985) indicates that TDS concentrations in the eastern portion of the basin are in the order of 500 mg/L, although much higher concentrations (1,500 mg/L) have been observed. Water quality in the western portion of the basin is worse, with TDS concentrations ranging from 1,500 to 2,000 mg/L.

The 2007 IRP identified two potential water supply projects: imported water conjunctive use and brackish groundwater demineralization.

##### 4.2.3.1 Santee/El Monte Conjunctive Use

With this project, 5,000 AFY of imported water would be recharged to the basin in wetter years and recovered during high demand periods, droughts, or emergency conditions. Recharge water could be obtained from raw water from the San Vicente Reservoir via the El Monte Pipeline. However, there may be limitations due to conveyance capacity.

It was assumed that the basin would be recharged with raw water from the San Vicente Reservoir conveyed via the El Monte pipeline. The replenishment water would percolate into the ground through infiltration basins and then be extracted and conveyed to the North System. A conceptual schematic of this project is shown in Figure 4.7.

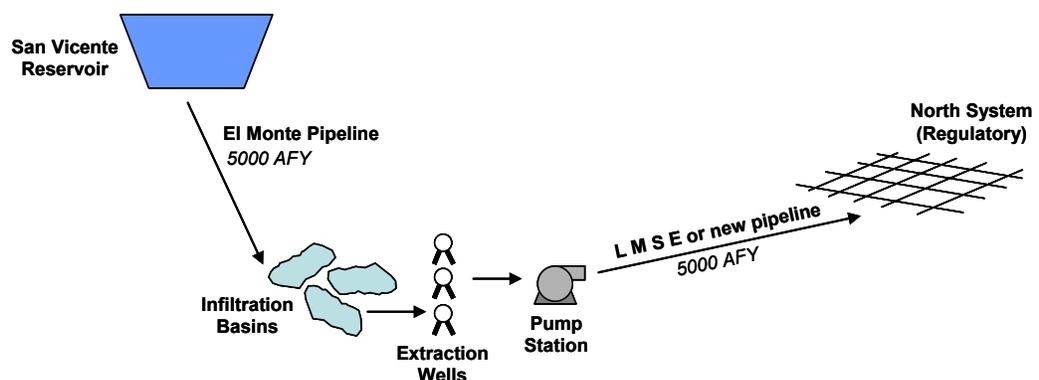


Figure 4.7 Santee/El Monte Conjunctive Use Project Schematic

Similar to the Sweetwater Conjunctive Use Project, a significant amount of infrastructure would be required including:

- Conveyance of replenishment water
- Infiltration basins
- Extraction wells
- Monitoring wells
- Conveyance of recovered water (pipeline and pumping)
- Land acquisition
- Imported raw water purchases from SDCWA (at the groundwater replenishment rate)

Potential implementation issues for this concept project include the need to coordinate with the city of San Diego, Padre Dam MWD and other jurisdictions located within the basin for the use of the basin and to address any potential water rights issues. Coordination with SDCWA will also be required for obtaining replenishment water and for potentially using some of its infrastructure. This project would not be considered a new supply source as it is only the storage of imported SDCWA water for dry-year use. Due to the expected cost of the infrastructure required, this project is not considered to be viable in the future.

#### 4.2.3.2 Santee/El Monte Brackish Groundwater Demineralization

This concept project entails extracting and treating 5,000 AFY of brackish groundwater with reverse osmosis throughout the year. According to available literature, the safe yield of the basin ranges from 1,650 to 5,500 AFY. Approximately 5,600 AFY of groundwater is currently being extracted from the basin by municipal (1,600 AFY) and agricultural users (4,000 AFY). With an assumed treatment efficiency of 85 percent, 4,250 AFY would be delivered to the OWD distribution system and 750 AFY of brine concentrate. The brine concentrate could be disposed of in the City of San Diego Metropolitan Wastewater District (Metro) Mission Gorge Sewer Line, and ultimately discharge at the Point Loma Ocean Outfall.

The treated groundwater would be delivered to the North System by new conveyance facilities. A conceptual schematic of this project is shown in Figure 4.8.

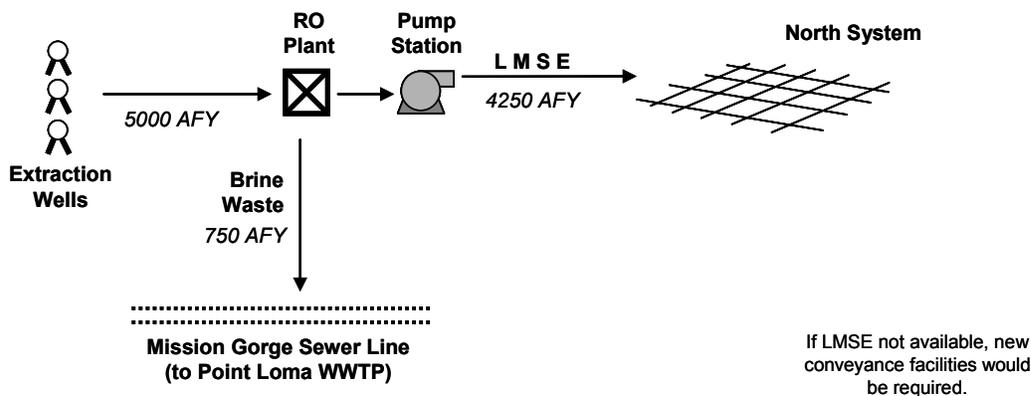


Figure 4.8 Santee/El Monte Brackish Groundwater Demineralization Project Schematic

The facilities/project components required for this project include:

- Extraction wells
- RO treatment plant and brine disposal facilities
- Conveyance of treated water (pipeline and pumping)
- Monitoring wells
- Land acquisition

The ability for OWD to extract and treat groundwater would depend on the actual current safe yield and use of the basin. Additionally, there might be water rights issues precluding OWD from obtaining this water. This issue might be resolved by extracting brackish groundwater for demineralization and replenishing the aquifer with better-quality imported water. This configuration will over time improve the quality of the aquifer.

Brine disposal will be an important consideration for project implementation and will require significant environmental review and coordination with Metro. Also of concern is the high cost for capacity through Metro and the potential impact to the City of San Diego Pure Water Program. Due to these reasons, this project is not recommended for further consideration as a water supply option.

#### 4.2.4 San Diego Formation Brackish Groundwater Demineralization

The San Diego Formation aquifer underlies the South Bay and extends approximately two miles north and inland to Mission Bay. Most of the aquifer is outside of the OWD service area. Refer to Figure 4.4 for the groundwater basin location.

According to available literature, the estimated safe yield of the aquifer is up to 10,000 AFY. The brackish water from the San Diego Formation contains high levels of dissolved solids; therefore, demineralization would be required.

The 2007 IRP project considered extraction 2,500 AFY of groundwater from the San Diego formation for demineralization by reverse osmosis. Approximately 2,125 AFY would be delivered by pipeline to the Central Area System and 375 AFY of brine concentrate would be sent to the San Diego County's Spring Valley Outfall, and ultimately discharge at the Point Loma Ocean Outfall.

A conceptual schematic of this project is shown in Figure 4.9.

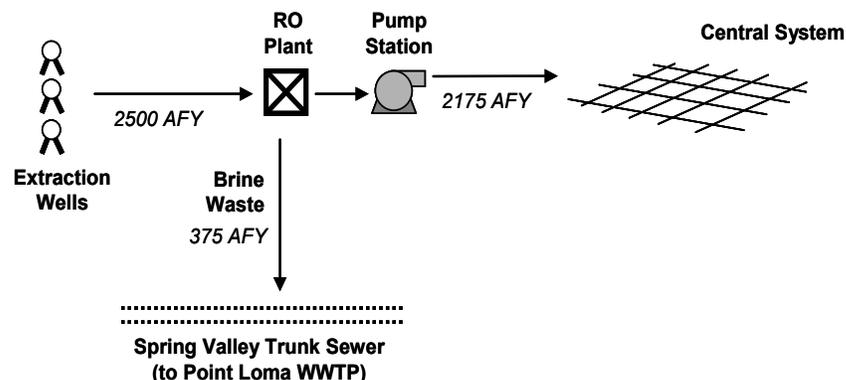


Figure 4.9 San Diego Formation Brackish Groundwater Desalination Project Schematic

The facilities/project components required for this project include:

- Extraction wells
- RO treatment plant (with brine disposal facilities)
- Conveyance to distribution system (pipeline and pumping)
- Monitoring wells
- Land acquisition

Potential issues for project implementation include seawater intrusion, interference with other users of the basin, such as Sweetwater Authority, and brine disposal. Additional extraction from the Formation is currently being developed by the Sweetwater Authority with the expansion of its Reynolds Desalination Facility. Brine may affect the salinity of the Point Loma effluent and impact the City of San Diego Pure Water Program and will be an important consideration for project implementation as significant environmental review and coordination with Metro will be required. Due to these reasons, this supply source should not be considered viable in the future.

#### 4.2.5 Rancho Del Rey Well

In 1997, OWD purchased property within the City of Chula Vista, southeast of the intersection of Rancho del Rey Parkway and Terra Nova Drive, with an existing brackish groundwater production well on site. In 1999, OWD split the property and sold the excess land. At the time the property was purchased, the Project was considered economically unfeasible. Consequently, the Project was temporarily suspended.

In 2010, a new production well was constructed by AECOM Technical Services, Inc. (AECOM). After development of the well, AECOM recommended that 450 gpm (725 AFY) maximum safe yield pumping rate be used for design purposes. Subsequently, staff contracted with Separation Processes, Inc. (SPI), a well-known membrane treatment firm, to conduct a feasibility study for the Project. In April 2011, the Board awarded a professional services contract to Tetra Tech, Inc. (Tetra Tech) to design the treatment plant facility. Tetra Tech has completed the design to the 90 percent level; however, the design was placed on hold in 2014 due to uncertainty associated with the Rosarito Desalination project, SDCWA/Poseidon Resources current draft water purchase agreement, SDCWA and Metropolitan Water District of Southern California treated water rate increases, SDG&E rate increases and the increase in the cost to at least double the cost of SDCWA water.

The existing asset consists of a production well, monitoring well, and 12,000 square foot parcel. The production well consists of a 30-inch mild steel conductor casing starting at the ground surface to 55 feet below ground surface, 12-inch stainless steel well casing starting at the ground surface to 903 feet below ground surface, and gravel packing and cement/bentonite seals. The 12-inch stainless steel well casing was installed with stainless steel screens at three intervals (278' to 638', 658' to 768', and 788' to 903' below ground surface). The pump tests indicated that the safe yield of the production well is approximately 450 gallons per minute. The 5-barrel monitoring well was installed approximately 20 feet from the production well. The monitoring well consists of a 30-inch mild steel conductor from the ground surface to 50 feet below ground surface, five (5) 4-inch well casings terminating at varying depths, and gravel packing and cement/bentonite seals. The monitoring well casings consist of 4-inch ID PVC well casings and stainless steel screens at varying depths.

The Rancho Del Rey well could produce up to 600 AFY.

#### 4.2.6 Lot 7 Well

The groundwater well at Lot 7 in the Tijuana groundwater basin is located in Otay Mesa near the border between the United States and Mexico. The existing asset consists of 10-inch diameter casing with a total depth of 1,041 feet. No perforations were found on the casing, but the bottom is open. The static water level was at 431 feet (in 2001).

An assessment completed for the site in 2001 concluded the water quality does not meet requirements for a municipal supply due to chloride and TDS levels above the maximum contaminant limit (MCL) established by the US EPA. The well could produce 320 AFY, but would require reverse osmosis and brine disposal, which would be expensive. Lot 7 well is not viewed as a strong candidate for implementation in the near future due to its high development and operational costs and low yield.

#### 4.2.7 Other Groundwater Wells

Additional local groundwater well projects were identified in the 2007 IRP. These projects included groundwater extraction wells, treatment facilities, and conveyance to the OWD distribution system from the following sites: Daley Ranch well, Otay Mesa Yard well and the Otay Mountain well site. For the Otay Mesa Yard well, limited information was available, but there was strong concern about poor water quality (in the form of high TDS concentrations) at the site. Advanced treatment with reverse osmosis would be required, which is very expensive for such a small yield, estimated to be approximately 400 AFY. For the Daley Ranch site, there was concern about institutional coordination and wildlife losses. Information for the Otay Mountain well site is based on an agreement between OWD and D&D Landholdings for the exploration, production, and sale of potable water and water rights. The Otay Mountain well is located near the intersection of Otay Mesa Rd. and Alta Rd. The water quality at this well is characterized by high TDS and would thus require demineralization treatment before the water could be used. Brine disposal will be an issue for each well supply project discussed. For these reasons, it is concluded that there may be too many obstacles to overcome to make groundwater a viable supply resource in the future.

### 4.3 Imported Raw Water for Potable Use (Cadiz Project)

The Cadiz Valley Water Conservation, Recovery, and Storage Project are a two part project wherein Cadiz, Inc. would construct a wellfield on the Cadiz Valley property in the Mojave Desert. Recovered groundwater would be conveyed to participating water providers from the wellfield via a 43 mile pipeline to the Colorado River Aqueduct. Participating water providers will also have the ability to decrease or forego their water delivery in certain years, such as wet years, and carry it over to future years when it may be needed. This carry-over water would be stored in the aquifer at Cadiz Valley. It is anticipated that up to 50,000 AFY will be made available for purchase. For the 2015 IRP Update, it is assumed that OWD's purchase amount would be 5,000 AFY.

For this water supply source, OWD would need to coordinate between Metropolitan Water District and SDCWA to transport the raw water to OWD. In addition, the raw water from Cadiz Valley would require treatment for potable use which could be paired with the Levy WTP as part of the East County Regional Treated Water Improvement Program.

A conceptual schematic of this project is shown in Figure 4.10.

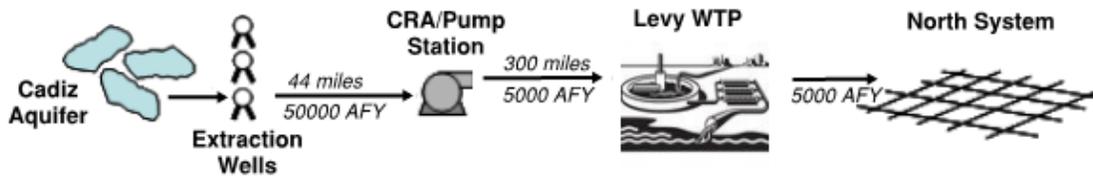


Figure 4.10 Cadiz Project Schematic: Imported Raw Water for Potable Use

#### 4.4 Indirect/Direct Potable Reuse with Local Supply

In addition to the expansion of the direct use of recycled water through Title 22 uses, recycled water can be utilized for indirect potable reuse (IPR) or direct potable reuse (DPR) projects. As each acre-foot of recycled water use can only be utilized for one of these projects, the pros and cons of each project application need to be considered when deciding how much recycled water should be utilized for purple pipe expansion and how much should be reserved for IPR/DPR.

Because California is currently amidst a severe drought and continuously faces the challenge of water shortages and population increases, measures to mitigate the dependence on imported water are critical as water rates continue to increase and supplies become limited.

##### 4.4.1 Partnership with PDMWD's Advanced Water Purification Project

Potable reuse has been successfully utilized for more than 30 years to augment aquifers and surface-water supplies. Padre Dam Municipal Water District (PDMWD) is actively pursuing the expansion of its recycled water program through a potable reuse project to increase water supply reliability.

The PDMWD is currently in the process of implementing an advanced water purification (AWP) demonstration project to establish the requirements for a full-scale AWP project. The full-scale potable reuse project would be executed in two phases.

Phase 1 would include expansion of the water recycling facility (WRF) from 2 mgd to 6 mgd and construction of a 2.2-mgd AWP facility. The AWP effluent would recharge the Santee Basin aquifer and augment water supply at Lake Jennings. The recharged AWP water would be extracted for potable water usage, and the augmented water would be blended with other sources of surface water and treated at the Levy WTP.

Phase 2 would include expansion of the WRF to 21.0 mgd, of which 11.6 mgd would be used for surface-water augmentation of Lake Jennings, owned, and operated by the Helix Water District. The lake water would then be treated at the Levy WTP.

Together, the two projects would provide 13.8 mgd of new potable water supply for East San Diego County. Infrastructure elements required for the project are shown in the conceptual plan in Figure 4.11.

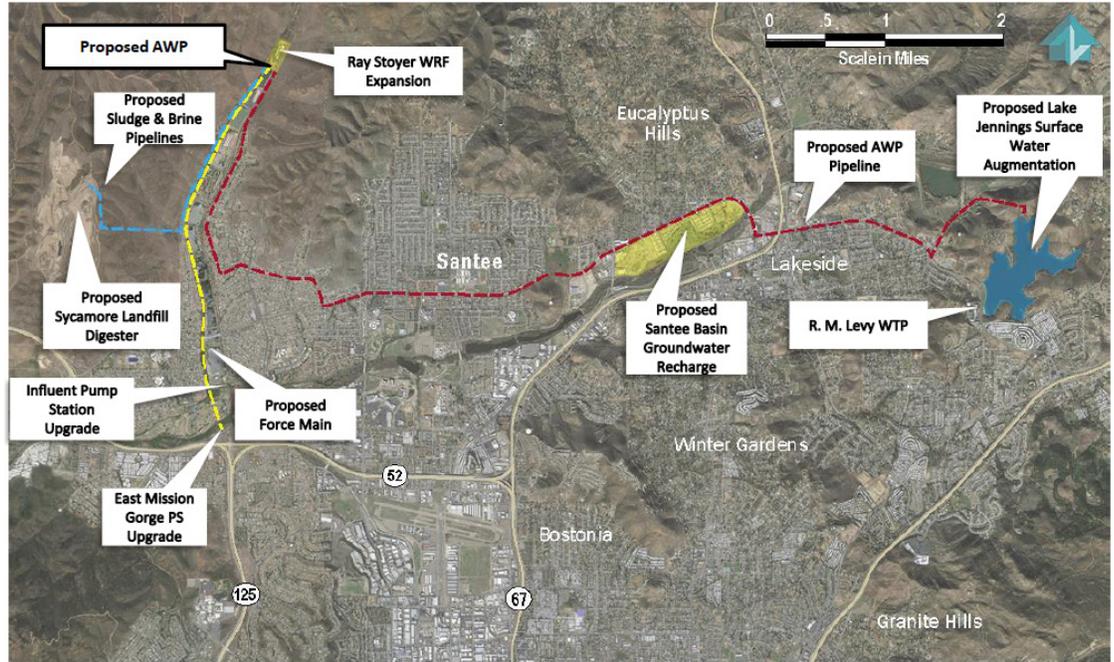


Figure 4.11 Proposed Advanced Water Purification Infrastructure

The advanced treated water would be sent to the Santee Basin for groundwater recharge through the use of a combination of injection and extraction wells. The recharged recycled water would help replenish the local groundwater basin, which would later be extracted for potable water usage. The program concept for the recharge of the Santee Basin is shown in Figure 4.12.

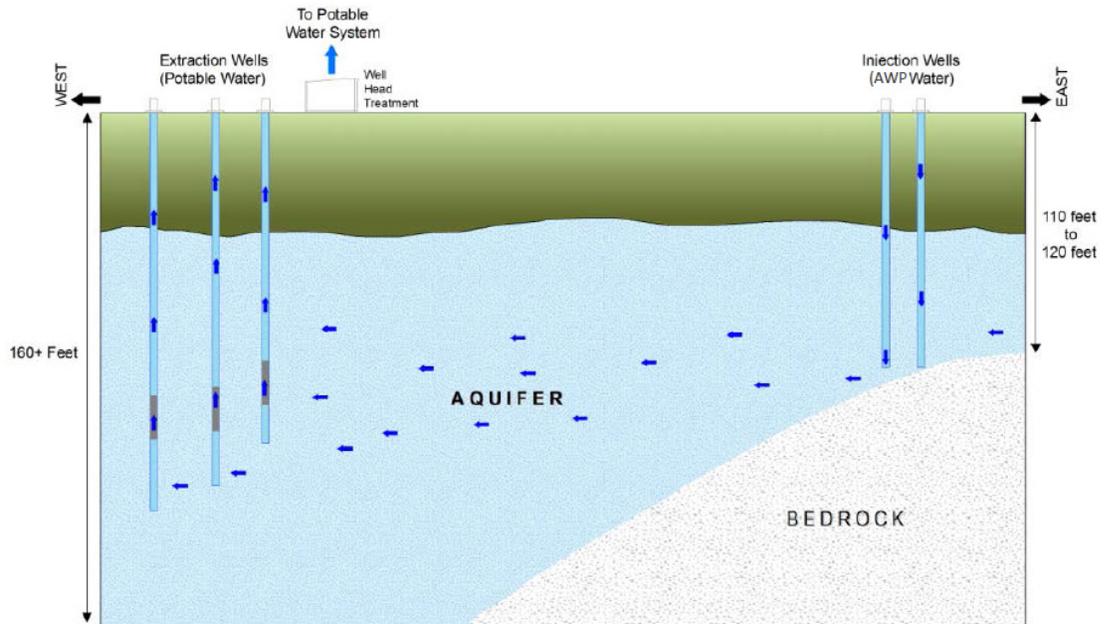


Figure 4.12 Santee Groundwater Recharge Program Concept

An alternative, pending acceptance by the State Water Board, advanced treated water could be used for reservoir augmentation in Lake Jennings. Lake water would be treated by the existing Levy WTP.

Under this project, coordination and agreements would be required with PDMWD, Helix Water District, SDCWA, and other regulatory agencies. It appears that the proposed quantity of IPR water comprises about 10% of the Levy WTP capacity. It is not known at this time if PDMWD would keep rights to all of this water or what interest other Districts have in procuring rights to a portion of it.

#### **4.4.2 Advanced Water Purification at RWCWRF or Spring Valley Stripping Plant**

Under this project, the RWCWRP would be upgraded to include an advanced water purification facility (AWPF) or a new stripping plant and AWPF would be constructed where more sewer flows are available. The advanced treated water would be sent to Sweetwater Authority's Sweetwater Reservoir and blended prior to treatment at the Perdue Water Treatment Plant. OWD would potentially have the option to either buy treated water from the Sweetwater Authority or trade for raw water from SDCWA.

Coordination between Sweetwater Authority, County of San Diego, and regulatory agencies would be required to make this project viable. In addition, additional studies regarding the available storage capacity in Sweetwater Reservoir and advanced treatment alternatives for RWCWRF is needed. It is anticipated that the economies of scale will make an IPR/DPR project at RWCWRF unlikely due to the low quantities of water available. Preliminary investigations place the costs for RWCWRF IPR/DPR water at over \$4,500/AF.

#### **4.4.3 Pure Water San Diego Program**

The City of San Diego's Pure Water San Diego is a phased, multi-year program to use advanced water purification to produce a local, drought-resistant water supply for San Diego. The program involves the design and construction of full-scale water purification facilities throughout the City of San Diego with a goal to ultimately produce 83 mgd of purified water. Phase Two of the program may potentially include a new AWPF at the South Bay WRF that would be used to augment and blend with supplies in Otay Reservoir. Water treatment for potable use would be provided at the City of San Diego's Otay WTP. For this water supply option, OWD could contribute funding for the project and in return receive a portion of the treated water.

Coordination between the City of San Diego and regulatory agencies would be required to make this project viable. Additional planning studies are needed to determine OWD's ultimate project participation level.

### **4.5 Ocean Desalination**

Desalination uses reverse osmosis technology to remove water molecules from seawater. Water from the ocean is forced through tightly-wrapped, semipermeable membranes under very high pressure. Salt and other impurities in the seawater do not pass through the membranes and are discharged from the facility.

In December 2015, the SDCWA added desalinated seawater to its water supply portfolio with the start of operations at the Claude "Bud" Lewis Carlsbad Desalination Plant, the nation's largest seawater desalination plant. The drought-resistant supply produces approximately 10 percent of

the County of San Diego's water demands and reduces the dependence on water from the Colorado River and Bay-Delta.

#### **4.5.1 Rosarito Desalination Plant**

The Rosarito Desalination Plant is a planned 100 mgd seawater reverse osmosis desalination plant to be located Rosarito Beach, Mexico. The plant would be the largest desalination plant in the Western Hemisphere. In 2014, the State of Baja California passed legislation to approve public-private partnership that allow for the direct negotiations of the State with private companies. The Secretaria de Infraestructura y Desarrollo Urbano del Estado (SIDUE), a State agency that coordinates infrastructure projects for the State and the Comisión Estatal del Agua de Baja California (CEA), an agency that is responsible for regulating the State's water and sewerage industry, issued a public invitation to tender for the production and conveyance of desalinated water produced in Rosarito Beach and operated for a period of 37 years. The State of Baja California is also considering selling to the District desalinated water.

The State of Baja California wants to pursue this project because Tijuana is currently exceeding their water allocation from the Colorado River. Today, Tijuana is about 1.2 cubic meters per second short (approximately 30,000 acre-feet per year) and must negotiate with the farmers in the Mexicali Valley on a yearly basis to acquire the additional water to meet its demands.

The plan is to build the project in two (2) or more phases. The first phase would provide product water to satisfy the demands for Mexico (Tijuana and Rosarito). The State of Baja California is expected to decide on the first phase sometime mid-2016 and construction could be completed by 2020. Future phase(s) would produce excess water for sale to the District. A designated pipeline will carry desalinated water to the District and the water would meet California water quality standards.

OWD has expressed an interest in acquiring a minimum of 13 mgd of desalinated water to augment supply. This will require the involvement and consent of the federal governments of both nations, likely through the International Boundary and Water Commission (IBWC) and Comisión Internacional de Limites y Agua (CILA).

The proposed project would enable OWD to import and convey desalinated seawater from a connection point at the United States-Mexico border north to the District's existing Roll Reservoir on Otay Mesa. The proposed location for the desalination pipeline is shown in Figure 4.13.

A Draft EIR/EIS has been prepared for the work north of the border and also in support of a Presidential Permit which was initiated in November, 2013, when the District submitted an application letter to the United States Department of State. A Presidential Permit could be granted late 2016.

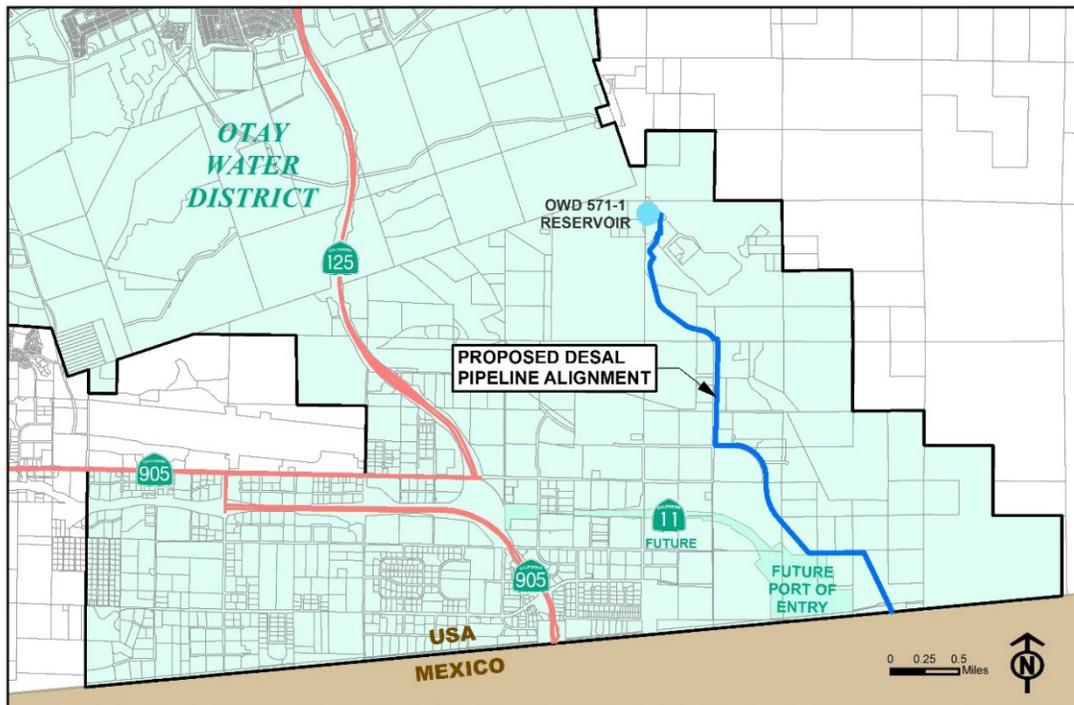


Figure 4.13 Proposed Route for Desalination Pipeline

#### 4.6 Recycled Water For Non-Potable Use

Recycled or reclaimed water can be used to meet select irrigation demands in place of potable water at considerable cost savings and while utilizing an otherwise discarded resource. Recycled water supplies can be used for the irrigation of golf courses, municipal parks, school grounds, highway medians, housing developments, and other large landscaped areas.

##### 4.6.1 Chula Vista Stripping Plant

For this project, OWD would team with the City of Chula Vista to construct a tertiary treatment facility to produce Title 22 recycled water. The recycled water would be delivered to meet recycled water demands in OWD's Central Area.

In 2012, the City of Chula Vista (Chula Vista) and OWD partnered for a study to develop alternatives for the City of Chula Vista to increase its wastewater treatment and disposal capacity with a Chula Vista-owned facility. The new facility would provide Title 22 recycled water to OWD for delivery to customers in the Central Area. Under this project, Chula Vista would phase the construction of a new 6 mgd wastewater treatment plant to coincide with the pace of population growth and increase in sewer flows.

Infrastructure required for this project includes a pump station and a transmission pipeline to convey recycled water from the Chula Vista Wastewater Treatment Plant to the Central Area System.

This project would require coordination with the City of Chula Vista, the County of San Diego, as well as the City of San Diego.

#### 4.6.2 Additional Purchases from and Expansion of South Bay WRP

The City of San Diego's Metropolitan Wastewater Department owns and operates the SBWRP. The SBWRP has a rated capacity of 15 mgd and is located at Monument and Dairy Mart Roads near the international border, adjacent to the Tijuana River. The SBWRP scalps flow from the existing interceptor system that conveys flow northward to the Point Loma Treatment Plant for treatment and ocean outfall disposal.

The agreement between OWD and the City of San Diego for purchase of recycled water from the SBWRP was finalized on October 20, 2003. In accordance with the agreement, the City of San Diego will provide an annual amount of up to 6 mgd of recycled water to District. The term of the agreement is 20 years from January 1, 2007. Under this water supply option, OWD would acquire an additional 4 mgd of SBWRP recycled water (for a total of 10 mgd).

No infrastructure would be required for the additional purchase of recycled water from SBWRP but the City of San Diego's Pure Water Program may impact OWD's opportunity to purchase additional recycled water from the SBWRP in the future.

#### 4.7 Recommended Water Supply Options

Table 4.1 presents the recommended water supply projects that OWD should continue to research as the need for local supplies increases. These projects could help meet the OWD's IRP objective to leverage water supply options between dependency on SDCWA with expanding local water supplies that can provide high reliability with lower costs and rate stability.

The projects listed under the IPD/DPR with Local Supply and the Recycled Water for Non-potable Use source types have the potential to be reliable local water supplies. Advanced water purification would enable recycled water to improve local supply reliability. The projects listed require multi-agency coordination and funding.

The recycled water for not-potable use projects would increase amount of recycled water available for irrigation demands. Increasing the quantity of recycled water currently purchased from SBWRP would not require additional infrastructure but might be impacted by the City of San Diego's Pure Water Program. The option for OWD to construct a new tertiary treatment facility in Chula Vista jointly with the City of Chula Vista would create a new supply of recycled water for the Central Area.

The construction of the Rosarito Desalination plant could provide a drought-resistant supply option to OWD's portfolio. The first phase of the project is focused on producing recycled water for local use within Mexico, with subsequent phases intended to produce water for purchase by the District. This project requires coordination between the federal governments of United States and Mexico.

Local groundwater sources are not highly recommended for expanding the water supply. Their further investigation for development is only recommended if the other alternatives indicated are not found to be viable. The primary reasons making the groundwater options less attractive include: water quality issues and treatment requirements, and potential difficulties with brine disposal.

Table 4.1 2015 IRP Recommended Water Supply Projects

Source Type	Supply Project	Description
IPR/DPR with Local Supply	PDMWD's Advanced Water Purification Project	Contribute funds for construction of AWWP
	Advanced Purification at RWCWRF or Spring Valley Plant	Upgrade RWCWRF to advanced purification facility or construct a new AWWP where more sewer flows are available, augment supplies in Sweetwater Reservoir
	City of San Diego's Pure Water Program	Contribute to AWWP at South Bay WRP that would augment water supplies in Otay Reservoir
Ocean Desalination	Rosarito Desalination Project	Purchase water from Rosarito's planned ocean desalination plant
Imported Water for Potable Use	Cadiz Water Conservation, Recovery, and Storage	Purchase 5,000 AFY from Cadiz Valley
Groundwater	Rancho del Rey Well	Produce up to 600 AFY (requires treatment and brine disposal)
	Lot 7 Well	Produce up to 320 AFY (requires treatment and brine disposal)
Recycled Water for Non-potable Use	City of San Diego's South Bay WRP	Increase amount of recycled water purchased at SBWRP
	Chula Vista MBR	Joint City of Chula Vista/OWD tertiary treatment facility to produce Title 22 recycled water

## Appendix A

# REFERENCES

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# AGENDA ITEM 9b

## STAFF REPORT

TYPE MEETING:	Regular Board	MEETING DATE:	August 3, 2016
SUBMITTED BY:	Stephen Beppler Senior Civil Engineer	PROJECT:	P1210- 008000
	Bob Kennedy Engineering Manager	DIV. NO.	ALL
APPROVED BY:	<input checked="" type="checkbox"/> Rod Posada, Chief, Engineering <input checked="" type="checkbox"/> German Alvarez, Assistant General Manager <input checked="" type="checkbox"/> Mark Watton, General Manager		
SUBJECT:	Informational Item - Feasibility of Indirect Potable Reuse/Direct Potable Reuse - Ralph W. Chapman Water Reclamation Facility Purification Plant to Sweetwater Reservoir Technical Note		

### GENERAL MANAGER'S RECOMMENDATION:

No recommendation. This is an informational item only.

### COMMITTEE ACTION:

Please see Attachment A.

### PURPOSE:

To present to the Board of Directors (Board) the completed Technical Note on Feasibility of Indirect Potable Reuse/Direct Potable Reuse (IPR/DPR) - Ralph W. Chapman Water Reclamation Facility (RWCWRF) Purification Plant to Sweetwater Reservoir that identifies and discusses the potential for creating a potable water supply for the District from existing recycled water sources.

### ANALYSIS:

Interest in creating additional potable water supplies in California due to extended drought conditions has lead the District to investigate the feasibility of an IPR/DPR project from its recycled water supplies. RWCWRF provides up to 1.3 MGD and the City of San Diego's South Bay Water Reclamation Plant (SBWRP) currently delivers up to 6 MGD of recycled water to the District. An IPR/DPR treatment

facility at RWCWRF would send product water to the Sweetwater Reservoir where it could be treated by Sweetwater Authority (SWA) at their Perdue Water Treatment Plant and made available to the District through an interconnection of the water systems. The District met with SWA representatives to discuss this concept level project and has shared the results.

Two options were investigated, with the first involving only the recycled water available from RWCWRF at 1.3 MGD, and the second considering up to 4 MGD from SBWRP added to the RWCWRF supply. Option 1 projects the production of 900 AFY of potable water at a cost range of \$3,860/AF to \$4,780/AF. Option 2 could create roughly 2,800 AFY of potable water at a cost range of \$3,450/AF to \$4,380/AF.

Two issues that greatly impact the planning level costs developed are the disposal of brine from the treatment process and assumptions on the IPR/DPR treatment process. There is currently no restriction on disposal of brine to the sanitary sewer, but there is the potential for this to change with the impacts it could have on the Pure Water Program the City of San Diego is initiating. Therefore, a range of costs is presented for each option. With the State Water Resources Control Board Division of Drinking Water (DDW) still in the process of setting IPR/DPR regulations, assumptions had to be made on treatment level, staffing, and reservoir augmentation. The District will continue to monitor the developing framework for IPR/DPR and its impacts on the assumptions used in the report.

The completed Technical Note by Atkins with Regulatory Discussion Technical Memorandum by Michael R. Welch (Attachment C) is attached. Also attached are Exhibits A and B which give an overall map of the proposed work identified for Options 1 and 2 in the Technical Note.

**FISCAL IMPACT:**             Joe Beachem, Chief Financial Officer

No fiscal impact as this is an informational item only.

**STRATEGIC GOAL:**

This Project supports the District's Mission statement, "To provide high value water and wastewater services to the customers of the Otay Water District in a professional, effective, and efficient manner" and the General Manager's Vision, "A District that is at the forefront in innovations to provide water services at affordable rates, with a reputation for outstanding customer service."

**LEGAL IMPACT:**

None.





## ATTACHMENT A

<b>SUBJECT/PROJECT:</b>  P1210-008000	Informational Item - Feasibility of Indirect Potable Reuse/Direct Potable Reuse - Ralph W. Chapman Water Reclamation Facility Purification Plant to Sweetwater Reservoir Technical Note
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### COMMITTEE ACTION:

The Engineering, Operations, and Water Resources Committee (Committee) reviewed this item at a meeting held on July 19, 2016, and the following comments were made:

- Staff indicated that the Technical Note was prepared by Atkins and Michael R. Welch. See Attachment C of the staff report for additional details.
- Staff reviewed the report and provided a PowerPoint presentation (Attachment B) that included information of the following:
  - Overview - Explore the feasibility of IPR/DPR water supply from the District's existing recycled water sources using:
    - 1) an advance water purification facility at the RWCWRF; and
    - 2) the Sweetwater Authority (SWA) Sweetwater Reservoir
  - Water Supply using wastewater from the Rancho San Diego sewer basin and excess recycled water from the City of San Diego SBWRP.
  - Advanced Water Purification Facility (AWPF) Treatment process to meet expected regulatory requirements.
  - Project Alternatives - Two (2) Options: 1) Supply from RWCWRF Only or 2) Supply from RWCWRF and SBWRP
  - Maps of Option 1 and 2
  - Required OWD System Improvements
  - Open Issues
  - Concept Level Costs, which staff noted that the costs are preliminary and conservative.
- The Committee commented that they appreciate staff exploring two (2) options for the feasibility of IPR/DPR water supply, especially the one option that included the use of City of San Diego's recycled water. Staff's information provided a general

idea that after considering all of the responsibilities (i.e. staffing requirements, regulations, and the cost of infrastructures) to obtain IPR/DPR water supply through the District's existing recycled water sources, the water flow rate of 2-6 MGD is too small to be feasible.

Following the discussion, the Committee supported staffs' recommendation and presentation to the full board as an informational item.



# Overview

Explore the feasibility of creating an Indirect Potable Reuse / Direct Potable Reuse (IPR/DPR) water supply from the District's existing recycled water sources using:

- an advanced water purification facility (AWPF) at the Ralph W. Chapman Water Reclamation Facility (RWCWRF); and
- Sweetwater Authority (SWA) Sweetwater Reservoir

Potable water would be produced from this supply at the SWA Perdue WTP

# Water Supply

## RWCWRF

- Wastewater from Rancho San Diego Sewershed, Total Basin Flow FY 2016 – 1.54 MGD
- Plant Design Capacity – 1.3 MGD
- Avg District Sewer Flow FY 2016 – 1.03 MGD

## City of San Diego South Bay Water Reclamation Plant (SBWRP)

- Available Recycled Water - 6 MGD
- Seasonally Available Excess Recycled Water
  - 4 MGD (Winter), 0 MGD (Summer)

# *AWPF Treatment*

## IPR/DPR Criteria

- Currently no statewide regulations exist to govern IPR augmentation of reservoirs, these are still in the development phase
- AWPF to involve Reverse Osmosis (RO) and advanced oxidation treatment
- Real-time monitoring and diversion of non-spec water
- Dechlorination at discharge to receiving water body
- Reservoir storage achieving minimum mean hydraulic retention time (potentially 6 months) and dilution levels

## *Project Alternatives*

### OPTION 1 – Supply from RWCWRF Only

- Plant Capacity – 1.3 MGD
- Title 22 Recycled Water Production (90% Efficiency) – 1.17 MGD
- IPR/DRP Water Production (85% Efficiency) – 0.99 MGD
- Available Potable Water Supply (Less 20% Transmission and Reservoir Evaporation Losses) – 0.8 MGD

# *Project Alternatives*

## OPTION 2 – Supply from RWCWRF and SBWRP

- Title 22 Recycled Water to AWPf
  - Maximum Months – 5.17 MGD
  - Average Month – 3.67 MGD
- IPR/DRP Water Production (85% Efficiency)
  - Maximum Months – 4.39 MGD
  - Average Month – 3.12 MGD
- Available Potable Water Supply (Less 20% Losses)
  - Maximum Months – 3.55 MGD
  - Average Month – 2.52 MGD





## *OWD System Improvements*

- Add third filtration unit and product water storage at RWCWRF
- Interconnection to SWA Water System at Perdue WTP with pipelines and OWD Perdue WTP PS (integrated with North-South Interconnection)
- Option 2 – Construct a 4 MGD RW PS at 944/927 Reservoir Area to convey SBWRP recycled water to RWCWRF AWPf

## Open Issues

- Brine Disposal
  - Disposal via sanitary sewer (\$4/1000 Gal)  
Implementation of the Pure Water Program by the City of San Diego may not make this alternative available, therefore, costs were estimated for hauling as well
  - Disposal via hauling (\$30/1000 Gal)
- Regulatory Staffing Requirements
  - With no regulations in place, assumed staffing level requirements were made for an operator on duty at all times of operation and appropriate Chief and Shift grade levels

# Concept Level Costs

## Basis for Costs

- City of San Diego Recycled Water Study (2012)
- City of San Diego AWP 1.0 MGD Demonstration Plant at North City
- Potable Treatment Costs at SDCWA Rate
- Study Level Design and Construction Factors
  - Contingencies – 30%
  - Engineering and Administration – 20%
  - Construction Management – 10%
  - Permitting – 5%

# Concept Level Costs

## Option 1 Cost Projections

- Total Capital Costs - \$19.6M
- Annual Operations and Maintenance Costs
  - With Sewer Brine Disposal – \$1.76M
  - With Brine Hauling – \$2.6M
- Annual Potable Water Production – 900 AF
- Unit Potable Water Cost Range

***\$3,860/AF to \$4,780/AF***

# Concept Level Costs

## Option 2 Cost Projections

- Total Capital Costs - \$70.8M
- Annual Operations and Maintenance Costs
  - With Sewer Brine Disposal – \$4.9M
  - With Brine Hauling – \$7.5M
- Annual Potable Water Production – 2,824 AF
- Unit Potable Water Cost Range

***\$3,450/AF to \$4,380/AF***



# Technical note

<b>Project:</b>	Feasibility of IPR/DPR - RWCWRF Purification Plant to Sweetwater Reservoir	<b>To:</b>	Steve Beppler, Otay Water District
<b>Subject:</b>	Technical Memorandum	<b>From:</b>	Jud Warren
<b>Date:</b>	June 28, 2016	<b>cc:</b>	Cynthia Peraza

## BACKGROUND

The Otay Water District (District) has identified an opportunity for an Indirect Potable Reuse/Direct Potable Reuse (IPR/DPR) project utilizing one or two potential sources of recycled water. Two potential projects have been identified. Both projects would generally consist of advanced water filtration processes at the Ralph W. Chapman Wastewater Reclamation Facility (RWCWRF) to treat Title 22 effluent to IPR quality and the facilities to transmit the treated water to the Sweetwater Reservoir. The reservoir would provide detention time and environmental buffer as required by the Draft IPR regulations. The District would take treated water from Sweetwater Authority (SWA) at a quantity and price to be determined. IPR project Option 1 is based upon treating Title 22 effluent produced at the RWCWRF and Option 2 is a larger project that would include an additional supply of available recycled water from the City of San Diego's South Bay Water Reclamation Plant (SBWRP).

The goal of the study is to provide an initial feasibility review and costs for the potential opportunities and constraints.

## REGULATORY REQUIREMENTS

Regulatory requirements for an IPR project are in flux. For the purposes of this memorandum, a separate draft Technical Memorandum prepared by Michael R. Welch, Ph.D., P.E. dated October 12, 2015 has been used as reference information for the expected regulatory considerations.

This IPR project is a conceptual project and is therefore based upon existing regulations in place, and key requirements and expected regulations that would likely be applicable for addition of purified water to Sweetwater reservoir.

A summary of the requirements that are applicable to the purposes of this memorandum are as follows:

1. An enhanced source control program for the wastewater service area generating wastewater influent to the RWCWRF would be required.
2. Treatment at the RWCWRF would require production of recycled water that meets Title 22 requirements
3. An Advanced Water Purification Facility (AWPF) would be required that involves Reverse Osmosis (RO) and an advanced oxidation process capable of meeting Department of Drinking Water (DDW) specifications
4. Post-treatment chlorination to maintain a free chlorine residual in the conveyance pipeline
5. Dechlorination of the purified water is required prior to discharge to the reservoir

# Technical note

6. Reliability features to monitor discharge in real-time and react to treatment failure. Water not meeting the DDW specifications would require diversion away from Sweetwater reservoir.
7. Reservoir storage at Sweetwater reservoir would require a minimum hydraulic retention time and a specified dilution
8. SWA would provide potable water treatment to DDW standards
9. The District would take treated water from a connection to the SWA distribution system at a location to be determined

## OPTION 1 – IPR WITH RWCWRF SUPPLY

### RWCWRF Effluent

The RWCWRF permit capacity is 1.3 MGD (1456 AF/YR). The sewer shed serves the District and County of San Diego, with basin flows of 1.97 MGD in 2010 dropping recently to 1.54 MGD in 2015 due partly to water conservation associated with the current drought. The District's share of the basin flow in 2015 was 1.03 MGD, but the District has the potential to treat County flows should District flows continue to decrease. Upgrades to the RWCWRF in 2012 have the facility operating well and with redundancies for everything except filtration, where the addition of a third filter is recommended. In 2015, the District produced 1,026 AFY of recycled water from RWCWRF. The maximum Sweetwater Reservoir capacity is approximately 28,000 ac-ft.

### RWCWRF Upgrades

Existing RWCWRF Processes and Capacity – The existing RWCWRF plant consists of headworks, grit handling, extended aeration biological process, clarification, chlorine disinfection, and effluent filtration. Existing capacity is 1.3 mgd.

Reliability upgrade for Title 22 filters – In order to provide for maintenance and reliability of the filtration process an additional filter will be required. After in plant and process usage losses, the expected flow available to send to advanced treatment is approximately 1.17 mgd if the plant is operating at its full 1.3 mgd capacity. Estimated costs for an additional filter unit at the RWCWRF were based on costs published in the City of San Diego's Recycled Water Study (2012), escalated for reduced scale and escalated to current dollars based on the ENR Construction Cost Index.

Advanced Water Purification Processes Required for IPR/DPR – Processes which would be required for treatment of Title 22 quality effluent for IPR would be similar to what is proposed for the City of San Diego (City) Pure Water Program and include membrane filtration, reverse osmosis, and UV disinfection. The new processes are assumed to be located on the southern portion of the existing plant site. Expected yield from the AWPf is 0.99 mgd. Brine and solids generated during the advanced treatment processes could potentially be discharged via existing sewer to METRO. However, disposal to METRO may not be an option for solids discharge due to increased brine in the METRO system from the City's Pure Water program. A range of brine disposal costs is given to reflect both brine discharge to METRO and hauling of brine for disposal. Added personnel would be required to operate the new treatment facilities. It is expected that the personnel required to run the facility would be a Grade 4 Chief Operator with RO experience as well as Grade 3 Shift Operators. The plant would run 24/7 and require an operator on site at all times.

# Technical note

Product Water Storage – AWP effluent will need to be continually tested to ensure that it is meeting drinking water standards prior to leaving the AWP site. In order to allow time for product water to be tested, storage must be provided on site to keep the AWP effluent from leaving the site prior to receiving acceptable test results. Twelve hours of storage (0.5 mg) is assumed to satisfy this requirement. Were the product water to fail to meet the required standards, the District could discharge it to the District's existing recycled water ponds which the RWCWRF currently pumps to using the existing pump station and discharge pipeline.

## **Treated Water Discharge Conveyance to Sweetwater Reservoir**

Following completion of treatment, the AWP effluent must be conveyed to the Sweetwater Reservoir for detention per current regulatory requirements, followed by drinking water treatment at Perdue WTP. AWP effluent would be conveyed off of the RWCWRF site to a site at or near the start of the SWA Sweetwater Reservoir Urban Runoff Diversion System (URDS). At this location the District would discharge into the Sweetwater River or directly into the URDS, both of which drain to the Sweetwater Reservoir. The approximate length of pipeline required to reach this point is 3,500 linear feet. Based on a maximum flow of 0.99 mgd given the current assumptions regarding process efficiency, an 8-inch or 10-inch diameter pipeline would be required to convey the flow. For the purposes of this analysis, a 10-inch diameter pipe was assumed.

Additional costs associated with the discharge of treated AWP effluent include improvements to the effluent pump station, a dechlorination facility at the outlet of the pipeline from RWCWRF, a discharge structure at the exit of the pipeline, additional right-of-way (ROW) acquisition costs and environmental costs anticipated from being near undeveloped, riparian habitats. Effluent pump station improvements would be primarily adjusting and augmenting the station to include VFDs to allow it to pump variable flows and to allow it to move water at the much lower head required to get it to the URDS or Sweetwater River. Dechlorination would be required to remove chlorine added at the completion of the AWP process in order to protect the river and/or reservoir environment(s). The location of the dechlorination facility would require the District to acquire ROW as well as provide electrical and physical access to the site, posing a number of costly challenges. It is also anticipated that during transmission to the reservoir a loss of approximately 5% could occur from leakage in the pipeline and infiltration in the URDS or Sweetwater River basin.

## **Sweetwater Reservoir Detention and Treatment**

Following transmission to the Sweetwater Reservoir, per current regulatory requirements the AWP effluent would require a minimum of four months of detention time prior to treatment at the Perdue WTP. During this detention time the reservoir is subject to evaporation losses on a daily basis. According to the SWA, at a level of 15,000 AF, previous studies have shown annual evaporation losses in the proximity of 15%. Given that the District's supply would require a detention time of 4 months according to existing IPR policy, an evaporation rate of 5% was initially assumed. However, SWA does not regularly withdraw water from Sweetwater Reservoir and it is more likely that flow deposited into the reservoir will remain there for periods closer to 12 months and therefore 15% evaporation loss was assumed.

## **OWD Connection to and Transmission from SWA Distribution System and Cost**

The District currently has planned in its CIP the construction of the Perdue WTP Pump Station (PS), which is currently a 10,000 gpm station to transfer flow from the Perdue WTP to the Otay 624 and 640 zones. In order for the IPR project to be viable, this station or another connection to the

# Technical note

SWA distribution system would be required to deliver the 0.80 mgd (555 gpm) average annual rate of product water produced. However, this project would not be the impetus for the PS and therefore the entire cost for the PS has not been assigned to this project. In order to recognize that the project does both require and participate in a portion of the capacity of this PS, a proportional amount of the current estimated cost of the PS (\$11.5 M total cost) was assigned to the IPR project costs. Additionally, the approximate cost to pump the project flows to the indicated zones has been included as a power cost in addition to estimated O&M costs in proportion to the project's usage of the PS capacity.

It is of note that should the District choose to make the pump station smaller or reduce the pump station to only the capacity required to serve this project, the relative cost of the PS to the project would increase. Additionally, the cost of the planned PS quoted above includes the cost of the required interconnection pipeline and metering station.

## **OPTION 2 – IPR WITH RWCWRF AND AVAILABLE SBWRP SUPPLY**

### **SBWRP Effluent**

The District currently has the contractual ability to receive up to 6 mgd of recycled water from the SBWRP, which is needed during peak summer water demands but not fully utilized during the remainder of the year when demands can fall below 2 mgd. Considering the take or pay agreement the District has with the City for this recycled water, there is interest to see if diverting some of this flow to the IPR/DPR process would contribute to a more cost effective facility.

The current configuration of conveying recycled water from the RWCWRF to the distribution system is to pump it through about 3 miles of 14-inch diameter piping and then flow by gravity through a half mile of piping to the 944 and 927 storage ponds above the Salt Creek golf course. Recycled water from SBWRP is pumped up to this service level already through the 680-1 Pump Station and the 944-1 Pump Station, which has a firm capacity of 4,900 gpm (about 7 mgd).

Based upon past typical recycled water demands, there would be about 4 mgd of excess recycled water available from the SBWRP supply that could be made available for IPR/DPR during at least one third of the year, with reduced supply available during another third of the year and little or no excess for the last third. For analysis purposes, it is assumed that the surplus supply available from the SBWRP throughout the year is as follows: 4 mgd for 4 months, 3 mgd for another 4 months, and an average of 0.5 mgd for the remaining 4 months of the year. This averages out to 2.5 mgd of recycled water annually that could be available for treatment at the proposed RWCWRF AWP. It is noted that all treatment and transmission facilities designed to utilize SBWRP effluent would require capacity to accommodate the peak supply rate but would operate at reduced capacity during most of the year.

### **SBWRP Effluent Transmission Facilities**

To divert SBWRP recycled water to RWCWRF, a new variable speed pump station adjacent to the 927 recycled water storage pond would be required with a maximum capacity of 4 mgd, or approximately 2,800 gpm. The existing ½ mile of gravity pipeline would be paralleled with a 16-inch diameter pipeline that connects to the existing 14-inch diameter pipeline at the high elevation point (1067 feet). The pump station will be designed to maintain positive pressure at the highpoint, and a hydropower turbine will be installed at the RWCWRF (elevation 300 feet) to recover energy

# Technical note

from the approximately 275 psi to 320 psi of available pressure head at the plant. The energy produced at the maximum flow rate of 4 mgd and 275 psi is estimated at 5,020 kWhr per day. The energy output will vary with the flow rate, and it is noted that at lower flows the available pressure head will increase.

With these new facilities and the existing recycled water pump stations, recycled water produced at the SBWRP could be delivered to the RWCWF where it would be combined with RWCWF Title 22 effluent for treatment at the proposed AWP. Although no other capacity improvements would be required to the existing recycled water pump stations and pipelines, the cost of additional pumping at the 680-1 and 944-1 pump stations are included as power O&M costs for the IPR project.

## **RWCWRF Upgrades**

Existing RWCWRF Processes and Capacity – Same as Option 1

Reliability upgrade for Title 22 filters – Same as Option 1

Advanced Water Purification Processes Required for IPR/DPR – Processes which would be required for treatment of Title 22 quality effluent for IPR would be similar to what is proposed for the City of San Diego (City) Pure Water Program and are the same as for Option 1, which include membrane filtration, reverse osmosis, and UV disinfection. However, the AWP would operate at different production rates throughout the year depending on available supply from the SBWRP. Expected maximum yield from the AWP is 04.39 mgd, the average yield is 3.12 mgd, and the minimum yield with supply from RWCWRF only is 0.99 mgd. The varying production rates will require a modular treatment plant design. Brine and solids generated during the advanced treatment processes could potentially be discharged via existing sewer to METRO. However, disposal to METRO may not be an option for solids discharge due to increased brine in the METRO system from the City's Pure Water program. A range of brine disposal costs is given to reflect both brine discharge to METRO and hauling of brine for disposal. Added personnel would be required to operate the new treatment facilities. It is expected that the personnel required to run the facility would be a Grade 4 Chief Operator with RO experience as well as Grade 3 Shift Operators. The AWP would run 24/7 throughout the year, even during the summer months at the minimum production rate to treat effluent from the RWCWRF only. An operator is assumed to be required on site at all times.

Product Water Storage – AWP effluent will need to be continually tested to ensure that it is meeting drinking water standards prior to leaving the AWP site. In order to allow time for product water to be tested, storage must be provided on site to keep the AWP effluent from leaving the site prior to receiving positive test results. Twelve hours of storage (2.2 mg) is assumed to satisfy this requirement. Were the product water to fail to meet the required standards, the District could discharge it to the District's existing recycled water ponds which the RWCWRF currently pumps by retaining the existing RWCWRF pump station and constructing bypass lines around the hydropower turbine and new pump station at the 927 storage pond.

## **Treated Water Discharge Conveyance to Sweetwater Reservoir**

Following completion of treatment, the AWP effluent must be conveyed to Sweetwater Reservoir for detention per current regulatory requirements, follow by drinking water treatment at Perdue WTP. Similar to Option 1, AWP effluent would be conveyed off of the RWCWRF site to a site at or near the start of the SWA Sweetwater Reservoir URDS. At this location the District would

# Technical note

discharge into the Sweetwater River or directly into the URDS, both of which drain to the Sweetwater Reservoir. The approximate length of pipeline required to reach this point is 3,500 linear feet. Based on a maximum flow of 4.39 mgd given the current assumptions regarding process efficiency, a 16-inch diameter pipeline would be required to convey the flow.

Additional costs associated with the discharge of treated AWP effluent include improvements to the effluent pump station, a dechlorination facility at the outlet of the pipeline from RWCWRF, a discharge structure at the exit of the pipeline, additional ROW acquisition costs and environmental costs anticipated from being near undeveloped, riparian habitats. Effluent pump station improvements would primarily be adding a low-head pump with VFD to allow it to pump variable flows and move water at the much lower head required to get it to the URDS or Sweetwater River. Dechlorination would be required to remove chlorine added at the completion of the AWP process in order to protect the river and/or reservoir environment(s). The location of the dechlorination facility would require the District to acquire ROW as well as provide electrical and physical access to the site, posing a number of costly challenges. It is also anticipated that during transmission to the reservoir a loss of approximately 5% could occur from leakage in the pipeline and infiltration in the URDS or Sweetwater River basin.

## **Sweetwater Reservoir Detention and Treatment**

Following transmission to the Sweetwater River, per current regulatory requirements the AWP effluent would require a minimum of four months of detention time prior to treatment at the Perdue WTP. During this detention time the reservoir is subject to evaporation losses on a daily basis. According to the SWA, at a level of 15,000 AF, previous studies have shown annual evaporation losses in the proximity of 15%. Given that the District's supply would require a detention time of 4 months according to existing IPR policy, an evaporation rate of 5% was initially assumed. However, SWA does not regularly use the Sweetwater Reservoir and it is more likely that flow deposited into the reservoir will remain there for periods closer to 12 months and therefore 15% evaporation loss was assumed.

## **OWD Connection to and Transmission from SWA Distribution System and Cost**

The District currently has planned in its CIP the construction of the Perdue WTP PS, which is currently a 10,000 gpm station to transfer flow from the Perdue WTP to the Otay 624 and 640 zones. In order for the IPR project to be viable, this station or another connection to the SWA distribution system would be required to deliver the 2.52 mgd (1,750 gpm) average annual rate of product water produced. However, this project would not be the impetus for the PS and therefore the entire cost for the PS has not been assigned to this project. In order to recognize that the project does both require and participate in a portion of the capacity of this PS, a proportional piece of the current estimated cost of the PS (\$11.5 M total cost) was assigned to the project. Additionally, the approximate cost to pump the project flows to the indicated zones has been included as a power cost in addition to estimated O&M costs in proportion to the project's usage of the PS capacity.

It is of note that should the District choose to make the pump station smaller or reduce the pump station to only the capacity required to serve this project, the relative cost of the PS to the project would increase. Additionally, the cost of the planned PS quoted above includes the cost of the interconnection pipeline and metering station.

# Technical note

## CONCEPTUAL PLANNING LEVEL COSTS

### General

All capital costs included in this study are increased by a factor of 1.65 prior to final calculations upon which conclusions are made. This factor represents a summation of individual factors which include:

- 30% of Capital Cost for Contingencies
- 20% of Capital Costs for Engineering and Administration of the project
- 10% of Capital Costs for Construction Management
- 5% of Capital Costs for Permitting

All O&M costs are not subject to the escalation factors, which the capital costs are increased by. O&M costs however, are increased by an escalation factor,  $j$ , when considering annual costs at a present cost level to consider the impact of inflation and rising costs on the total cost of the project.

In order to generate an estimated cost per acre-foot figure for the product water, life cycle cost factors had to be determined to amortize capital costs incurred in the project. The following factors have been used to determine an estimate of the annual project costs: Project Life Cycle/Amortization Length ( $N$ ) of 30 years and Interest Rate ( $i$ ) of 4.5%.

### Basis for Costs

Estimated costs for the Advanced Water Purification (AWP) processes were based primarily on costs published in the City of San Diego's Recycled Water Study (2012), escalated for reduced scale and escalated to current dollars based on the ENR Construction Cost Index. These estimates were then verified by comparing the total cost of the estimated AWP facilities to the actual costs for the City's 1.00 mgd AWP demonstration plant.

The cost to retain a treatment plant operator was provided by the District. Brine disposal to the sewer was estimated at \$4 per 1000 gallons, but if the METRO sewer is unavailable for brine disposal, the cost for hauling brine is estimated at \$30 per 1000 gallons. A range of costs for brine disposal is given reflecting the two options. Pipeline costs were based upon a Construction Cost factor of \$25/in-ft.

According to the SWA, a series of fees exists for storage and treatment of AWP effluent following transmission to the Sweetwater Reservoir. The fees provided by the SWA for consideration in this study include a reservoir storage fee, a pumping fee for extracting flow from Sweetwater Reservoir, and a treatment fee for treating stored flow at Perdue WTP. The reservoir storage fee was quoted as \$1.83 per acre foot, and is analyzed based on the volume required to store 12 months of average AWP effluent. The pumping fee covers the cost of pumping water to be treated at Perdue WTP from the Sweetwater Reservoir to the WTP. The final fee provided by the SWA is the cost for treatment at Perdue WTP. Treatment at Perdue WTP is anticipated to be at the cost of treatment charged by the SDCWA of approximately \$280 per acre foot.

It should be noted when reviewing the analysis presented and the final estimate cost of the project supply that the cost for the source water from the RWCWRF is included as the cost to produce Title 22 recycled water (\$350/af). This is the source that the project pulls from and provides advanced treatment to produce IPR quality effluent. No production costs have been allocated to source water from the SBWRP since only surplus water under the existing take or pay agreement

# Technical note

with the City of San Diego is considered as a source of supply. The costs discussed and presented represent the additional cost to take the wastewater supply from its current level of treatment (Title 22 tertiary) to a finished drinking water supply using an advanced treatment process for IPR.

## Cost Summary

### OPTION 1 rough planning level cost per acre-foot

Given the various components and costs associated with a project to produce IPR quality water at RWCWRF, store it in Sweetwater Reservoir, treat it at Perdue WTP and then take it from the SWA distribution system the following planning level costs have been generated for consideration of this project.

- \$11.9M in estimated capital costs, escalated to \$19.6M in total capital costs to include contingency, engineering, administration, permitting and construction management
- Amortized capital costs come to a total of \$1.2 M per year based on the stated financing assumptions
- Annual O&M Costs of \$1.76M, which would increase to \$2.6M if brine hauling is required
- Annual project production of 900 AF (0.80 mgd)
- **A total cost of the new supply of \$3,860/AF - \$4,780/AF**

### OPTION 2 rough planning level cost per acre-foot

Given the various components and costs associated with a project to deliver surplus SBWRP effluent, produce IPR quality water at RWCWRF, store it in Sweetwater Reservoir, treat it at Perdue WTP and then take it from the SWA distribution system the following planning level costs have been generated for consideration of this project. It is noted that supply and production rates for Option 2 vary seasonally, and capital costs are generally based on sizing for peak flows whereas O&M costs are based on average flows.

- \$42.9M in estimated capital costs, escalated to \$70.8M in total capital costs to include contingency, engineering, administration, permitting and construction management
- Amortized capital costs come to a total of \$4.4M per year based on the stated financing assumptions
- Annual O&M Costs of \$4.9M, which would increase to \$7.5M if brine hauling is required
- Annual project production of 2,824 AF (2.52 mgd)
- **A total cost of the new supply of \$3,450/AF - \$4,380/AF**

## Exclusions

This study is a conceptual level analysis of the cost to produce a new source of potable water through an IPR process. This study has limits in its accuracy and its ability to analyze all possible or probable costs associated with the project and for that reason substantial contingency costs have been applied to the project. Some project elements that are known but were unable to be quantified due to insufficient information include:

- The allocation of any additional or reduced costs associated with supplying the existing recycled water system from a different source

# Technical note

## Attachments:

- Sweetwater Reservoir IPR Option 1 Water Balance – RWCWRF Supply
- Sweetwater Reservoir IPR Option 1 Cost Analysis – RWCWRF Supply
- Sweetwater Reservoir IPR Option 2 Water Balance – RWCWRF and SBWRP Supply
- Sweetwater Reservoir IPR Option 2 Cost Analysis – RWCWRF and SBWRP Supply
- Otay Water District, 2015. Indirect Potable Reuse (IPR) Regulatory Issues, Michael Welch, October.

	RWCWRF PEAK INFLUENT	TITLE 22 TREATMENT EFFICIENCY	RWCWRF PEAK EFFLUENT	ADVANCED TREATMENT EFFICIENCY	IPR EFFLUENT	TRANSMISSION (to Reservoir) EFFICIENCY	IPR EFFLUENT	DETENTION (evaporation) EFFICIENCY	SWEETWATER WTP EFFLUENT TO OWD	OVERALL PROCESS EFFICIENCY
<b>AVAILABLE FLOWS AND PROCESS EFFICIENCIES</b> →	<b>1.30 mgd</b>	90%	<b>1.17 mgd</b>	85%	<b>0.99 mgd</b>	95%	<b>0.94 mgd</b>	85%	<b>0.80 mgd</b>	62%
		↓		↓		↓		↓		
<b>PROCESS LOSS PERCENTAGES</b> →		10%		15%		5%		15% per year	12 months	Retention Time
		↓		↓		↓		↓		
<b>PROCESS LOSSES</b> →		<b>0.13 mgd</b>		<b>0.18 mgd</b>		<b>0.05 mgd</b>		<b>0.14 mgd</b>		
<b>NOTES</b> →		Losses already accounted for in existing treatment train		Brine, backwash and other treatment losses. O&M Cost Associated		No cost associated with pipeline and transportation losses.		No cost associated with Evaporation Losses. Small cost associated with using Reservoir storage		

Cost Summary - Facilities			Annualized Capital						Capitalized Annual
	Capital Cost	Quantity	Cost	Power Cost	Other O&M Cost	O&M Cost %	Total O&M Cost	Total Annual Cost	Cost
<b>Title 22 Treatment Improvements</b>	<b>\$1,160,000</b>		<b>\$71,000</b>		<b>\$58,000</b>		<b>\$58,000</b>	<b>\$129,000</b>	<b>\$2,700,000</b>
Redundant Filtration Capacity	\$1,160,000	1.30 mgd	\$71,000		\$58,000	5%	\$58,000		
<b>Pre-Treatment Improvements</b>	<b>\$60,000</b>		<b>\$4,000</b>		<b>\$40,000</b>		<b>\$40,000</b>	<b>\$44,000</b>	<b>\$900,000</b>
Source Control Program & public outreach	\$60,000		\$4,000		\$40,000		\$40,000		
<b>Advanced Water Purification Facility</b>	<b>\$8,300,000</b>		<b>\$510,000</b>	<b>\$164,375</b>	<b>\$1,198,750</b>		<b>\$1,363,125</b>	<b>\$1,873,125</b>	<b>\$38,700,000</b>
Micro Filtration <sup>(1)</sup>	\$2,600,000	1.17 mgd	\$160,000	\$60,000	\$140,000	5%	\$200,000		
Reverse Osmosis <sup>(1)</sup>	\$2,980,000	1.08 mgd	\$183,000	\$70,000	\$200,000	7%	\$270,000		
Ozone/UV	\$1,200,000	0.99 mgd	\$74,000	\$25,000	\$62,000	5%	\$87,000		
Chlorination	\$70,000	0.99 mgd	\$4,000	\$6,250	\$31,000	44%	\$37,250		
Sampling	\$50,000		\$3,000	\$3,125	\$7,750	16%	\$10,875		
Failsafe Storage <sup>(2)</sup>	\$1,400,000	0.50 mg	\$86,000		\$28,000	2%	\$28,000		
Brine Disposal - Metro discharge <sup>(3)</sup>		0.09 mgd			\$130,000		\$130,000		
Additional Operations Staff <sup>(4)</sup>					\$600,000		\$600,000		
<b>Effluent Transmission to Sweetwater Reservoir</b>	<b>\$1,725,000</b>		<b>\$106,000</b>	<b>-\$120,000</b>	<b>\$56,750</b>		<b>-\$63,250</b>	<b>\$42,750</b>	<b>\$880,000</b>
Effluent PS Improvements <sup>(5)</sup>	\$200,000	0.99 mgd	\$12,000	-\$120,000	\$10,000	5%	-\$110,000		
Pipelines/Channels <sup>(6)</sup>	\$875,000	3,500 lin-ft	\$54,000		\$8,750	1%	\$8,750		
Dechlorination Facility <sup>(7)</sup>	\$350,000	0.94 mgd	\$21,000		\$35,000	10%	\$35,000		
Pipeline and Dechlor Facility ROW and Environmental	\$200,000								
Sweetwater Reservoir Discharge Structure	\$100,000	0.94 mgd	\$6,000		\$3,000	3%	\$3,000		
<b>OWD Connection to SWA Distribution System and PL</b>	<b>\$640,000</b>		<b>\$39,000</b>	<b>\$61,000</b>	<b>\$32,000</b>		<b>\$93,000</b>	<b>\$132,000</b>	<b>\$2,700,000</b>
Participation in Perdue WTP PS and Connection PL <sup>(8) (9)</sup>	\$640,000	0.80 mgd	\$39,000	\$61,000	\$32,000	5%	\$93,000		
<b>Sweetwater WTP Effluent Purchase</b>					<b>\$272,600</b>		<b>\$272,600</b>	<b>\$272,600</b>	<b>\$5,600,000</b>
Reservoir Storage - 12 month detention (\$1.83/AF-mo)		0.80 mgd			\$1,624		\$1,624		
Reservoir Pumping (\$21/AF)		0.80 mgd			\$18,905		\$18,905		
SDCWA Water Treatment Cost (\$280/AF)		0.80 mgd			\$252,061		\$252,061		
Plant Capital Upgrades Participation							\$0		

Life Cycle Costs	
N (years)	30
<i>i</i> (% per year) - interest rate	4.5%
<i>j</i> (% per year) - escalation rate	2.0%
Amortization Factor	0.061
Capitalization Factor	20.7

- <sup>(1)</sup> Assumed 50% of process loss occurs in both MF and RO
- <sup>(2)</sup> Assumed 12 hours of storage required. OWD WMP Update tank cost estimates utilized
- <sup>(3)</sup> Cost based on \$4/1000 for METRO discharge. Brine hauling costs estimated at \$960,000 based on \$30 per 1000 gallons. Half of process losses are production assumed to be brine production.
- <sup>(4)</sup> Advanced treatment facility anticipated to require an operator on-site at all times. A Grade 4 Chief Operator and Grade 3 Shift Operators are anticipated to operate the facility.
- <sup>(5)</sup> Effluent pumping costs of approximately \$10,000 per month avoided by low head and gravity discharge to Sweetwater tributary
- <sup>(6)</sup> Quantity shown is approximate linear feet of 10-inch pipeline. Unit cost of \$25/in-ft used to estimate cost
- <sup>(7)</sup> Includes cost to run electrical, development of site access, and development of the facility itself
- <sup>(8)</sup> Currently planned Perdue WTP PS & PL will convey 10,000 gpm at est. cost of \$11.5M. Proportionate cost included (e.g. 700/10,000 gpm\*\$11.5M)
- <sup>(9)</sup> Power cost based on 1,043 KW consumption and \$0.12/kWhr (per District email, Sept 21, 2015)

Supply Unit Cost	
Estimated Project Capital Costs (\$)	\$11,900,000
Soft Costs and Contingency Factor <sup>(1)</sup>	1.65
Total Project Capital Costs (\$)	\$19,600,000
Capitalized O&M Costs (\$)	\$51,480,000
Total Project Present Cost (\$)	<b>\$71,080,000</b>
Annual O&M Costs (\$/yr)	\$1,760,000
Amortized Capital Costs (\$/yr)	\$1,200,000
Total Annual Project Cost (Capital & O&M)	<b>\$2,960,000</b>
Annual Project Production (AF)	<b>900</b>
<b>Treatment, Transmission, Detention &amp; Distribution Cost (\$/AF)</b>	<b>\$3,290</b>
<b>Annual RWCWRF Title 22 Treatment Cost (\$)<sup>(2)</sup></b>	<b>\$510,000</b>
<b>Total Project Supply Cost (\$/AF)<sup>(3)</sup></b>	<b>\$3,860</b>

<sup>(1)</sup>Soft Costs and Contingency are as follows: 30% for Contingency, 20% for Design and Admin, 10% for CM, 5% for Permitting  
<sup>(2)</sup> The full cost of Title 22 treatment at the RWCWRF is applied to this project, which is \$350/AF.  
<sup>(3)</sup> Total Project Supply Cost increases to \$4,780/AF if brine hauling is required.

OTAY WATER DISTRICT - SWEETWATER RESERVOIR IPR CONCEPT WATER BALANCE OPTION 2 - RWCWRF & SBWRP EFFLUENT, PEAK (WINTER) FLOWS

06/28/2016

	RWCWRF PEAK INFLUENT	TITLE 22 TREATMENT EFFICIENCY	RWCWRF PEAK EFFLUENT	SBWRP PEAK EFFLUENT (WINTER)	ADVANCED TREATMENT EFFICIENCY	IPR EFFLUENT	TRANSMISSION (to Reservoir) EFFICIENCY	IPR EFFLUENT	DETENTION (evaporation) EFFICIENCY	SWEETWATER WTP EFFLUENT TO OWD	OVERALL AWT TO DELIVERY EFFICIENCY
AVAILABLE FLOWS AND PROCESS EFFICIENCIES	1.30 mgd	90%	1.17 mgd	4.0 mgd	85%	4.39 mgd	95%	4.17 mgd	85%	3.55 mgd	69%
PROCESS LOSS PERCENTAGES		10%			15%		5%		15% per year	12 months	Detention Time
PROCESS LOSSES		0.13 mgd			0.78 mgd		0.22 mgd		0.63 mgd		
NOTES		Losses already accounted for in existing treatment train			Brine, backwash and other treatment losses. O&M Cost Associated		No cost associated with Transmission Losses.		No cost associated with Evaporation Losses. Small cost associated with using Reservoir storage		

OTAY WATER DISTRICT - SWEETWATER RESERVOIR IPR CONCEPT WATER BALANCE OPTION 2 - RWCWRF & SBWRP EFFLUENT, AVERAGE FLOWS

06/28/2016

	RWCWRF PEAK INFLUENT	TITLE 22 TREATMENT EFFICIENCY	RWCWRF EFFLUENT	SBWRP EFFLUENT (Average)	ADVANCED TREATMENT EFFICIENCY	IPR EFFLUENT	TRANSMISSION (to Reservoir) EFFICIENCY	IPR EFFLUENT	DETENTION (evaporation) EFFICIENCY	SWEETWATER WTP EFFLUENT TO OWD	OVERALL AWT TO DELIVERY EFFICIENCY
AVAILABLE FLOWS AND PROCESS EFFICIENCIES	1.30 mgd	90%	1.17 mgd	2.5 mgd	85%	3.12 mgd	95%	2.96 mgd	85%	2.52 mgd	69%
PROCESS LOSS PERCENTAGES		10%			15%		5%		15% per year	12 months	Detention Time
PROCESS LOSSES		0.13 mgd			0.55 mgd		0.16 mgd		0.44 mgd		
NOTES		Losses already accounted for in existing treatment train			Brine, backwash and other treatment losses. O&M Cost Associated		No cost associated with Transmission Losses.		No cost associated with Evaporation Losses. Small cost associated with using Reservoir storage		

Cost Summary - Facilities	Capital Cost	Peak Quantity	Annualized Capital Cost	Average Quantity	Power Cost	Other O&M Cost	O&M Cost %	Total O&M Cost	Total Annual Cost	Capitalized Annual Cost
<b>Title 22 Treatment Improvements</b>	<b>\$1,160,000</b>		<b>\$71,000</b>			<b>\$58,000</b>		<b>\$58,000</b>	<b>\$129,000</b>	<b>\$2,700,000</b>
Redundant Filtration Capacity	\$1,160,000	1.30 mgd	\$71,000	1.30 mgd		\$58,000	5%	\$58,000	\$129,000	
<b>Pre-Treatment Improvements</b>	<b>\$150,000</b>		<b>\$9,000</b>			<b>\$80,000</b>		<b>\$80,000</b>	<b>\$89,000</b>	<b>\$1,800,000</b>
Source Control Program & public outreach	\$150,000		\$9,000			\$80,000	53%	\$80,000	\$89,000	
<b>SBWRP Effluent Transmission to RWCWRF</b>	<b>\$3,212,000</b>		<b>\$197,000</b>		<b>\$266,000</b>	<b>\$130,600</b>		<b>\$396,600</b>	<b>\$593,600</b>	<b>\$12,300,000</b>
Additional pumping at existing RW pumps <sup>(1)</sup>				2.5 mgd	\$300,000			\$300,000		
Supply PS at 927 Reservoir <sup>(1)</sup>	\$1,860,000	4.0 mgd	\$114,000	2.5 mgd	\$90,000	\$55,800	3%	\$145,800		
Supply pipeline from PS to Junction Box	\$880,000	2,200 lin-ft	\$54,000			\$8,800	1%	\$8,800		
PRV/energy recovery system	\$472,000	4.0 mgd	\$29,000	2.5 mgd	-\$124,000	\$66,000	14%	-\$58,000		
<b>Advanced Water Purification Facility</b>	<b>\$33,004,000</b>		<b>\$2,026,000</b>		<b>\$531,125</b>	<b>\$2,626,750</b>		<b>\$3,157,875</b>	<b>\$5,183,875</b>	<b>\$107,100,000</b>
Micro Filtration <sup>(2)</sup>	\$11,490,000	5.17 mgd	\$705,000	3.67 mgd	\$200,000	\$450,000	4%	\$650,000		
Reverse Osmosis <sup>(2)</sup>	\$13,180,000	4.78 mgd	\$809,000	3.39 mgd	\$230,000	\$640,000	5%	\$870,000		
Ozone/UV	\$5,275,000	4.39 mgd	\$324,000	3.12 mgd	\$78,000	\$200,000	4%	\$278,000		
Chlorination	\$309,000	4.39 mgd	\$19,000	3.12 mgd	\$20,000	\$100,000	32%	\$120,000		
Sampling	\$50,000		\$3,000		\$3,125	\$7,750	16%	\$10,875		
Product Water On-Site Storage <sup>(3)</sup>	\$2,700,000	2.2 mg	\$166,000	--		\$27,000	1%	\$27,000		
Brine Disposal - Metro discharge <sup>(4)</sup>				0.28 mgd		\$402,000		\$402,000		
Additional Operations Staff <sup>(5)</sup>						\$800,000		\$800,000		
<b>Effluent Transmission to Sweetwater Reservoir</b>	<b>\$3,390,000</b>		<b>\$208,000</b>		<b>-\$100,000</b>	<b>\$148,100</b>		<b>\$48,100</b>	<b>\$256,100</b>	<b>\$5,290,000</b>
Effluent PS Improvements <sup>(6)</sup>	\$800,000	4.39 mgd	\$49,000	3.12 mgd	-\$100,000	\$40,000	5%	-\$60,000		
Pipelines/Channels <sup>(7)</sup>	\$1,400,000	3,500 lin-ft	\$86,000			\$14,000	1%	\$14,000		
Dechlorination Facility <sup>(8)</sup>	\$770,000	4.17 mgd	\$47,000	2.96 mgd		\$87,500	11%	\$87,500		
Pipeline and Dechlor Facility ROW and Environmental	\$200,000									
Sweetwater Reservoir Discharge Structure	\$220,000	4.17 mgd	\$14,000	2.96 mgd		\$6,600	3%	\$6,600		
<b>OWD Connection to SWA Distribution System and PL</b>	<b>\$2,010,000</b>		<b>\$123,000</b>		<b>\$192,000</b>	<b>\$101,000</b>		<b>\$293,000</b>	<b>\$416,000</b>	<b>\$8,600,000</b>
Participation in Perdue WTP PS and Connection PL <sup>(9) (10)</sup>	\$2,010,000	3.55	\$123,000	2.52 mgd	\$192,000	\$101,000	5%	\$293,000		
<b>Sweetwater WTP Effluent Purchase</b>						<b>\$855,100</b>		<b>\$855,100</b>	<b>\$855,100</b>	<b>\$17,700,000</b>
Reservoir Storage - 12 month detention (\$1.83/AF-mo)				2.52 mgd		\$5,100		\$5,100		
Reservoir Pumping (\$21/AF)				2.52 mgd		\$59,300		\$59,300		
SDCWA Water Treatment Cost (\$280/AF)				2.52 mgd		\$790,700		\$790,700		
Plant Capital Upgrades Participation								\$0		

Life Cycle Costs	
N (years)	30
i (% per year) - interest rate	4.5%
j (% per year) - escalation rate	2.0%
Amortization Factor	0.061
Capitalization Factor	20.7

Supply Unit Cost	
Estimated Project Capital Costs (\$)	\$42,900,000
Soft Costs and Contingency Factor <sup>(1)</sup>	1.65
Total Project Capital Costs (\$)	\$70,800,000
Capitalized O&M Costs (\$)	\$155,490,000
Total Project Present Cost (\$)	<b>\$226,290,000</b>
Annual O&M Costs (\$/yr)	\$4,890,000
Amortized Capital Costs (\$/yr)	\$4,350,000
Total Annual Project Cost (Capital & O&M)	<b>\$9,240,000</b>
Annual Project Production (AF)	<b>2824</b>
<b>Treatment, Transmission, Detention &amp; Distribution Cost (\$/AF)</b>	<b>\$3,270</b>
<b>Annual RWCWRF Title 22 Treatment Cost (\$)<sup>(2)</sup></b>	<b>\$510,000</b>
<b>Annual SBWRP Title 22 Treatment Cost(\$)<sup>(3)</sup></b>	<b>\$0</b>
<b>Total Project Supply Cost (\$/AF)<sup>(4)</sup></b>	<b>\$3,450</b>

- <sup>(1)</sup> Energy cost for pumps is based on an electricity rate of \$0.12/kWhr and assumes 24hr/day pumping
- <sup>(2)</sup> Assumed 50% of process loss occurs in both MF and RO
- <sup>(3)</sup> Assumed 12 hours of storage required. OWD WMP Update tank cost estimates utilized
- <sup>(4)</sup> Cost based on \$4/1000 for METRO discharge. Brine hauling costs estimated at \$3,014,000 based on \$30 per 1000 gallons. Half of process losses are production assumed to be brine production.
- <sup>(5)</sup> Advanced treatment facility anticipated to require an operator on staff at all times. A Grade 4 Chief Operator and Grade 3 Shift Operators are assumed, with higher staffing during peak production periods.
- <sup>(6)</sup> Effluent pumping costs of approximately \$10,000 per month avoided by low head and gravity discharge to Sweetwater tributary
- <sup>(7)</sup> Quantity shown is approximate linear feet of 16-inch pipeline. Unit cost of \$25/in-ft used to estimate cost
- <sup>(8)</sup> Includes cost to run electrical, development of site access, and development of the facility itself
- <sup>(9)</sup> Currently planned Perdue WTP PS & PL will convey 10,000 gpm at est. cost of \$11.5M. Proportionate cost included (e.g. 700/10,000 gpm\*\$11.5M)
- <sup>(10)</sup> Power cost based on 1,043 KW consumption and \$0.12/kWhr (per District email, Sept 21, 2015)

<sup>(1)</sup>Soft Costs and Contingency are as follows: 30% for Contingency, 20% for Design and Admin, 10% for CM, 5% for Permitting

<sup>(2)</sup> The \$350/AF production cost for the 1.3 mg (1460 afy) supply source of Title 22 Effluent from RWCWRF is the starting point for the cost of this project

<sup>(3)</sup> Only surplus Title 22 effluent from the SBWRP is assumed for the source of supply based on the existing take or pay agreement with the City of San Diego

<sup>(4)</sup> Total Project Supply Cost would increase to \$4,380/AF if brine hauling is required.



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## TECHNICAL MEMORANDUM

To: Bob Kennedy, P.E.  
Otay Water District

From: Michael R. Welch, Ph.D., P.E.  
Consulting Engineer

Subject: Indirect Potable Reuse (IPR) Regulatory Issues  
IPR/Reservoir Augmentation at Sweetwater Reservoir

Date: June 22, 2016

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### INTRODUCTION

**Concept-Level Indirect Potable Reuse Evaluation.** Otay Water District (OWD) is engaged in a concept-level evaluation of whether it may be feasible to utilize highly purified recycled water to augment flows to the 28,000 acre-foot-capacity Sweetwater Reservoir. OWD's concept-level evaluation is being performed with the cooperation of Sweetwater Authority, the owner and operator of Sweetwater Reservoir. The concept being explored in OWD's feasibility investigation would involve:

- constructing an advanced water treatment (AWT) facility to purify recycled water from the OWD Ralph W. Chapman Water Recycling Facility (Chapman WRF),
- constructing conveyance facilities to transport the purified water to Sweetwater Reservoir, and
- implementing an agreement between OWD and Sweetwater Authority to provide for the transfer of treated water from Sweetwater Authority to OWD.

The Chapman WRF is currently permitted to treat up to 1.3 million gallons per day (mgd) of recycled water. Available wastewater flows within the Chapman WRF tributary sewer area will likely limit the potential size of an OWD indirect potable reuse (IPR) reservoir augmentation project to approximately 2 mgd (2,200 acre-feet per year). As a result, purified OWD water under this IPR/reservoir augmentation concept would comprise a small portion of the overall Sweetwater Reservoir inflow.

**Purpose of Memorandum.** In support of OWD's concept-level feasibility assessment of IPR/reservoir augmentation, this Technical Memorandum summarizes key requirements and regulations that would likely be applicable to the discharge of purified water to Sweetwater Reservoir.

### REGULATORY FRAMEWORK

**Reservoir Augmentation Concept.** Numerous IPR projects within California have been implemented that involve recharging recycled water into potable groundwater basins. On the basis of decades of operational experience for such IPR/groundwater recharge projects, state-wide IPR/groundwater recharge regulations have been developed and refined to identify required combinations of recycled water treatment, groundwater recharge, and groundwater storage necessary to ensure that the

level of public health protection afforded by IPR/groundwater recharge projects is equivalent to the high level of public health protection provided by conventional water sources. (DDW, 2014)

Under the IPR/reservoir augmentation concept, surface reservoir storage would serve as an environmental buffer that (1) provides time to respond to a treatment failure and (2) can further attenuate pathogens through dilution or inactivation. The combination of surface reservoir storage followed by conventional potable water treatment would provide an equivalent level of public health protection as the aquifer storage requirements of the existing IPR/groundwater recharge regulations. Figure 1 illustrates the IPR/reservoir augmentation concept.

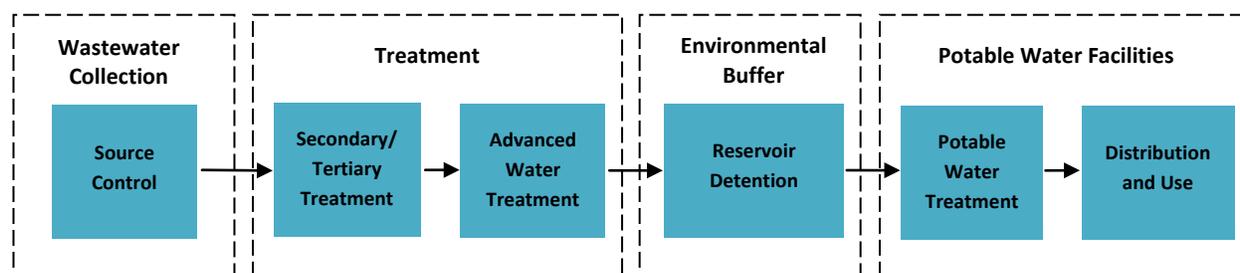


Figure 1 Reservoir Augmentation Concept

**IPR/Reservoir Augmentation Regulatory Framework.** Currently, no statewide regulations exist governing the use of highly treated AWT product water to augment supplies in potable water surface reservoirs, and no such IPR/reservoir augmentation projects have been implemented within California. The State Water Resources Control Board Division of Drinking Water (DDW), however, has initiated the process for developing statewide IPR/reservoir augmentation regulations in accordance with directives of Section 13565 of the *California Water Code*. Pending implementation of statewide IPR/reservoir augmentation regulations, DDW retains its authority to review and approve IPR/reservoir augmentation projects and water sources on a project-by-project basis.

The general framework for regulating IPR/reservoir augmentation projects can be identified through (1) public health protection requirements established within the existing IPR/groundwater recharge regulations, (2) concept-level approval granted by the State of California for a City of San Diego IPR/reservoir augmentation project at San Vicente Reservoir, and (3) the current State of California effort to develop state-wide regulations governing IPR/reservoir augmentation. Under this framework, IPR/reservoir augmentation projects would be regulated by both DDW and the Regional Water Quality Control Board (RWQCB).

The RWQCB would regulate the discharge of purified recycled water to reservoirs through the issuance of a NPDES (National Pollutant Discharge Elimination System) permit that is issued pursuant to the federal Clean Water Act under authority delegated by the U.S. Environmental Protection Agency (EPA). The NPDES permit would implement applicable state and federal water quality plans, policies and standards.

DDW would regulate purified water treatment, reservoir storage, and subsequent potable treatment of the stored water. DDW requirements governing the treatment and discharge of purified water would be incorporated into the NPDES discharge permit issued by the RWQCB. DDW requirements governing

storage, treatment and use of the reservoir water would be incorporated into the water supply permit issued by DDW to regulate potable water operations of the agency that operates the potable water reservoir. The DDW water supply permit would also implement applicable state and federal drinking water standards, policies, and plans.

## **DDW REGULATION**

**Concept Approval of City of San Diego IPR/Reservoir Augmentation Concept.** To date, City of San Diego San Vicente Reservoir project is the only IPR/reservoir augmentation project that has been reviewed and conceptually approved by DDW. The City of San Diego developed its initial IPR/reservoir augmentation concept in the early 1990s, and after a comprehensive review process, received concept-level DDW approval in 1994. Although never implemented, this initial concept formed the basis for the more comprehensive City of San Diego Water Purification Demonstration Project (WPDP) which the City initiated in 2009. To support the WPDP, the City constructed a pilot scale AWT facility that featured two separate reverse osmosis (RO) treatment trains to evaluate membranes from two RO manufacturers, and two alternative pretreatment trains to assess performance of ultrafiltration and microfiltration. The WPDP also featured a year-long comprehensive monitoring program that evaluated pilot plant feed water and product water quality. (City of San Diego; 2012, 2013)

On the basis of the results of the feasibility studies, the City finalized its proposed IPR/reservoir augmentation concept, and in 2012 submitted a request to DDW entitled *Proposal to Augment San Vicente Reservoir with Recycled Water*, that proposed a 15,000 acre-foot per year discharge of purified water to San Vicente Reservoir that featured the following project elements:

- a wastewater source control program for the North City Water Reclamation Plant service area similar to that approved by DDW for the Orange County Groundwater Replenishment System,
- treatment at the City's North City Water Reclamation Plant that includes flow equalization, full nitrification, and recycled water that complies with Title 22 filtration requirements,
- AWT that involves RO and advanced oxidation treatment that is capable of meeting applicable DDW specifications,
- implementation of a reliability program that features real-time monitoring to identify and react to treatment failure by diverting non-spec water in less than the 10 hours it takes to convey AWT product water to San Vicente,
- reservoir storage at San Vicente that achieves a minimum 12 month mean hydraulic retention time and a minimum 100 to 1 dilution of purified water in ambient reservoir water, and implements short-circuiting provisions including the discharge of purified water above the thermocline and withdrawal from below the thermocline, and
- conventional potable water treatment of withdrawn reservoir water, and the ability to take the reservoir offline at any time.

DDW (then called California Department of Public Health) approved the City's proposed IPR/reservoir augmentation concept in correspondence dated September 7, 2012. (CDPH, 2012) Subsequent to the DDW concept-level approval, the City has further added to the level of public health protection by proposing (1) post-treatment chlorination to maintain a free chlorine residual in the conveyance pipeline and (2) dechlorination the purified water prior to discharge to the reservoir.

**DDW Process for Developing State-Wide Regulations.** In accordance with, Section 13565 of the *California Water Code*, DDW has initiated a process for the development of state-wide IPR/reservoir augmentation regulations that entails:

- the establishment of an Advisory Group,
- the establishment of an Expert Panel, and
- the preparation of a report summarizing recommended IPR/reservoir augmentation public health findings and recommended requirements.

To date, DDW has convened both the Advisory Group and Expert Panel, and initial draft internal review documents have been circulated within the Advisory Group, Expert Panel, and DDW which identify proposed state-wide IPR/reservoir augmentation requirements. DDW has not released an official public review draft of proposed IPR/reservoir augmentation regulations, but tentative IPR/reservoir augmentation regulations recommended by the Expert Panel have been distributed by the National Water Research Institute. (NWRI, 2015) The *California Water Code* requires DDW to issue final IPR/reservoir augmentation regulations by December 31, 2016.

**Probable DDW IPR/Reservoir Augmentation Regulations.** Based on the DDW concept approval of the City of San Diego San Vicente project and the current Expert Panel recommendations on state-wide IPR/reservoir regulations, Table 1 (page 5) summarizes probable state-wide DDW requirements that would be applicable for IPR/reservoir augmentation at Sweetwater Reservoir.

It should be noted that current state-wide IPR/reservoir augmentation recommendations being considered by the Expert Panel do not require a source of reservoir diluent water, and would allow previously discharged purified water that meets applicable standards to be used for purposes of complying with reservoir dilution requirements. Current state-wide IPR/reservoir augmentation recommendations, however, would not allow for pathogen removal credits for reservoir storage. DDW source control and treatment requirements shown in Table 1 would be incorporated into the NPDES permit issued by the RWQCB to regulate the discharge of purified water to Sweetwater Reservoir from the OWD AWT facility. DDW reservoir operations and dilution requirements shown in Table 1 would be incorporated into the Water Supply Permit issued by DDW to regulate Sweetwater Authority's potable water system.

**Probable Compliance with Reservoir Discharge Requirements.** The OWD purified water discharge would be small (2000 acre-feet per year or less) compared to the approximate 28,000 acre-foot capacity of Sweetwater Reservoir. The proposed DDW six-month hydraulic retention time requirement, however, is based on reservoir volume divided by monthly reservoir withdrawals. As a result of this proposed computational methodology, the DDW six-month hydraulic retention time requirement may represent a significant constraint to Sweetwater Authority's operation of the reservoir. To comply with the retention requirement, Sweetwater Authority reservoir withdrawals during any given month would be limited to one-sixth of the reservoir volume that remains at the end of the month.

Potential options for discharging OWD purified water to Sweetwater Reservoir include direct discharge to the reservoir or discharge to a surface stream that flows into the reservoir. Hydrodynamic modeling and discharge siting studies would be required to identify the method and location for introducing OWD purified water to Sweetwater Reservoir, but it is probable that a discharge method and discharge site can be selected to ensure that the purified water discharge achieves compliance with the DDW reservoir dilution requirements.

**Table 1**  
**Probable DDW IPR/Reservoir Augmentation Criteria**  
**Applicable to Potential OWD/Sweetwater Authority Project<sup>1</sup>**

Regulated Agency	Category	Probable IPR/Reservoir Augmentation Requirement
OWD (Purified Water Producer)	Source Control <sup>1,2</sup>	<ul style="list-style-type: none"> <li>• Develop and implement a wastewater source control program that:               <ul style="list-style-type: none"> <li>○ identifies sources of DDW- and RWQCB-regulated compounds discharged to the sewer system and identifies, monitors, and assesses the fate of such regulated compounds through the wastewater and recycled water treatment processes, and</li> <li>○ includes an outreach program to commercial, industrial, and residential users.</li> </ul> </li> </ul>
	Treatment and Pathogen Removal <sup>1,2</sup>	<ul style="list-style-type: none"> <li>• The combination of pathogen removal from wastewater treatment and advanced water treatment shall achieve:               <ul style="list-style-type: none"> <li>○ 8-log reduction in enteric virus,</li> <li>○ 7-log reduction in <i>Giardia</i> cyst, and</li> <li>○ 8-log reduction in <i>Cryptosporidium</i> oocyst.</li> </ul> </li> <li>• At least three separate treatment processes must be provided that achieve 1-log reduction or more, and no single process will be credited with more than a 6-log reduction.</li> <li>• No pathogen removal credit is allowed for reservoir storage.</li> <li>• Full advanced treatment shall be employed that utilizes reverse osmosis treatment and an oxidation treatment process.</li> <li>• RO treatment shall provide a minimum of 99 percent removal of sodium chloride, and a nominal average reduction of sodium chloride of 99.2 percent.</li> <li>• Develop and implement protocols to demonstrate through challenge tests or spiked tests that oxidation treatment achieves a minimum 0.5-log reduction in 1,4-dioxane.</li> <li>• During the first 20 weeks of operation, no more than 5 percent of samples shall exceed a total organic carbon concentration of 0.25 mg/l.</li> <li>• Treatment agency must have the ability to dispose of any water not meeting assigned water quality specifications (off-spec water).</li> </ul>
Sweetwater Authority (Water System Operator)	Reservoir Operations <sup>1,2</sup>	<ul style="list-style-type: none"> <li>• The reservoir must be in operation as an approved surface water source for 5 years.</li> <li>• The public water system using the reservoir must have sufficient control and influence over the reservoir to meet assigned IPR parameters.</li> </ul>
	Reservoir Dilution <sup>1</sup>	<ul style="list-style-type: none"> <li>• Achieve either: 100:1 dilution of any 24-hour pulse of purified water, as measured at the reservoir outlet, or 10:1 dilution plus treatment that provides one additional independent log-reduction (over and above the above-listed pathogen removal requirements) of enteric virus, <i>Giardia</i> cyst, and <i>Cryptosporidium</i> oocyst.</li> <li>• Achieve six month theoretical detention time, measured by the reservoir volume at the end of the month divided by the reservoir withdrawals during the month.</li> <li>• Pre-discharge reservoir dilution is to be demonstrated with hydrodynamic modeling or tracers.</li> <li>• A tracer study must be completed within six months of project start-up to demonstrate compliance with the above dilution requirements.</li> </ul>

1 Based on Expert Panel input summarized in NWRI (2015).

2 Based on September 7, 2012 DDW concept-level approval of City of San Diego San Vicente Reservoir IPR/reservoir augmentation project. (CDPH, 2012).

**Disposal of Off-Spec Water.** As shown in Table 1, DDW would require that OWD demonstrate the ability to handle any purified water not meeting specified water quality standards (off-spec water). To handle such off-spec flows, OWD may be required to either:

- maintain capacity within the San Diego Metropolitan Sewerage System to allow for disposal of any such off-spec flows,
- maintain the ability to divert off-spec flows to non-potable storage or use facilities, or
- discharge off-spec flows to surface waters in such a manner so as to divert the off-spec flows around Sweetwater Reservoir.

## **RWQCB REGULATION**

As noted, the RWQCB would regulate OWD's discharge of purified water to Sweetwater Reservoir through issuance of a federal NPDES permit. The NPDES permit would establish purified water concentration standards that implement:

- state and federal water quality standards for Sweetwater Reservoir that are established by the RWQCB and EPA within the *Water Quality Control Plan for the San Diego Basin* (Basin Plan), and
- state-wide standards for inland surface waters that have been imposed by EPA within the California Toxics Rule (CTR).

**Basin Plan Water Quality Objectives.** The Basin Plan establishes surface water quality standards within the San Diego Region on a watershed-by-watershed basis. Basin Plan water quality standards for Sweetwater Reservoir and tributary streams are established for:

- mineral constituents such as total dissolved solids, chloride, sulfate, manganese, iron, boron, and fluoride,
- nutrient constituents (total nitrogen and total phosphorus), and
- toxic constituents for which state and federal primary drinking water standards have been established.

Table 2 (page 7) summarizes Basin Plan surface water quality objectives for mineral constituents within Sweetwater Reservoir and its tributary streams. Because the OWD purified water would be required (per DDW regulations) to undergo full RO treatment, compliance with the Basin Plan mineral standards is not projected to represent a compliance concern.

**Application of Drinking Water Standards to Untreated Surface Waters.** In addition to establishing standards for mineral constituents, the Basin Plan imposes state and federal primary drinking water standards on surface waters within the Sweetwater Reservoir watershed. As a result, while DDW applies the drinking water standards to the final potable supply, the RWQCB applies the state and federal primary drinking water concentration standards to the untreated source water waters within the watershed.

Pilot AWT testing conducted as part of the City of San Diego WPDP demonstrated that AWT purified water would comply with state and federal drinking water standards with a significant margin of safety. Because of the lack of significant industry within the Chapman WRF tributary area, it is probable that OWD purified water would similarly comply with the state and federal drinking water standards.

Parameter	Concentration <sup>1</sup> (mg/l)
Total dissolved solids	500
Chloride	250
Sulfate	250
Iron	0.3
Manganese	0.05
Boron	0.75
Fluoride	1.0
<sup>1</sup> Basin Plan surface water quality objectives not to be exceeded more than 10 percent of the time in waters of the Middle Sweetwater River watershed. Basin Plan surface water quality objectives have been adopted by EPA as federal surface water standards subject to the protection of the federal Clean Water Act.	

**Basin Plan Nutrient Standards.** The Basin Plan establishes a narrative objective that concentrations of nitrogen and phosphorus, by themselves or in combination with any other nutrient, shall be maintained at levels below those that stimulate algae and emergent plant growth. The Basin Plan also established numerical concentration objectives (see Table 3) for total phosphorus. Basin Plan concentration objectives for total phosphorus are stringent, but phosphorus is readily removed through AWT processes and compliance with the Basin Plan standard for total phosphorus should not represent a compliance concern for the level of AWT mandated under proposed DDW IPR/reservoir augmentation requirements.

Type of Receiving Water	Concentration (mg/l)	
	Total Phosphorus (P)	Total Nitrogen (N)
Flowing waters	0.1 <sup>2</sup>	See note <sup>3</sup>
Discharges to standing bodies of water	0.05 <sup>2</sup>	See note <sup>3</sup>
Within standing bodies of water	0.025 <sup>2</sup>	See note <sup>3</sup>
<sup>1</sup> Basin Plan surface water quality objectives not to be exceeded more than 10 percent of the time in waters of the Middle Sweetwater River watershed. Basin Plan surface water quality objectives have been adopted by EPA as federal surface water standards subject to the protection of the federal Clean Water Act. <sup>2</sup> Threshold total phosphorus (P) shall not exceed 0.05 mg/l in any stream at the point where it enters any standing body of water, nor 0.025 mg/l in any standing body of water. The Basin Plan desired goal in order to prevent plant nuisances in streams and other flowing waters is 0.1 mg/l total phosphorus. <sup>3</sup> The Basin Plan does not establish analogous concentration values for total nitrogen, but requires that natural ratios of nitrogen to phosphorus (N:P) are to be identified through monitoring and upheld. In the absence of data, the Basin Plan specifies that a N:P ratio of 10:1 is to be used. If applied to Sweetwater Reservoir, such a 10:1 N:P ratio would translate to a total nitrogen standard of 1.0 mg/l for flowing waters, 0.5 mg/l in discharges to standing bodies of water, and 0.25 mg/l within standing bodies of water.		

Total nitrogen, on the other hand, is not completely removed through AWT and represents a significant compliance concern for IPR/reservoir augmentation projects within the San Diego Region. As shown in Table 3, applying a 10:1 N:P ratio to the Basin Plan standards for total phosphorus would result in

nitrogen concentration limits of 1.0 mg/l in flowing waters, 0.5 mg/l in discharges to standing bodies of water, and 0.25 mg/l within standing bodies of water (e.g. a reservoir). Pilot AWT testing conducted as part of the City of San Diego WPDP indicated that AWT processes could potentially achieve a total nitrogen concentration on the order of 1.0 mg/l, but that achieving total nitrogen concentrations near 0.5 mg/l would not be feasible. To address this issue, the City of San Diego WPDP proposed a reservoir nitrogen compliance approach issue to the RWQCB that was based on:

- providing nitrification/denitrification to minimize nitrogen concentrations within secondary effluent,
- removing total phosphorus to a near zero concentration and maintaining a high N:P ratio in the purified water
- selecting RO membranes to target a purified total nitrogen concentration on the order of 1.0 mg/l,
- utilizing a phosphorus-limiting approach (maintain a high reservoir N:P ratio) to prevent biostimulation within San Vicente Reservoir, and
- implementing a reservoir management program that includes hydrodynamic modeling to predict reservoir nutrient concentrations, identify potential biostimulation problems, and evaluate potential mitigation strategies.

The RWQCB concept approval of the City of San Diego San Vicente Reservoir IPR project acknowledged that this compliance approach should be feasible, and that IPR/reservoir augmentation effluent concentration standards for total nitrogen could be based on managed reservoir N:P ratios. (RWQCB; 2011, 2013)

Additional study will be required to determine if the City of San Diego approach is workable at Sweetwater Reservoir. While the OWD purified water discharge would be relatively small compared to the Sweetwater Reservoir capacity, phosphorus loads in runoff generated within the Sweetwater Reservoir watershed may make it difficult to consistently maintain high reservoir N:P ratios and prevent reservoir biostimulation solely by reducing phosphorus concentrations in the purified water.

**California Toxics Rule.** EPA's California Toxics Rule (CTR) establishes state-wide standards for inland surface waters of California within Title 40, Section 131.38 of the *Code of Federal Regulations* (40 CFR 131.38). (EPA, 2000) CTR standards (see Attachment A) have been established for the protection of aquatic habitat and the protection of public health. Because CTR standards for toxic constituents are more stringent than corresponding drinking water standards, the CTR concentration limits (rather than drinking water limits) would govern purified water treatment and production.

Pilot AWT testing conducted as part of the City of San Diego WPDP indicated that purified AWT water should be able to comply with applicable CTR standards, due to (1) required DDW source controls, (2) almost total removal of toxic organic compounds by RO treatment, and (3) additional removal of toxic organics through advanced oxidation treatment. The WPDP project report, however, raised potential concerns that the occurrence of any detectable concentration of N-nitrosodimethylamine (NDMA) in the AWT influent could represent a potential compliance concern, as the CTR standard for NDMA is 0.00069 µg/l. (City of San Diego, 2013)

**Chlorine Policy.** The CTR does not establish a standard for chlorine residual, but EPA has established national criteria for chlorine residual concentrations to protect freshwater aquatic life. (EPA,

2014). The State Water Resources Control Board (SWRCB) in 2006 proposed that the EPA criteria be established as a statewide standard, but to date the draft chlorine residual standards have not been implemented and are being addressed as part of a SWRCB-sponsored expert panel. (SWRCB, 2006) The draft statewide chlorine standards currently being considered by the SWRCB would require that dischargers reduce chlorine residual in discharges to receiving waters to as close to zero as practicable. Pending approval of statewide standards for chlorine residual, the SWRCB has implemented the EPA criteria maximum concentration (CMC) water quality criteria (see Table 4 below) in the current statewide NPDES permit governing discharges to surface waters from drinking water systems. It is anticipated that such a standard would also be applied to any IPR/reservoir augmentation discharge to Sweetwater Reservoir. (SWRCB, 2014)

<b>Table 4</b> <b>National Recommended Water Quality Criteria for Chlorine</b> <b>for the Protection of Freshwater Aquatic Life</b>		
Parameter	National Recommended Water Quality Criteria <sup>1</sup> (concentration in µg/l)	
	CMC <sup>2</sup>	CCC <sup>3</sup>
Chlorine Residual	19 <sup>4</sup>	11
1 National recommended water quality criteria per EPA (2014) for the protection of aquatic freshwater life. 2 CMC is the criteria maximum concentration, the highest concentration to which aquatic life can be exposed for a short period of time without deleterious effect. 3 CCC is the criteria continuous concentration, the highest concentration to which aquatic life can be exposed for 4 days without deleterious effect. 4 This 19 µg/l criterion has been established as a NPDES effluent concentration limit in the SWRCB general NPDES permit (Order WQ 2014-0194-DWQ) that regulates discharges of potable water to surface waters. (SWRCB, 2014)		

## CONCLUSIONS

The discharge of purified water from an OWD AWT to Sweetwater Reservoir would be regulated by DDW and the RWQCB. DDW would regulate reservoir operations and potable water treatment/use operations through modification of Sweetwater Authority's water supply permit. DDW and the RWQCB would regulate source control, purified water treatment, and the discharge to Sweetwater Reservoir through a NPDES Permit issued to OWD by the RWQCB. Draft regulations being considered by DDW would require OWD to implement a comprehensive source control program that minimizes the potential for the discharge of toxic constituents to the sewer system. Draft regulations being considered by DDW would also require that wastewater and AWT treatment processes achieve 8-log removal of enteric virus, 7-log removal of *Giardia* cysts, and 8-log removal of *Cryptosporidium* oocysts. Treatment must include three processes that achieve a minimum 1-log removal of each pathogen, and no more than 6-log reduction would be credited to any one process.

As part of the IPR/reservoir augmentation concept, OWD will have to provide for means of disposing or reusing AWT product water that does not meet water quality specifications, either through sewer discharge, diversion to the non-potable distribution system, sewer system, or discharge to surface waters downstream from Sweetwater Reservoir.

Discharge of purified water to Sweetwater Reservoir could be achieved either through direct discharge to the reservoir or discharge to a tributary stream.

DDW regulations (currently under development) will likely require that the reservoir achieve a minimum 100:1 dilution for a 24-hour pulse discharge of purified water. Alternately, a 10:1 dilution could be achieved if an additional log removal is provided for virus, *Giardia*, and *Cryptosporidium* through treatment. Regardless of the method of introducing purified water to the reservoir, modeling and tracer studies would be required to confirm compliance with the DDW reservoir dilution requirements.

DDW will also likely impose a minimum monthly reservoir mean hydraulic detention time of six months, computed on the basis of the reservoir volume at the end of the month divided by monthly reservoir outflows. This six-month detention time may act as a constraint on monthly Sweetwater Authority reservoir withdrawals, particularly during times the reservoir volume is minimal.

AWT pilot studies completed by the City of San Diego demonstrate that AWT product water should be able to comply with applicable Basin Plan mineral standards, total phosphorus standards, state and federal drinking water standards, and EPA-imposed California Toxics Rule standards. Compliance with Basin Plan standards for total nitrogen may be problematic, however, as AWT processes will probably be able to achieve total nitrogen concentration of approximately 1.0 mg/l. Managing Sweetwater Reservoir so as to achieve a high N:P ratio represents a potential strategy for complying with Basin Plan biostimulation requirements, but additional study and monitoring will be required to confirm that this approach is feasible. Dechlorination will be required to ensure that the purified water discharge to Sweetwater Reservoir complies with applicable state policy and federal water quality criteria.

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## ABBREVIATIONS

AWT	advanced water treatment
Basin Plan	<i>Water Quality Control Plan for the San Diego Region</i>
CCC	criteria continuous concentration
CDPH	California Department of Public Health (now DDW)
CFR	<i>Code of Federal Regulations</i>
Chapman WRF	OWD Ralph W. Chapman Water Recycling Facility
CMC	criteria maximum concentration
CTR	California Toxics Rule
DDW	State Water Resources Control Board Division of Drinking Water
EPA	U.S. Environmental Protection Agency
IPR	indirect potable reuse
mg/l	milligrams per liter
NDMA	N-nitrosodimethylamine
N:P	nitrogen to phosphorus ratio
NPDES	National Pollutant Discharge Elimination System
NWRI	National Water Research Institute
OWD	Otay Water District
RO	reverse osmosis
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
µg/l	micrograms per liter
WPDP	City of San Diego Water Purification Demonstration Project

## ATTACHMENT A

### CALIFORNIA TOXICS RULE (CTR) STANDARDS

Table A-1 California Toxics Rule (CTR) Standards Metals and Cyanide			
Constituent	Concentration (µg/l)		
	Criteria for the Protection of Aquatic Habitat <sup>1</sup>		Criteria for the Protection of Human Health - Consumption Plus Organisms <sup>1</sup>
	CMC <sup>2</sup>	CCC <sup>2</sup>	
Antimony	NS <sup>3</sup>	NS <sup>3</sup>	NS <sup>3</sup>
Arsenic	340	150	NS <sup>3</sup>
Cadmium	4.3 <sup>4</sup>	2.2 <sup>4</sup>	NS <sup>3</sup>
Chromium III	550 <sup>4</sup>	180 <sup>4</sup>	NS <sup>3</sup>
Chromium VI	16	11	NS <sup>3</sup>
Copper	13 <sup>4</sup>	9 <sup>4</sup>	1300
Lead	65 <sup>4</sup>	2.5 <sup>4</sup>	NS <sup>3</sup>
Mercury	1.4	0.77	0.05
Nickel	470	52	610
Selenium	NS <sup>3</sup>	5.0	NS <sup>3</sup>
Silver	3.4 <sup>4</sup>	NS <sup>3</sup>	NS <sup>3</sup>
Thallium	NS <sup>3</sup>	NS <sup>3</sup>	1.7
Zinc	120 <sup>4</sup>	120 <sup>4</sup>	NS <sup>3</sup>
Cyanide	22	5.2	700

<sup>1</sup> *California Toxics Rule* (40 CFR 131) per EPA (2000). CTR numeric criteria for protection of human health are for consumption of water plus organisms. All values rounded to two significant figures.  
<sup>2</sup> CMC is the criteria maximum concentration, the highest concentration to which aquatic life can be exposed for a short period of time without deleterious effect. CCC is the criteria continuous concentration, the highest concentration to which aquatic life can be exposed for 4 days without deleterious effect.  
<sup>3</sup> NS indicates no standard is established.  
<sup>4</sup> CMC and CCC water quality criteria for cadmium, chromium III, copper, lead, silver, and zinc are dependent on receiving water hardness. (CTR limits become more stringent with lower hardness, and less stringent with higher hardness concentrations.) The above values are based on a receiving water hardness of 100 mg/l.

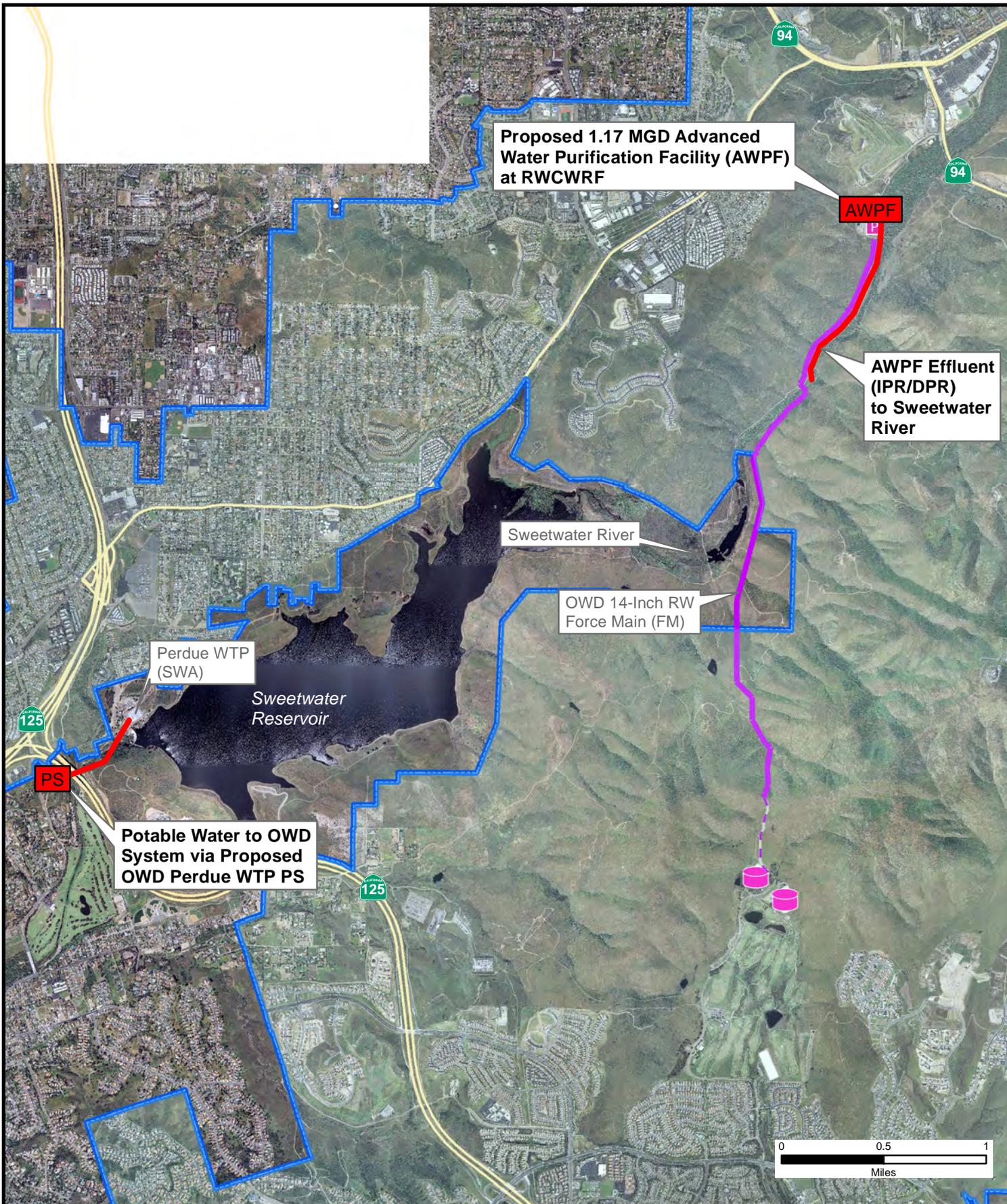
<b>Table A-2 California Toxics Rule Standards for the Protection of Aquatic Habitat Toxic Organic Constituents</b>		
Toxic Inorganic Parameter	Concentration (µg/l) Standard for Protection of Aquatic Habitat <sup>1</sup>	
	Instantaneous Maximum <sup>2</sup>	4-Day Average <sup>3</sup>
<b>ACID EXTRACTABLE COMPOUNDS</b>		
Pentachlorophenol	340	150
<b>CHLORINATED PESTICIDES</b>		
Aldrin	3.0	NS
gamma BHC (Lindane)	0.95	NS
Chlordane	2.4	0.0043
4,4'-DDT	1.1	0.001
4,4'-DDD	NS	NS
4,4'-DDE	NS	NS
Dieldrin	0.24	0.056
alpha Endosulfan	0.22	0.056
beta Endosulfan	0.22	0.056
Endosulfan Sulfate	NS	NS
Endrin	0.086	0.036
Endrin Aldehyde	NS	NS
Heptachlor	0.52	0.0038
Heptachlor Epoxide	0.52	0.0038
PCBs	NS	0.014
Toxaphene	0.73	0.0002
NS indicates that no standard has been established for the listed constituent.		
<p>1 Actual discharge concentration standards will be established in the NPDES permit established by the RWQCB. The above table reflects the probable discharge standards based on existing CTR standards (40 CFR 131.38). The above probable standards do not take into account potential mixing zone dilution credits that may be available.</p> <p>2 Based on CTR instantaneous maximum CMC (criteria maximum concentration) for the protection of aquatic habitat.</p> <p>3 Based on CTR 4-day average CCC (criteria continuous concentration) for the protection of aquatic habitat.</p>		

**Table A-3  
California Toxics Rule  
Standards for the Protection of Human Health - Toxic Organic Constituents**

Constituent	Concentration (µg/l) Standard for the Protection of Human Health for the Consumption of Water Plus Organisms <sup>1</sup> (Monthly Average)	Constituent	Concentration (µg/l) Standard for the Protection of Human Health for the Consumption of Water Plus Organisms <sup>1</sup> (Monthly Average)
<b>TOXIC INORGANIC CONSTITUENTS</b>		<b>ACID EXTRACTABLE COMPOUNDS</b>	
Antimony	14	2-chlorophenol	120
Arsenic	0.018	2,4-dichlorophenol	93
Copper	1300	2,4-dimethylphenol	540
Lead	50	2-methyl 4,6-dinitrophenol	13.4
Mercury	0.05	2,4-dinitrophenol	70
Nickel	610	Pentachlorophenol	0.28
Selenium	170	Phenol	21,000
Thallium	1.7	2,4,6-trichlorophenol	2.1
Zinc	9100	<b>BASE NEUTRAL COMPOUNDS</b>	
<b>VOLATILE ORGANIC COMPOUNDS</b>		Acenaphthene	1200
Acrolein	320	Anthracene	9600
Acrylonitrile	0.059	Benzidene	0.00012
Benzene	1.2	Benzo (a) anthracene	0.0044
Bromoform	4.3	Benzo (a) pyrene	0.0044
Carbon tetrachloride	0.25	Benzo (b) fluoranthene	0.0044
Chlorobenzene	680	Benzo (k) fluoranthene	0.0044
Chlorodibromomethane	0.41	Bis (2-chloroethoxy) ether	0.031
Dichlorobromomethane	0.56	Bis (2-chloroisopropyl) ether	1400
1,2-dichloroethane	0.38	Bis (2-ethylhexyl) phthalate	1.8
1,1-dichloroethylene	0.057	Butyl benzyl phthalate	3000
1,2-dichloropropane	0.52	2-chloronaphthalene	1700
1,3-dichloropropene	10	Chrysene	0.0044
Ethylbenzene	3100	Dibenzo (a,h) anthracene	0.0044
Methyl bromide	48	1,2-dichlorobenzene	2700
Methylene chloride	4.7	1,3-dichlorobenzene	400
1,1,2,2-tetrachloroethane	0.17	1,4-dichlorobenzene	400
Tetrachloroethylene	0.8	3,3-dichlorobenzidene	0.04
Toluene	6,800	Diethyl phthalate	23,000
1,2 trans-dichloroethylene	700	Dimethyl phthalate	313,000
1,1,2-trichloroethane	0.60	Di-n-octyl phthalate	2700
Trichloroethylene	2.7	2,4-dinitrotoluene	0.11
Vinyl chloride	2.0	1,2-diphenylhydrazine	0.04
<b>CHLORINATED PESTICIDES</b>		Fluoranthene	300
Aldrin	0.00013	Fluorene	1300
alpha BHC	0.0039	Hexachlorobenzene	0.00075
beta BHC	0.014	Hexachlorobutadiene	0.44
gamma BHC (Lindane)	0.019	Hexachlorocyclopentadiene	240
Chlordane	0.00057	Hexachloroethane	1.9
4,4'-DDT	0.00059	Ideno 1,2,3-cd Pyrene	0.0044
4,4'-DDD	0.00059	Isophorone	8.4
4,4'-DDE	0.00083	Nitrobenzene	17
Dieldrin	0.00014	N-nitrosodimethylamine	0.00069
alpha Endosulfan	110	N-nitrosodi-n-propylamine	0.005
beta Endosulfan	110	N-nitrosodiphenylamine	5.0
Endosulfan Sulfate	110	Pyrene	960
Endrin	0.76	1,2,4-trichlorobenzene	260
Endrin Aldehyde	0.76	<b>DIOXANS AND DIFURANS</b>	
Heptachlor	0.00021	2,3,7,8-TCDD	1.3E-008
Heptachlor Epoxide	0.00010		
PCBs	0.00017		
Toxaphene	0.00073		

1 Actual discharge concentration standards will be established in the NPDES permit established by the RWQCB. The above table reflects the probable discharge standards based on existing CTR standards (40 CFR 131.38) for the protection of human health. The above probable standards do not take into account potential mixing zone dilution credits that may be available.

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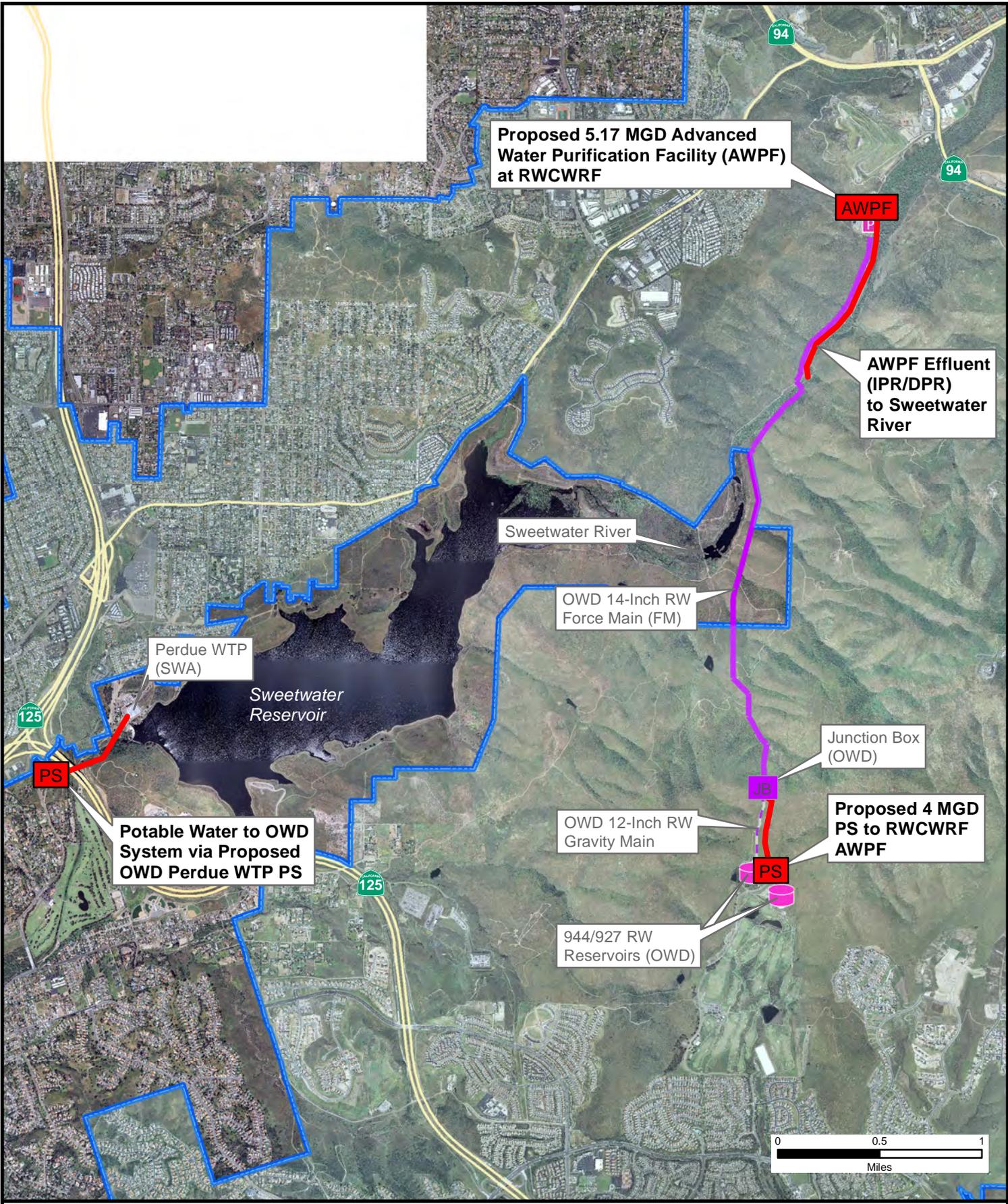
# OTAY WATER DISTRICT

RWCWRF AWPFF  
OPTION 1 FIGURE



EXHIBIT A

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# OTAY WATER DISTRICT

RWCWRF AWPF  
OPTION 2 FIGURE



EXHIBIT B

# AGENDA ITEM 10



## STAFF REPORT

TYPE		MEETING			
MEETING:	Regular Board	DATE:	August 3, 2016		
SUBMITTED	Mark Watton	W.O./G.F.	N/A	DIV.	N/A
BY:	General Manager	NO:	NO.		
APPROVED BY:	<input checked="" type="checkbox"/> Mark Watton, General Manager				
SUBJECT:	General Manager's Report				

### ADMINISTRATIVE SERVICES:

#### Purchasing and Facilities:

- Annual Fire Extinguisher Inspections - In conjunction with monthly fire extinguisher inspections, staff conducted an annual District-wide test, which occurred during the week of June 16<sup>th</sup> with the assistance of Anita Fire Hose Company. All extinguishers including those located at remote facilities and in vehicles were tested and while all passed, a few that were marginal were replaced.
- Fire Alarm Inspection and Testing - Albireo Energy, the District's fire alarm monitoring and service provider completed the annual fire alarm tests at Administration, Operations and Warehouse buildings. The system and all components including smoke detectors, strobes and sirens were tested and verified to be in good working order.

#### Human Resources:

- Employee Picnic - The Employee Picnic was held at Rohr Park on July 16<sup>th</sup>. Employees, retirees, and their family members enjoyed the activities and festivities including pony rides, petting zoo, games, face painting, and a party jump. The employees appreciated the event and it was a fun time for all.
- Employee Information Meeting - The District held employee information meetings on July 12<sup>th</sup>. These meetings are held three times per year to provide employees with relevant information regarding key District projects and updates. The meeting this month included topics such as training on the "Anti-Fraud" and "IT Resources and Telecommunications Systems" Policies and departmental updates in key areas.

- Annual Performance Evaluations - July was a busy month for Managers and Supervisors as they worked to complete their employee annual performance evaluations. Employees receive performance reviews on an annual basis based on the fiscal year from July through June.
- Recruitments/New Hires:
  - The District is currently recruiting for a Communications Assistant and a Senior Procurement and Contracting Analyst.
  - The Construction Inspector recruitment resulted in an internal transfer, which will create and opening in the Utility Maintenance division. HR will be recruiting for a Utility Worker.
  - These positions are critical to District operations.

**Safety & Security:**

- Safety Training/Meetings - Staff attended/completed the following:
  - Safety Committee Meeting (4<sup>th</sup> quarter): Discussed and reviewed safety and security year-end related items (YTD accidents/injuries and Confined Space Program updates). In addition, there was a review of operational occupational health & safety District programs including Lockout/Tagout/Blockout, Asbestos Cement Pipe (ACP), and Trench Inspection Form.
  - Staff met with US Securities, the District's security patrol services vendor, and reviewed service response levels, protocols and upgraded patrol officers' facility access to key entry FOB cards.

**INFORMATION TECHNOLOGY AND STRATEGIC PLANNING:**

- Tyler Cashiering Solution - Staff completed the implementation of the District's new cashiering system. The new solution improves overall cashiering services, meets compliance for new credit card reader (chip) technology, and improves the overall security with PCI/PA-DSS compliance. Also, the solution offers enhancements to batch processing activities, streamlining of the data collection process, single point of entry for data input, and improved interface features for Customer Service staff. Training has been completed and the cashiering system went live during the 2<sup>nd</sup> week of July.

**FINANCE:**

- Capacity Fee Study - HDR Engineering has been selected to perform the water and sewer capacity fee studies. Staff is expecting the capacity fee study will be completed in December.
- Fiscal Year-End and Audit - Staff has been preparing for the fiscal year-end close and the audit. Auditors from Teaman, Ramirez, & Smith will be at the District the week of August 22<sup>nd</sup> to complete their fieldwork.

- Board of Directors Expenses - Attached is the Board of Directors Expenses for the 3rd Quarter of Fiscal Year 2016 (FY 2016). Expenses for the quarter totaled \$5,860.42 for a total of \$20,015.76 to date.
- Financial Reporting:
  - o For the twelve months ended June 30, 2016, there are total revenues of \$85,282,088 and total expenses of \$85,000,323. The revenues exceeded expenses by \$281,765.
  - o The market value shown in the Portfolio Summary and in the Investment Portfolio Details as of June 30, 2016 total \$86,208,226 with an average yield to maturity of 0.82%. The total earnings year-to-date are \$677,540.

**ENGINEERING AND WATER SYSTEM OPERATIONS:**

**Engineering:**

- **927 Zone, Force Main Assessment and Repair Project:** This Project consists of inspection, condition assessment, and repair of the existing Ralph W. Chapman Water Reclamation Facility (RWCWRF) 1980 era, 16,000 feet long, 14-inch diameter steel force main. Pipeline Inspection and Condition Analysis Corporation (PICA) will return to inspect the lower 12,000 feet of force main in December 2016. Award of a construction contract to Charles King Company, Inc. is scheduled for the August Board meeting for blow off replacements, cathodic protection system rehabilitation, and other improvements. A fourth amendment to PICA's agreement will be negotiated to include the Charles King's construction contract and an adjustment for delays due to cultural resources (artifacts) found at several sites. (R2116)
- **SR-11 Potable Water Utility Relocations:** Construction for the first two rounds of relocations associated with the SR-11 freeway are complete. A second amendment to Caltrans Utility Agreement Number 33622 was executed on July 11, 2016. A final reimbursement payment to both Caltrans Utility Agreement Numbers 33592 and 33622 will be processed. The overall project is within budget and on schedule. (P2453)
- **944-1, 944-2, & 458-2 Reservoir Interior/Exterior Coatings & Upgrades:** This project consists of removing and replacing the interior and exterior coatings of the 944-1 0.3 MG Reservoir, the 944-2 3.0 MG Reservoir, and the 458-2 1.8 MG Reservoir, along with providing structural upgrades to ensure the tanks comply with both State and Federal OSHA standards as well as the American Water Works Association and the County Health Department standards. The overall project reached substantial completion on December 3, 2015 (beyond the approved contract date). A credit change order to complete the assessment of liquidated damages associated with the project's late delivery was processed unilaterally, as approved by the Board in

February 2016. Punch list items that consisted of final administrative deliverables were resolved, contract acceptance was processed, and a Notice of Completion was recorded with the County of San Diego on May 5, 2016. The District has received a total of four (4) Stop Payment Notices from subcontractors on the project. The District has been notified that three (3) of the Stop Payment Notices have been resolved. In accordance with applicable State law, the District is withholding funds and retaining contract bonding until the District is notified of resolution associated with the remaining Stop Payment Notice. The project is within budget. (P2531, P2532, P2535)

- **Rosarito Desalination:** NSC Agua has emerged as the top-ranked bidder for the seawater desalination plant at Playas de Rosarito, Mexico. NSC Agua expects to finalize a definitive public-private partnership agreement with the State within the next 60 days. District staff and representatives from NSC Agua continue to coordinate on complying with the California Water Resources Control Board Drinking Water Program regulatory requirements related to source water quality testing. On June 23, 2016, the 45-day review period ended for draft EIR/EIS. District staff, U. S. Department of State, and AECOM are working on responses to the comments for adoption of the EIR/EIS by the Board this fall. (P2451)
- **711-1 & 711-2 Reservoir Interior/Exterior Coatings & Upgrades:** This project consists of removing and replacing the interior and exterior coatings of the 711-1 3.1 MG Reservoir and the 711-2 2.3 MG Reservoir, along with providing structural upgrades, to ensure the tanks comply with both State and Federal OSHA standards as well as the American Water Works Association and the County Health Department standards. The contractor, Advanced Industrial Services, Inc., has completed the work on the 711-1 Reservoir and the reservoir has been placed into service. Work consists of coating the interior of the 711-2 Reservoir. It is anticipated that removal and replacement of the exterior coating will begin in August 2016. The project is within budget and on schedule to be completed in late September 2016. (P2529 & P2530)
- **980-1 Reservoir Interior/Exterior Coatings & Upgrades:** This project consists of removing and replacing the interior and exterior coatings of the 980-1, 5.0 MG, Reservoir, along with providing structural upgrades, to ensure the tank complies with both State and Federal OSHA standards as well as the American Water Works Association and the County Health Department standards. At the January, 2016 Board Meeting, the Board authorized the General Manager to enter into an agreement with Advanced Industrial Services, Inc. from Los Alamitos, CA. Construction began in February, 2016. Removal and replacement of the exterior coating was completed in July 2016. It is anticipated that filling and testing of the reservoir in preparation for placing the reservoir into

service will be completed in August 2016. The project is within budget and on schedule to be completed in August 2016. (P2545)

- **Rancho San Diego Basin Sewer Rehabilitation - Phase 1:** This project consists of sewer system improvements at fourteen (14) locations within the Rancho San Diego Basin. The work includes replacement of approximately 3,250 linear feet of 8-inch gravity sewer main and the installation of four (4) new manholes. At the February 2016 Board Meeting, the Board authorized the General Manager to enter into an agreement with Transtar Pipeline, Inc. from San Diego, CA. Work to replace the sewer located within and adjacent to Julianna Street was completed in July 2016. Sewer replacement work located within Donahue Drive is scheduled to begin in August 2016. The project is within budget, however, the construction is significantly behind as a result of slow contractor progress. It is anticipated that construction will be completed in November 2016. The Contractor has been notified that the project is subject to liquidated damages associated with late delivery. (S2033)
- **Water Facilities Master Plan Update:** This project will update the District's existing Water Resources Master Plan that was previously updated in October 2008 and revised in May 2013. Staff is currently coordinating the draft CIP list with developer project lists and associated District CIP upsize projects. The draft Program Environmental Impact Report (PEIR) 45-day public comment period is scheduled to begin early August 2016. The final PEIR should be ready for Board consideration before the end of the year. (P1210)
- **Ralph W. Chapman Water Reclamation Facility (RWCWRF) Indirect Potable Reuse/Direct Potable Reuse (IPR/DPR) with Sweetwater Authority:** Staff from both the District and Sweetwater Authority (SWA) continue to meet to discuss the major issues associated with an IPR/DPR project. Staff has retained Atkins Global and Michael Welch to prepare a high level report identifying the needed upgrades to the RWCWRF, the regulatory issues of an IPR/DPR project, and to produce a rough planning level cost per acre-foot for the product water delivered to SWA's Reservoir. A second draft report was reviewed by staff from both agencies and the comments forwarded to Atkins on June 22, 2016. The final report was completed by the end of June 2016 and will be presented to the Board in August 2016.
- **Recycled Water Fire Hydrant Installations:** This project consists of installing fire hydrants/filling stations on the recycled water system for fire suppression. The project includes meeting Title 22 requirements, obtaining regulatory approval, establishing protocol, and site selection. On April 13, 2016, a fill station was constructed at the end of Hunte Parkway. The facility is a locked enclosure within a District easement with easy access to fire department trucks and street sweepers. Staff submitted the project

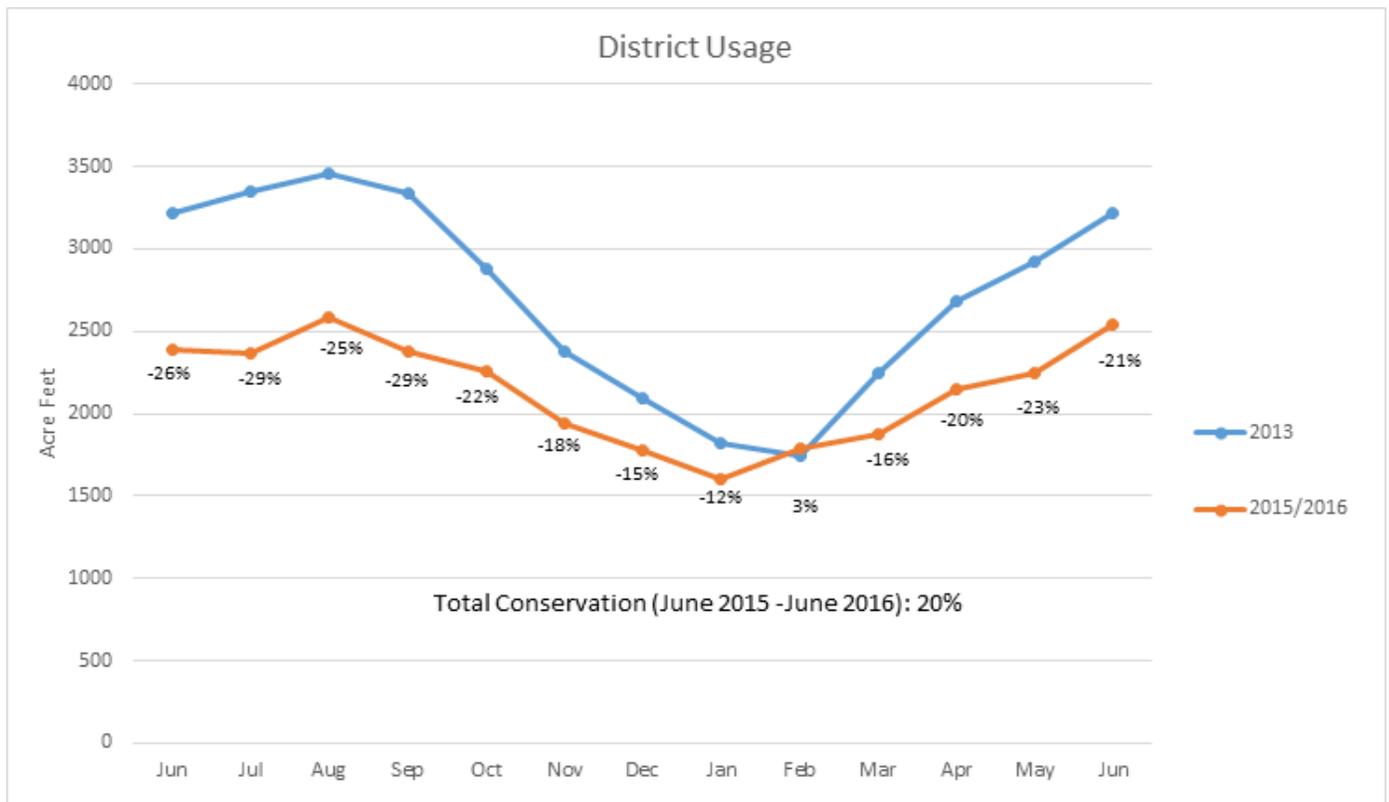
to be enrolled in Order WQ 2014-0090-DWQ, General Waste Discharge Requirements for Recycled Water Use (General Order). On July 20, 2016, the District received approval of the Rules and Regulations for Recycled Water Use by the Regional Board, however, the State Board will require the District to transition to Order WQ 2016-0068-DDW, the new statewide permit that was adopted on June 7, 2016. A link to the new Order WQ 2016-0068-DDW can be found at: [http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2016/wqo2016\\_0068\\_ddw.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2016/wqo2016_0068_ddw.pdf). (R2122)

- **Ralph W. Chapman Water Reclamation Facility (RWCWRF) Facility Master Plan:** On February 29, 2016, the District issued a Task Order to Arcadis to prepare a Master Plan for the RWCWRF to develop a phased approach to implement improvements with prioritizing identified improvements considering the needs, overall costs, long term payback on investment, and other factors. The District assembled a list of projects to begin the study, but Arcadis will draw upon their expertise to identify additional work that would improve the operation of the facility. Improved instrumentation to enhance the operation and automation is also being studied. The final plan will be completed in September 2016 and will be used for prioritizing future CIP projects. (R2119)
- For the month of June 2016, the District sold 7 meters (34 EDUs), generating \$320,797 in revenue. Projection for this period was 14 meters (21 EDUs), with a budgeted revenue of \$190,542. Total revenue for Fiscal Year 2016 is \$4,279,255 against the annual budget of \$2,286,500.

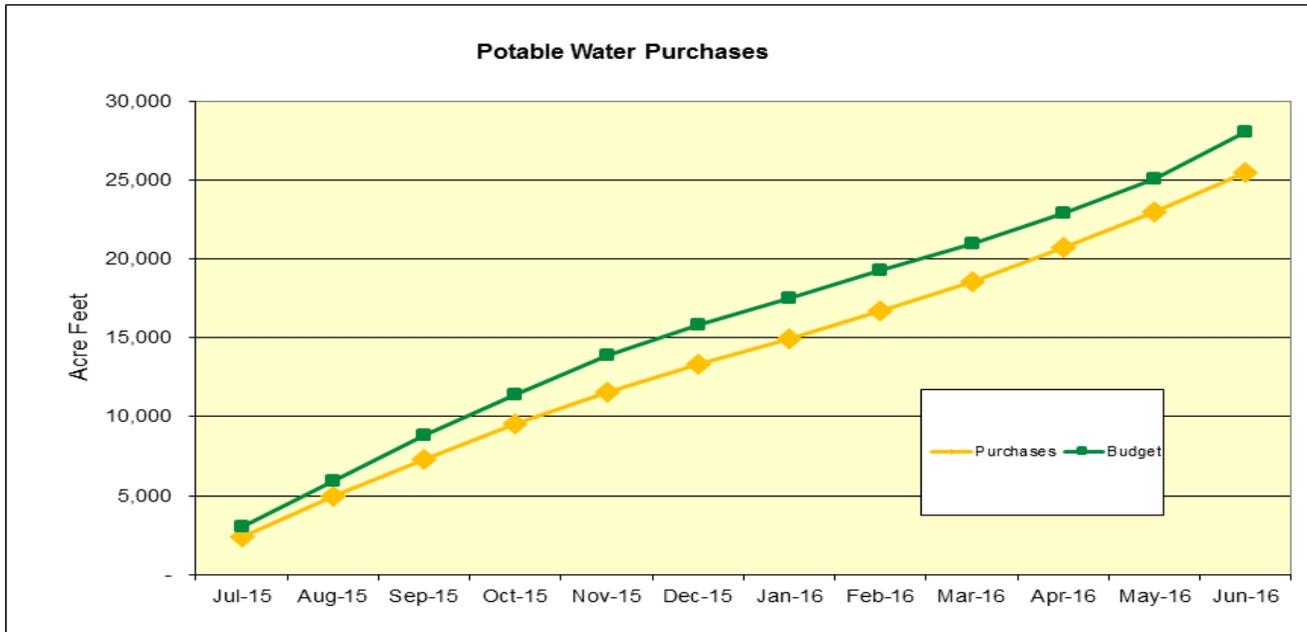
#### **Water System Operations (reporting for April):**

- On June 1, Water Systems Operators started taking over the recycled distribution system operations as part of their daily duties.
- On June 8, a break occurred on the 18-inch concrete cement pipe (CCP) that runs from the Regulatory site and services the Rancho San Diego Towne Center and other services along Campo Road. for a total of 36 meters. Considering the number and location of services affected, the main was repaired on the evening of Thursday, June 9, going into the morning of Friday, June 10. Water trailers were strategically placed during the shutdown for customers affected. All water services were restored by noon on Friday, June 10.
- On June 19, staff performed a shutdown on Brandywine Avenue in Chula Vista to replace an 8-inch gate valve and installed a new 12-inch valve to allow use of the new pressure reducing station on Sequoia. Staff also replaced two defective valves along Brandywine. Seven residential homes were affected and two commercial meters. A water trailer was on-site for those affected during the shutdown.

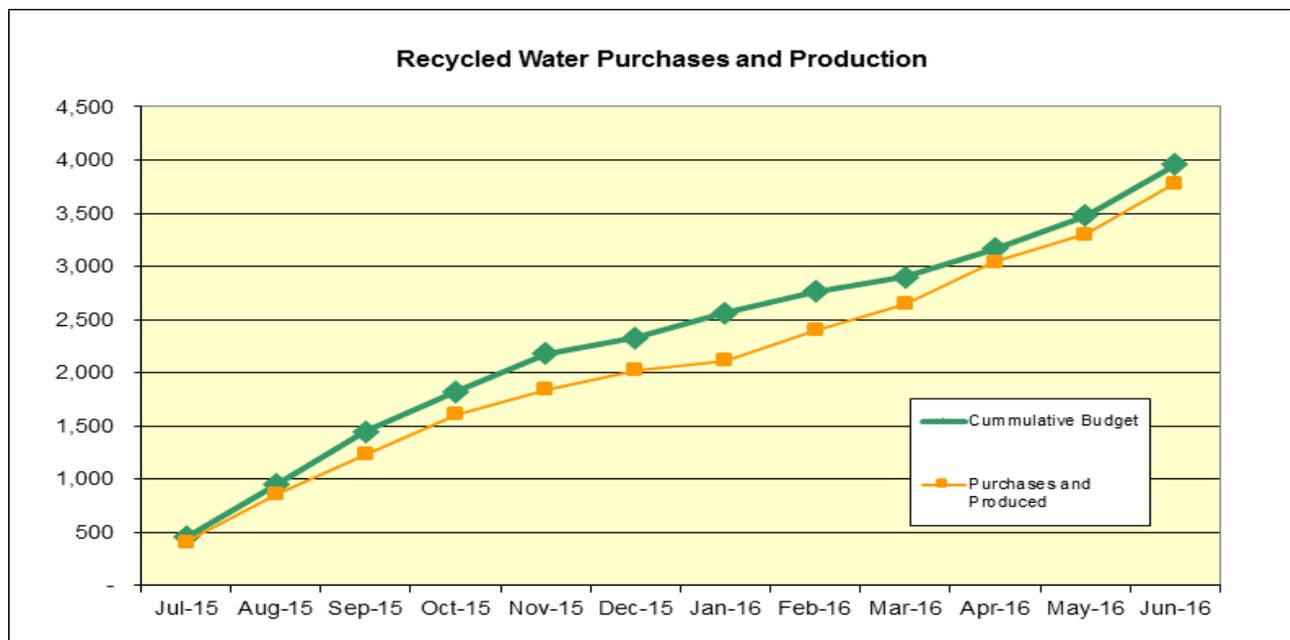
- On June 22, staff performed a shutdown on Brandywine Avenue in Chula Vista to replace a defective 12-inch gate valve and two defective fire hydrant valves. No customers were affected.
- On July 14, the District experienced an emergency main break on the 24-inch 624 pressure zone line on Telegraph Canyon Road between Apache Drive and Buena Vista. Three customers were initially affected and water trailers were provided until a high-line could be installed to restore their water service. The cause of the break was a steel saddle for a 2-inch service and approximately 27-inches of pipe that failed. Repair of the main was completed on July 18 due to the difficulty of the repair, proximity with other utilities, depth, and extremely hard soil.
- Conservation - District customers continue to conserve water. June 2016 usage was 21% less than June 2013 usage. Since the beginning of the State's conservation mandate in June 2015, customers have saved an average of 20%.



- The June potable water purchases were 2,540.9 acre-feet which is 13.6% below the budget of 2,941.1 acre-feet. The cumulative purchases through June were 25,500.7 acre-feet which is 9.1% below the cumulative budget of 28,052.0 acre-feet.



- The June recycled water purchases and production were 477.1 acre-feet which is 0.6% below the budget of 480.0 acre-feet. The cumulative production and purchases through June were 3,782.0 acre-feet which is 4.4% below the cumulative budget of 3,955.7 acre-feet.



**Potable, Recycled, and Sewer (Reporting up to the month of June):**

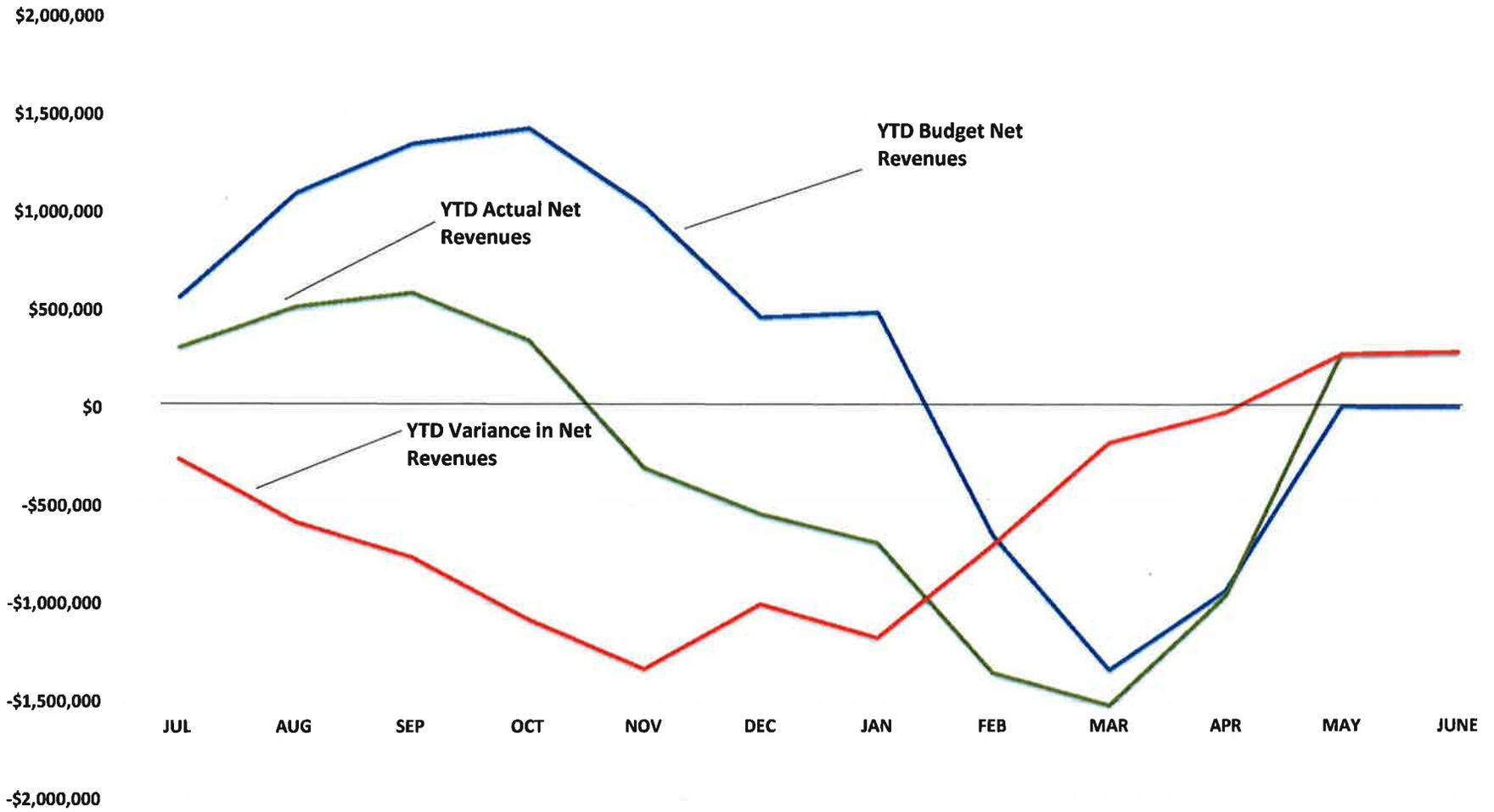
- Total number of potable water meters is 49,537.
- Recycled water consumption for the month of June is as follows:
  - Total consumption was 392.7 acre-feet or 127,952,132 gallons and the average daily consumption was 4,265,071 gallons per day.
  - Total cumulative recycled water consumption since July 1, 2015 is 3518.3 acre-feet.
  - Total number of recycled water meters is 710.
- Wastewater flows for the month of June were as follows:
  - Total basin flow, gallons per day: 1,563,400. This is an increase of 4.61% from June 2015.
  - Spring Valley Sanitation District Flow to Metro, gallons per day: 516,960.
  - Total Otay flow, gallons per day: 1,046,433.
  - Flow Processed at the Ralph W. Chapman Water Recycling Facility, gallons per day: 954,133.
  - Flow to Metro from Otay Water District was 92,300 gallons per day.

By the end of June there were 6,101 wastewater EDUs.

**FY2016**

	<b>3rd Quarter</b>	<b>YTD</b>
	<b><u>(1/1/16 - 3/31/16)</u></b>	<b><u>(7/1/15 - 3/31/16)</u></b>
CROUCHER, GARY	\$ 500.00	\$ 1,700.00
LOPEZ, JOSE	1,216.10	4,332.90
ROBAK, MARK	422.68	2,161.83
SMITH, TIM	1,241.92	3,120.22
THOMPSON, MITCHELL	2,479.72	8,700.81
	<u>\$ 5,860.42</u>	<u>\$ 20,015.76</u>

**COMPARATIVE BUDGET SUMMARY  
NET REVENUES AND EXPENSES  
FOR TWELVE MONTHS ENDED JUNE 30, 2016**



The year-to-date actual net revenues through June were positive of \$281,765.

OTAY WATER DISTRICT  
**COMPARATIVE BUDGET SUMMARY (UNAUDITED)**  
 FOR TWELVE MONTHS ENDED JUNE 30, 2016

	Annual Budget	Actual	Budget	YTD Variance	Var %
<b>REVENUES:</b>					
Potable Water Sales	\$ 41,344,900	\$ 37,234,425	\$ 41,344,900	\$ (4,110,475)	(9.9%)
Recycled Water Sales	9,116,000	8,616,746	9,116,000	(499,254)	(5.5%)
Potable Energy Charges	2,311,300	2,151,538	2,311,300	(159,762)	(6.9%)
Potable System Charges	13,292,300	13,391,005	13,292,300	98,705	0.7%
Potable MWD & CWA Fixed Charges	11,946,600	11,850,407	11,946,600	(96,193)	(0.8%)
Potable Penalties	888,600	776,704	888,600	(111,896)	(12.6%)
Total Water Sales	<u>78,899,700</u>	<u>74,020,825</u>	<u>78,899,700</u>	<u>(4,878,875)</u>	<u>(6.2%)</u>
Sewer Charges	3,206,300	3,149,295	3,206,300	(57,005)	(1.8%)
Meter Fees	66,200	78,568	66,200	12,368	18.7%
Capacity Fee Revenues	1,134,800	1,517,128	1,134,800	382,328	33.7%
Non-Operating Revenues	1,873,600	2,421,567	1,873,600	547,967	29.2%
Tax Revenues	3,897,900	3,970,202	3,897,900	72,302	1.9%
Interest	157,500	124,502	157,500	(32,998)	(21.0%)
Total Revenues	<u>\$ 89,236,000</u>	<u>\$ 85,282,088</u>	<u>\$ 89,236,000</u>	<u>\$ (3,953,912)</u>	<u>(4.4%)</u>
<b>EXPENSES:</b>					
Potable Water Purchases	\$ 32,332,100	\$ 29,440,327	\$ 32,332,100	\$ 2,891,773	8.9%
Recycled Water Purchases	1,705,800	2,362,225	1,705,800	(656,425)	(38.5%)
CWA-Infrastructure Access Charge	1,931,400	1,930,848	1,931,400	552	0.0%
CWA-Customer Service Charge	1,777,800	1,778,197	1,777,800	(397)	(0.0%)
CWA-Reliability Charge	950,400	950,052	950,400	348	0.0%
CWA-Emergency Storage Charge	4,681,800	4,681,673	4,681,800	128	0.0%
MWD-Capacity Res Charge	806,400	883,203	806,400	(76,803)	(9.5%)
MWD-Readiness to Serve Charge	1,798,800	1,587,254	1,798,800	211,546	11.8%
Subtotal Water Purchases	<u>45,984,500</u>	<u>43,613,780</u>	<u>45,984,500</u>	<u>2,370,720</u>	<u>5.2%</u>
Power Charges	3,112,800	2,699,915	3,112,800	412,885	13.3%
Payroll & Related Costs	20,381,000	20,331,556	20,381,000	49,444	0.2%
Material & Maintenance	3,612,800	3,056,725	3,612,800	556,075	15.4%
Administrative Expenses	5,137,800	4,287,010	5,137,800	850,790	16.6%
Legal Fees	250,000	254,237	250,000	(4,237)	(1.7%)
Expansion Reserve	2,695,800	2,695,800	2,695,800	-	0.0%
Betterment Reserve	2,400,000	2,400,000	2,400,000	-	0.0%
Replacement Reserve	3,421,000	3,421,000	3,421,000	-	0.0%
New Supply Fee	35,000	35,000	35,000	-	0.0%
OPEB Trust	1,006,000	1,006,000	1,006,000	-	0.0%
Sewer Replacement	1,199,300	1,199,300	1,199,300	-	0.0%
Total Expenses	<u>\$ 89,236,000</u>	<u>\$ 85,000,323</u>	<u>\$ 89,236,000</u>	<u>\$ 4,235,677</u>	<u>4.7%</u>
<b>EXCESS REVENUES(EXPENSE)</b>	<u>\$ -</u>	<u>\$ 281,765</u>	<u>\$ -</u>	<u>\$ 281,765</u>	

**OTAY WATER DISTRICT  
INVESTMENT PORTFOLIO REVIEW  
June 30, 2016**

**INVESTMENT OVERVIEW & MARKET STATUS:**

The federal funds rate has remained constant for over 5 years. On December 16, 2015, at the Federal Reserve Board’s regular scheduled meeting, the federal funds rate was increased from 0.25% to 0.50%” in response to the nation’s gradual economic improvement. The Committee judges that there has been considerable improvement in labor market conditions this year, and it is reasonably confident that inflation will rise, over the medium term, to its 2 percent objective. The stance of monetary policy remains accommodative after this increase, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation. There have been no further changes made to the federal funds rate at the Federal Reserve Board’s subsequent regular meetings, the most recent of which was held on June 15, 2016. In determining the timing and size of future adjustments to the target range for the federal funds rate, they went on to say: *“the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.”*

The District’s overall effective rate of return at June 30, 2016 was 0.82%, which was two basis points higher than the previous month. At the same time the LAIF return on deposits has improved over the previous month, reaching an average effective yield of 0.576% for the month of June 2016. Based on our success at maintaining a competitive rate of return on our portfolio during this extended period of low interest rates, no changes in investment strategy regarding returns on investment are being considered at this time. The desired portfolio mix is important in mitigating any liquidity risk from unforeseen changes in LAIF or County Pool policy.

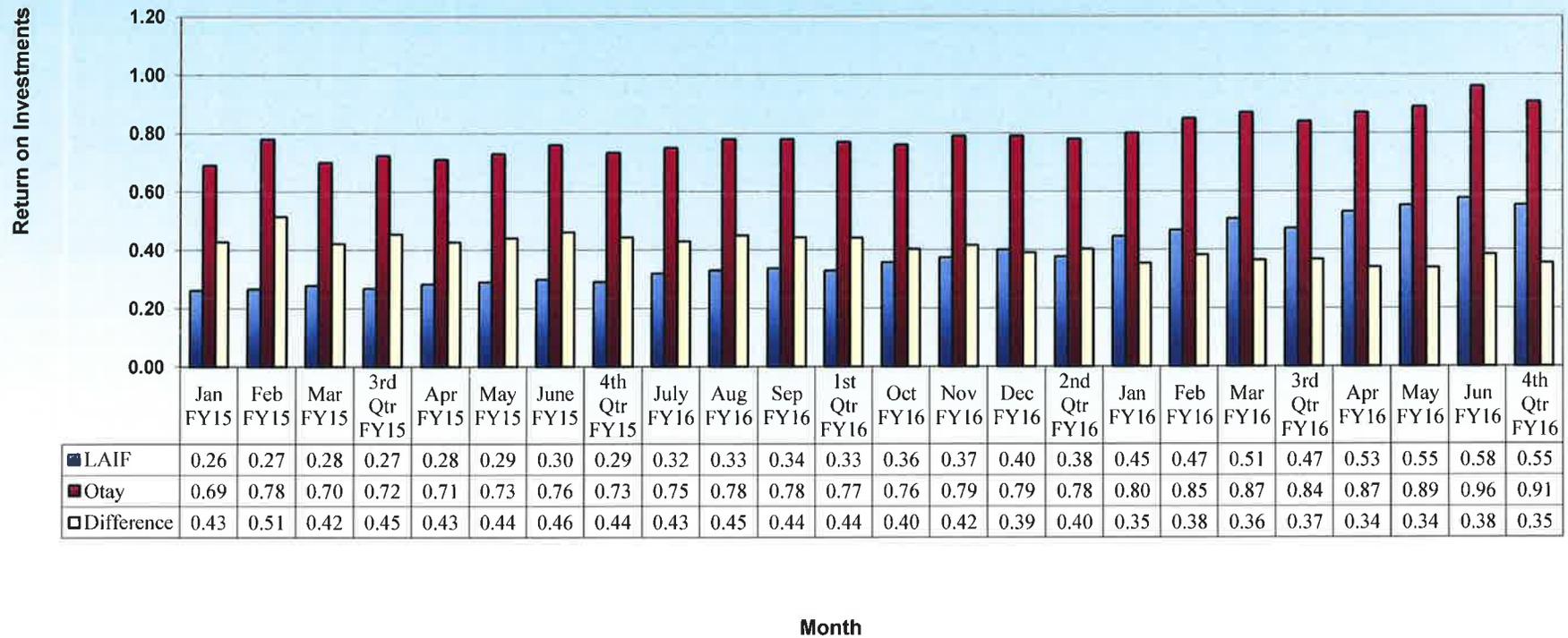
In accordance with the District’s Investment Policy, all District funds continue to be managed based on the objectives, in priority order, of safety, liquidity, and return on investment.

**PORTFOLIO COMPLIANCE: June 30, 2016**

	<u>Investment</u>	<u>State Limit</u>	<u>Otay Limit</u>	<u>Otay Actual</u>
8.01:	Treasury Securities	100%	100%	0
8.02:	Local Agency Investment Fund (Operations)	\$65 Million	\$65 Million	\$6.33 Million
8.02:	Local Agency Investment Fund (Bonds)	100%	100%	0
8.03:	Federal Agency Issues	100%	100%	75.37%
8.04:	Certificates of Deposit	30%	15%	.10%
8.05:	Short-Term Commercial Notes	25%	10%	0
8.06:	Medium-Term Commercial Debt	30%	10%	0
8.07:	Money Market Mutual Funds	20%	10%	0
8.08:	San Diego County Pool	100%	100%	15.54%
12.0:	Maximum Single Financial Institution	100%	50%	1.64%

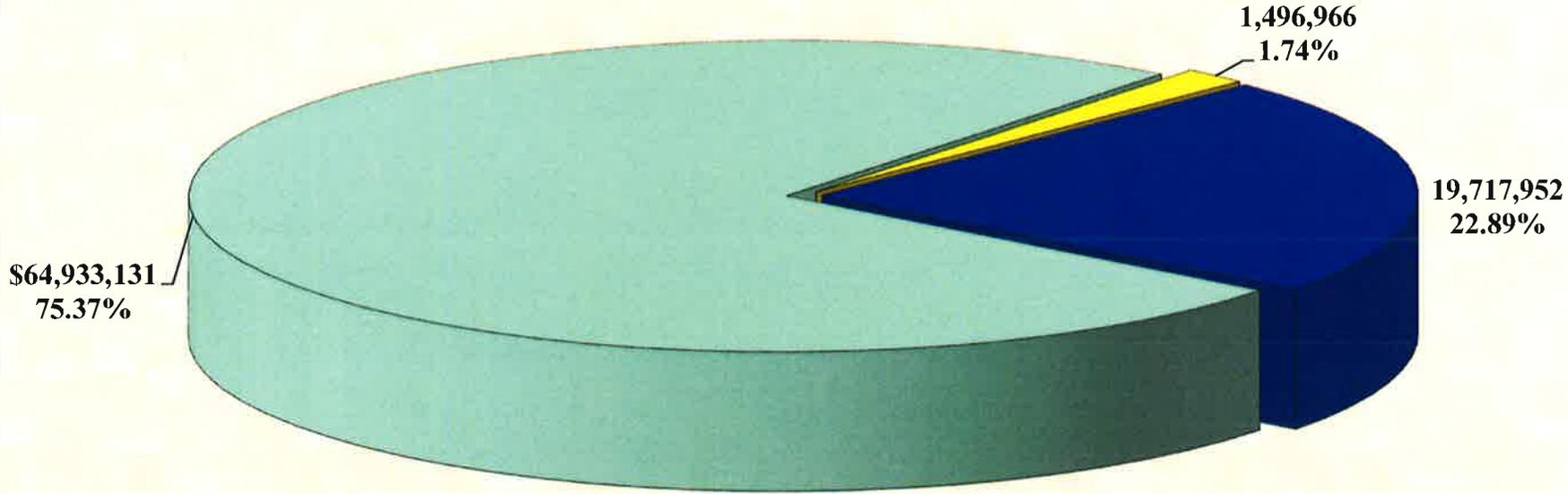
## Performance Measure FY-16 Return on Investment

Target: Meet or Exceed 100% of LAIF



■ LAIF   
 ■ Otay   
 ■ Difference

# Otay Water District Investment Portfolio: 06/30/2016



Total Cash and Investments: \$86,148,049

■ Banks (Passbook/Checking/CD)

■ Pools (LAIF & County)

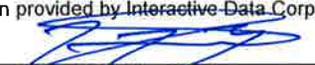
■ Agencies & Corporate Notes

**Month End  
Portfolio Management  
Portfolio Summary  
June 30, 2016**

<b>Investments</b>	<b>Par Value</b>	<b>Market Value</b>	<b>Book Value</b>	<b>% of Portfolio</b>	<b>Term</b>	<b>Days to Maturity</b>	<b>YTM 360 Equiv.</b>	<b>YTM 365 Equiv.</b>
Federal Agency Issues- Callable	60,935,000.00	60,993,464.90	60,934,713.89	71.91	928	762	1.050	1.065
Federal Agency Issues - Coupon	4,000,000.00	4,000,160.00	3,998,417.62	4.72	759	162	0.610	0.618
Certificates of Deposit - Bank	81,833.21	81,833.21	81,833.21	0.10	731	570	0.030	0.030
Local Agency Investment Fund (LAIF)	6,330,235.92	6,331,635.28	6,330,235.92	7.47	1	1	0.568	0.576
San Diego County Pool	13,387,715.90	13,386,000.00	13,387,715.90	15.80	1	1	0.808	0.819
<b>Investments</b>	<b>84,734,785.03</b>	<b>84,793,093.39</b>	<b>84,732,916.54</b>	<b>100.00%</b>	<b>704</b>	<b>556</b>	<b>0.954</b>	<b>0.967</b>
<b>Cash</b>								
Passbook/Checking (not included in yield calculations)	1,415,132.69	1,415,132.69	1,415,132.69		1	1	0.353	0.358
<b>Total Cash and Investments</b>	<b>86,149,917.72</b>	<b>86,208,226.08</b>	<b>86,148,049.23</b>		<b>704</b>	<b>556</b>	<b>0.954</b>	<b>0.967</b>

<b>Total Earnings</b>	<b>June 30 Month Ending</b>	<b>Fiscal Year To Date</b>	<b>Fiscal Year Ending</b>
Current Year	67,944.19	677,540.38	677,540.38
<b>Average Daily Balance</b>	<b>85,781,896.75</b>	<b>82,731,313.88</b>	
<b>Effective Rate of Return</b>	<b>0.96%</b>	<b>0.82%</b>	

I hereby certify that the investments contained in this report are made in accordance with the District Investment Policy Number 27 adopted by the Board of Directors on May 4, 2016. The market value information provided by Interactive Data Corporation. The investments provide sufficient liquidity to meet the cash flow requirements of the District for the next six months of expenditures.

 7-26-16  
Joseph Beachem, Chief Financial Officer

**Month End  
Portfolio Management  
Portfolio Details - Investments  
June 30, 2016**

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM 360	Days to Maturity	Maturity Date
<b>Federal Agency Issues- Callable</b>												
3134G5A47	2301	Federal Home Loan Mortgage		06/30/2014	2,000,000.00	2,005,720.00	2,000,000.00	0.650		0.641	182	12/30/2016
3133EELR9	2317	Federal Farm Credit Bank		01/27/2015	2,000,000.00	2,000,000.00	1,999,713.89	0.625		0.616	210	01/27/2017
3133EEXC9	2323	Federal Farm Credit Bank		04/20/2015	2,000,000.00	2,000,040.00	2,000,000.00	0.690		0.681	279	04/06/2017
3136G23G0	2304	Federal National Mortgage Assoc		08/15/2014	2,000,000.00	2,001,040.00	2,000,000.00	1.050		1.036	410	08/15/2017
3134G8NM7	2345	Federal Home Loan Mortgage		03/29/2016	2,000,000.00	2,001,280.00	2,000,000.00	0.850	AA	0.838	455	09/29/2017
3134G8WWW5	2349	Federal Home Loan Mortgage		04/27/2016	2,000,000.00	2,000,180.00	2,000,000.00	0.850	AA	0.838	483	10/27/2017
3134G9D38	2363	Federal Home Loan Mortgage		06/29/2016	2,000,000.00	1,999,940.00	2,000,000.00	0.700	AAA	0.690	546	12/29/2017
3133EEYE4	2320	Federal Farm Credit Bank		04/16/2015	2,000,000.00	2,000,020.00	2,000,000.00	1.000		0.986	564	01/16/2018
3130A85A7	2355	Federal Home Loan Bank		05/26/2016	2,000,000.00	2,000,480.00	2,000,000.00	0.900	AAA	0.888	605	02/26/2018
3130A7H73	2346	Federal Home Loan Bank		03/29/2016	2,000,000.00	2,003,680.00	2,000,000.00	1.000	AA	0.986	636	03/29/2018
3134G9AF4	2350	Federal Home Loan Mortgage		04/26/2016	2,000,000.00	2,000,900.00	2,000,000.00	1.050	AA	1.036	664	04/26/2018
3130A56B0	2325	Federal Home Loan Bank		05/04/2015	1,200,000.00	1,200,048.00	1,200,000.00	1.120	AA	1.105	672	05/04/2018
3130A8KR3	2358	Federal Home Loan Bank		06/23/2016	2,000,000.00	2,002,680.00	2,000,000.00	0.820		0.809	735	07/06/2018
3134G8XA2	2348	Federal Home Loan Mortgage		04/27/2016	2,000,000.00	2,002,300.00	2,000,000.00	1.000	AA	0.986	756	07/27/2018
3133EGBG9	2354	Federal Farm Credit Bank		05/23/2016	2,000,000.00	2,000,940.00	2,000,000.00	1.000		0.986	783	08/23/2018
3135G0G64	2336	Fannie Mae		10/30/2015	2,000,000.00	2,000,240.00	2,000,000.00	1.100		1.085	850	10/29/2018
3134G9GB7	2353	Federal Home Loan Mortgage		05/02/2016	2,000,000.00	2,000,160.00	2,000,000.00	1.200		1.184	854	11/02/2018
3136G2R665	2334	Fannie Mae		11/19/2015	2,000,000.00	2,001,300.00	2,000,000.00	1.150		1.134	871	11/19/2018
3130A6UZ8	2338	Federal Home Loan Bank		12/28/2015	2,000,000.00	2,006,340.00	2,000,000.00	1.375		1.356	910	12/28/2018
3134G9ZR1	2360	Federal Home Loan Mortgage		06/28/2016	2,000,000.00	2,000,360.00	2,000,000.00	1.000		0.986	910	12/28/2018
3130A72G9	2339	Federal Home Loan Bank		01/29/2016	2,000,000.00	2,001,640.00	2,000,000.00	1.500		1.479	942	01/29/2019
3134G8KL2	2340	Federal Home Loan Mortgage		02/26/2016	2,000,000.00	2,001,620.00	2,000,000.00	1.300		1.282	970	02/26/2019
3136G2ZW0	2342	Federal National Mortgage Assoc		02/26/2016	1,030,000.00	1,030,556.20	1,030,000.00	1.125		1.110	970	02/26/2019
3136G2ZW0	2343	Federal National Mortgage Assoc		02/26/2016	2,705,000.00	2,706,460.70	2,705,000.00	1.125		1.110	970	02/26/2019
3134G8Q44	2344	Federal Home Loan Mortgage		03/29/2016	2,000,000.00	2,001,020.00	2,000,000.00	1.350		1.332	1,001	03/29/2019
3134G9AW7	2347	Federal Home Loan Mortgage		04/26/2016	2,000,000.00	2,002,900.00	2,000,000.00	1.150	AA	1.134	1,029	04/26/2019
3134G8ZM4	2351	Federal Home Loan Mortgage		04/29/2016	2,000,000.00	2,000,480.00	2,000,000.00	1.300	AA	1.282	1,032	04/29/2019
3130A7WK7	2352	Federal Home Loan Bank		05/24/2016	2,000,000.00	2,006,780.00	2,000,000.00	1.250		1.233	1,057	05/24/2019
3133EGCZ6	2357	Federal Farm Credit Bank		06/06/2016	2,000,000.00	2,007,080.00	2,000,000.00	1.300	AA	1.282	1,070	06/06/2019
3133EGGS8	2359	Federal Farm Credit Bank		06/27/2016	2,000,000.00	2,001,060.00	2,000,000.00	1.200	AA	1.184	1,091	06/27/2019
3134G9SL2	2356	Federal Home Loan Mortgage		06/28/2016	2,000,000.00	2,006,220.00	2,000,000.00	1.300		1.282	1,092	06/28/2019
<b>Subtotal and Average</b>			<b>58,601,360.42</b>		<b>60,935,000.00</b>	<b>60,993,464.90</b>	<b>60,934,713.89</b>			<b>1.050</b>	<b>762</b>	

Data Updated: SET\_ME8: 07/19/2016 14:55

Run Date: 07/19/2016 - 14:56

Portfolio OTAY  
NLI AP  
PM (PRF\_PM2) 7.3.0

**Month End  
Portfolio Management  
Portfolio Details - Investments  
June 30, 2016**

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM 360	Days to Maturity	Maturity Date
<b>Federal Agency Issues - Coupon</b>												
3135G0YE7	2286	Federal National Mortgage Assoc		04/01/2014	2,000,000.00	2,000,460.00	2,000,178.03	0.625		0.558	56	08/26/2016
3133EEC73	2329	Federal Farm Credit Bank		06/26/2015	2,000,000.00	1,999,700.00	1,998,239.59	0.550	AA	0.661	269	03/27/2017
<b>Subtotal and Average</b>			<b>3,998,368.60</b>		<b>4,000,000.00</b>	<b>4,000,160.00</b>	<b>3,998,417.62</b>			<b>0.610</b>	<b>162</b>	
<b>Certificates of Deposit - Bank</b>												
2050003183-7	2341	California Bank & Trust		01/22/2016	81,833.21	81,833.21	81,833.21	0.030		0.030	570	01/22/2018
<b>Subtotal and Average</b>			<b>81,833.21</b>		<b>81,833.21</b>	<b>81,833.21</b>	<b>81,833.21</b>			<b>0.030</b>	<b>570</b>	
<b>Local Agency Investment Fund (LAIF)</b>												
LAIF	9001	STATE OF CALIFORNIA			6,330,235.92	6,331,635.28	6,330,235.92	0.576		0.568	1	
LAIF BABS 2010	9012	STATE OF CALIFORNIA		07/01/2015	0.00	0.00	0.00	0.267		0.263	1	
<b>Subtotal and Average</b>			<b>5,523,569.25</b>		<b>6,330,235.92</b>	<b>6,331,635.28</b>	<b>6,330,235.92</b>			<b>0.568</b>	<b>1</b>	
<b>San Diego County Pool</b>												
SD COUNTY POOL	9007	San Diego County			13,387,715.90	13,386,000.00	13,387,715.90	0.819		0.808	1	
<b>Subtotal and Average</b>			<b>14,627,715.90</b>		<b>13,387,715.90</b>	<b>13,386,000.00</b>	<b>13,387,715.90</b>			<b>0.808</b>	<b>1</b>	
<b>Total and Average</b>			<b>85,781,896.75</b>		<b>84,734,785.03</b>	<b>84,793,093.39</b>	<b>84,732,916.54</b>			<b>0.954</b>	<b>556</b>	

**Month End  
Portfolio Management  
Portfolio Details - Cash  
June 30, 2016**

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM	Days to 360 Maturity
<b>Union Bank</b>											
UNION MONEY	9002	STATE OF CALIFORNIA			59,205.66	59,205.66	59,205.66	0.010		0.010	1
PETTY CASH	9003	STATE OF CALIFORNIA			2,950.00	2,950.00	2,950.00			0.000	1
UNION OPERATING	9004	STATE OF CALIFORNIA			1,266,016.03	1,266,016.03	1,266,016.03	0.400		0.395	1
PAYROLL	9005	STATE OF CALIFORNIA		07/01/2015	27,861.29	27,861.29	27,861.29			0.000	1
RESERVE-10 COPS	9010	STATE OF CALIFORNIA			2,263.42	2,263.42	2,263.42	0.010		0.010	1
RESERVE-10 BABS	9011	STATE OF CALIFORNIA			5,944.45	5,944.45	5,944.45	0.010		0.010	1
UBNA-2010 BOND	9013	STATE OF CALIFORNIA		07/01/2015	0.00	0.00	0.00			0.000	1
UBNA-FLEX ACCT	9014	STATE OF CALIFORNIA		07/01/2015	50,891.84	50,891.84	50,891.84			0.000	1
		<b>Average Balance</b>	<b>0.00</b>								<b>1</b>
<b>Total Cash and Investments</b>			<b>85,781,896.75</b>		<b>86,149,917.72</b>	<b>86,208,226.08</b>	<b>86,148,049.23</b>			<b>0.954</b>	<b>556</b>

**Month End  
GASB 31 Compliance Detail  
Sorted by Fund - Fund  
June 1, 2016 - June 30, 2016**

CUSIP	Investment #	Fund	Investment Class	Maturity Date	Beginning Invested Value	Purchase of Principal	Addition to Principal	Redemption of Principal	Adjustment in Value		Ending Invested Value
									Amortization Adjustment	Change in Market Value	
<b>Fund: Treasury Fund</b>											
LAIF	9001	99	Fair Value		4,931,325.80	0.00	6,900,000.00	5,500,000.00	0.00	309.48	6,331,635.28
UNION MONEY	9002	99	Amortized		10,005.66	0.00	12,039,205.66	11,990,005.66	0.00	0.00	59,205.66
PETTY CASH	9003	99	Amortized		2,950.00	0.00	0.00	0.00	0.00	0.00	2,950.00
UNION OPERATING	9004	99	Amortized		1,332,314.07	0.00	668,477.54	734,775.58	0.00	0.00	1,266,016.03
PAYROLL	9005	99	Amortized		27,420.16	0.00	441.13	0.00	0.00	0.00	27,861.29
SD COUNTY POOL	9007	99	Fair Value		16,456,000.00	0.00	0.00	3,100,000.00	0.00	30,000.00	13,386,000.00
RESERVE-10 COPS	9010	99	Amortized		2,263.11	0.00	0.31	0.00	0.00	0.00	2,263.42
RESERVE-10 BABS	9011	99	Amortized		5,943.46	0.00	0.99	0.00	0.00	0.00	5,944.45
LAIF BABS 2010	9012	99	Fair Value		0.00	0.00	0.00	0.00	0.00	0.00	0.00
UBNA-2010 BOND	9013	99	Amortized		0.00	0.00	0.00	0.00	0.00	0.00	0.00
UBNA-FLEX ACCT	9014	99	Amortized		57,730.30	0.00	0.00	6,838.46	0.00	0.00	50,891.84
3135G0YE7	2286	99	Fair Value	08/26/2016	2,000,700.00	0.00	0.00	0.00	0.00	-240.00	2,000,460.00
3134G5A47	2301	99	Fair Value	12/30/2016	2,003,380.00	0.00	0.00	0.00	0.00	2,340.00	2,005,720.00
3136G23G0	2304	99	Fair Value	08/15/2017	2,000,580.00	0.00	0.00	0.00	0.00	460.00	2,001,040.00
3133EELR9	2317	99	Fair Value	01/27/2017	1,997,880.00	0.00	0.00	0.00	0.00	2,120.00	2,000,000.00
3133EYE4	2320	99	Fair Value	01/16/2018	1,994,500.00	0.00	0.00	0.00	0.00	5,520.00	2,000,020.00
3133EEXC9	2323	99	Fair Value	04/06/2017	1,997,860.00	0.00	0.00	0.00	0.00	2,180.00	2,000,040.00
3130A56B0	2325	99	Fair Value	05/04/2018	1,200,000.00	0.00	0.00	0.00	0.00	48.00	1,200,048.00
3134G6V264	2326	99	Amortized	06/29/2018	2,000,000.00	0.00	0.00	2,000,000.00	0.00	0.00	0.00
3133EEC73	2329	99	Amortized	03/27/2017	1,998,041.05	0.00	0.00	0.00	198.54	0.00	1,998,239.59
3136G2LZ8	2330	99	Amortized	09/28/2018	2,000,000.00	0.00	0.00	2,000,000.00	0.00	0.00	0.00
3134G7XJ5	2331	99	Fair Value	12/18/2017	1,999,040.00	0.00	0.00	2,000,000.00	0.00	960.00	0.00
3134G7B75	2332	99	Amortized	12/29/2017	2,000,000.00	0.00	0.00	2,000,000.00	0.00	0.00	0.00
3136G2R665	2334	99	Amortized	11/19/2018	2,000,000.00	0.00	0.00	0.00	0.00	0.00	2,000,000.00
3135G0G64	2336	99	Amortized	10/29/2018	2,000,000.00	0.00	0.00	0.00	0.00	0.00	2,000,000.00
3130A6UZ8	2338	99	Amortized	12/28/2018	2,000,000.00	0.00	0.00	0.00	0.00	0.00	2,000,000.00
3130A72G9	2339	99	Amortized	01/29/2019	2,000,000.00	0.00	0.00	0.00	0.00	0.00	2,000,000.00
3134G8KL2	2340	99	Amortized	02/26/2019	2,000,000.00	0.00	0.00	0.00	0.00	0.00	2,000,000.00
2050003183-7	2341	99	Amortized	01/22/2018	81,833.21	0.00	0.00	0.00	0.00	0.00	81,833.21
3136G2ZW0	2342	99	Amortized	02/26/2019	1,030,000.00	0.00	0.00	0.00	0.00	0.00	1,030,000.00

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Month End  
**GASB 31 Compliance Detail**  
 Sorted by Fund - Fund

CUSIP	Investment #	Fund	Investment Class	Maturity Date	Beginning Invested Value	Purchase of Principal	Addition to Principal	Redemption of Principal	Adjustment in Value		Ending Invested Value
									Amortization Adjustment	Change in Market Value	
<b>Fund: Treasury Fund</b>											
3136G2ZW0	2343	99	Fair Value	02/26/2019	2,705,135.25	0.00	0.00	0.00	0.00	1,325.45	2,706,460.70
3134G8Q44	2344	99	Fair Value	03/29/2019	1,993,200.00	0.00	0.00	0.00	0.00	7,820.00	2,001,020.00
3134G8NM7	2345	99	Amortized	09/29/2017	2,000,000.00	0.00	0.00	0.00	0.00	0.00	2,000,000.00
3130A7H73	2346	99	Fair Value	03/29/2018	1,998,920.00	0.00	0.00	0.00	0.00	4,760.00	2,003,680.00
3134G9AW7	2347	99	Fair Value	04/26/2019	1,991,120.00	0.00	0.00	0.00	0.00	11,780.00	2,002,900.00
3134G8XA2	2348	99	Fair Value	07/27/2018	1,994,200.00	0.00	0.00	0.00	0.00	8,100.00	2,002,300.00
3134G8VW5	2349	99	Fair Value	10/27/2017	1,995,640.00	0.00	0.00	0.00	0.00	4,540.00	2,000,180.00
3134G9AF4	2350	99	Fair Value	04/26/2018	1,995,800.00	0.00	0.00	0.00	0.00	5,100.00	2,000,900.00
3134G8ZM4	2351	99	Fair Value	04/29/2019	1,998,960.00	0.00	0.00	0.00	0.00	1,520.00	2,000,480.00
3130A7WK7	2352	99	Fair Value	05/24/2019	2,000,900.00	0.00	0.00	0.00	0.00	5,880.00	2,006,780.00
3134G9GB7	2353	99	Fair Value	11/02/2018	2,000,000.00	0.00	0.00	0.00	0.00	160.00	2,000,160.00
3133EGBG9	2354	99	Fair Value	08/23/2018	1,994,420.00	0.00	0.00	0.00	0.00	6,520.00	2,000,940.00
3130A85A7	2355	99	Fair Value	02/26/2018	1,996,640.00	0.00	0.00	0.00	0.00	3,840.00	2,000,480.00
3134G9SL2	2356	99	Amortized	06/28/2019	0.00	2,000,000.00	0.00	0.00	0.00	0.00	2,000,000.00
3133EGCZ6	2357	99	Fair Value	06/06/2019	0.00	2,000,000.00	0.00	0.00	0.00	7,080.00	2,007,080.00
3130A8KR3	2358	99	Fair Value	07/06/2018	0.00	2,000,000.00	0.00	0.00	0.00	2,680.00	2,002,680.00
3133EGGS8	2359	99	Fair Value	06/27/2019	0.00	2,000,000.00	0.00	0.00	0.00	1,060.00	2,001,060.00
3134G9ZR1	2360	99	Fair Value	12/28/2018	0.00	2,000,000.00	0.00	0.00	0.00	360.00	2,000,360.00
3134G9D38	2363	99	Fair Value	12/29/2017	0.00	2,000,000.00	0.00	0.00	0.00	-60.00	1,999,940.00
<b>Subtotal</b>					<b>83,794,702.07</b>	<b>12,000,000.00</b>	<b>19,608,125.63</b>	<b>29,331,619.70</b>	<b>198.54</b>	<b>116,162.93</b>	<b>86,187,569.47</b>
<b>Total</b>					<b>83,794,702.07</b>	<b>12,000,000.00</b>	<b>19,608,125.63</b>	<b>29,331,619.70</b>	<b>198.54</b>	<b>116,162.93</b>	<b>86,187,569.47</b>

**Month End  
Activity Report  
Sorted By Issuer  
June 1, 2016 - June 30, 2016**

CUSIP	Investment #	Issuer	Percent of Portfolio	Par Value		Transaction Date	Par Value		Ending Balance
				Beginning Balance	Current Rate		Purchases or Deposits	Redemptions or Withdrawals	
<b>Issuer: STATE OF CALIFORNIA</b>									
<b>Union Bank</b>									
UNION MONEY	9002	STATE OF CALIFORNIA			0.010		12,039,205.66	11,990,005.66	
UNION OPERATING	9004	STATE OF CALIFORNIA			0.400		668,477.54	734,775.58	
PAYROLL	9005	STATE OF CALIFORNIA					441.13	0.00	
RESERVE-10 COPS	9010	STATE OF CALIFORNIA			0.010		0.31	0.00	
RESERVE-10 BABS	9011	STATE OF CALIFORNIA			0.010		0.99	0.00	
UBNA-FLEX ACCT	9014	STATE OF CALIFORNIA					0.00	6,838.46	
<b>Subtotal and Balance</b>				<b>1,438,626.76</b>			<b>12,708,125.63</b>	<b>12,731,619.70</b>	<b>1,415,132.69</b>
<b>Local Agency Investment Fund (LAIF)</b>									
LAIF	9001	STATE OF CALIFORNIA			0.576		6,900,000.00	5,500,000.00	
<b>Subtotal and Balance</b>				<b>4,930,235.92</b>			<b>6,900,000.00</b>	<b>5,500,000.00</b>	<b>6,330,235.92</b>
<b>Issuer Subtotal</b>			<b>8.991%</b>	<b>6,368,862.68</b>			<b>19,608,125.63</b>	<b>18,231,619.70</b>	<b>7,745,368.61</b>
<b>Issuer: California Bank &amp; Trust</b>									
<b>Certificates of Deposit - Bank</b>									
<b>Subtotal and Balance</b>				<b>81,833.21</b>					<b>81,833.21</b>
<b>Issuer Subtotal</b>			<b>0.095%</b>	<b>81,833.21</b>			<b>0.00</b>	<b>0.00</b>	<b>81,833.21</b>
<b>Issuer: Fannie Mae</b>									
<b>Federal Agency Issues- Callable</b>									
3136G2LZ8	2330	Fannie Mae			1.250	06/28/2016	0.00	2,000,000.00	
<b>Subtotal and Balance</b>				<b>6,000,000.00</b>			<b>0.00</b>	<b>2,000,000.00</b>	<b>4,000,000.00</b>
<b>Issuer Subtotal</b>			<b>4.643%</b>	<b>6,000,000.00</b>			<b>0.00</b>	<b>2,000,000.00</b>	<b>4,000,000.00</b>
<b>Issuer: Federal Farm Credit Bank</b>									

**Month End  
Activity Report  
June 1, 2016 - June 30, 2016**

CUSIP	Investment #	Issuer	Percent of Portfolio	Par Value		Transaction Date	Purchases or Deposits	Par Value		Ending Balance
				Beginning Balance	Current Rate			Redemptions or Withdrawals		
<b>Issuer: Federal Farm Credit Bank</b>										
<b>Federal Agency Issues- Callable</b>										
3133EGCZ6	2357	Federal Farm Credit Bank			1.300	06/06/2016	2,000,000.00	0.00		
3133EGGS8	2359	Federal Farm Credit Bank			1.200	06/27/2016	2,000,000.00	0.00		
<b>Subtotal and Balance</b>				<b>8,000,000.00</b>			<b>4,000,000.00</b>	<b>0.00</b>		<b>12,000,000.00</b>
<b>Federal Agency Issues - Coupon</b>										
<b>Subtotal and Balance</b>				<b>2,000,000.00</b>						<b>2,000,000.00</b>
<b>Issuer Subtotal</b>				<b>16.251%</b>	<b>10,000,000.00</b>		<b>4,000,000.00</b>	<b>0.00</b>		<b>14,000,000.00</b>
<b>Issuer: Federal Home Loan Bank</b>										
<b>Federal Agency Issues- Callable</b>										
3130A8KR3	2358	Federal Home Loan Bank			0.820	06/23/2016	2,000,000.00	0.00		
<b>Subtotal and Balance</b>				<b>11,200,000.00</b>			<b>2,000,000.00</b>	<b>0.00</b>		<b>13,200,000.00</b>
<b>Issuer Subtotal</b>				<b>15.322%</b>	<b>11,200,000.00</b>		<b>2,000,000.00</b>	<b>0.00</b>		<b>13,200,000.00</b>
<b>Issuer: Federal Home Loan Mortgage</b>										
<b>Federal Agency Issues- Callable</b>										
3134G6V264	2326	Federal Home Loan Mortgage			1.250	06/29/2016	0.00	2,000,000.00		
3134G7XJ5	2331	Federal Home Loan Mortgage			1.000	06/18/2016	0.00	2,000,000.00		
3134G7B75	2332	Federal Home Loan Mortgage			1.016	06/29/2016	0.00	2,000,000.00		
3134G9SL2	2356	Federal Home Loan Mortgage			1.300	06/28/2016	2,000,000.00	0.00		
3134G9ZR1	2360	Federal Home Loan Mortgage			1.000	06/28/2016	2,000,000.00	0.00		
3134G9D38	2363	Federal Home Loan Mortgage			0.700	06/29/2016	2,000,000.00	0.00		
<b>Subtotal and Balance</b>				<b>26,000,000.00</b>			<b>6,000,000.00</b>	<b>6,000,000.00</b>		<b>26,000,000.00</b>
<b>Issuer Subtotal</b>				<b>30.180%</b>	<b>26,000,000.00</b>		<b>6,000,000.00</b>	<b>6,000,000.00</b>		<b>26,000,000.00</b>
<b>Issuer: Federal National Mortgage Assoc</b>										
<b>Federal Agency Issues- Callable</b>										
<b>Subtotal and Balance</b>				<b>5,735,000.00</b>						<b>5,735,000.00</b>

Month End  
Activity Report  
June 1, 2016 - June 30, 2016

CUSIP	Investment #	Issuer	Percent of Portfolio	Par Value Beginning Balance	Current Rate	Transaction Date	Purchases or Deposits	Par Value Redemptions or Withdrawals	Ending Balance
<b>Issuer: Federal National Mortgage Assoc</b>									
<b>Federal Agency Issues - Coupon</b>									
				2,000,000.00					2,000,000.00
				7,735,000.00			0.00	0.00	7,735,000.00
<b>Issuer: San Diego County</b>									
<b>San Diego County Pool</b>									
SD COUNTY POOL	9007	San Diego County			0.819		0.00	3,100,000.00	
				16,487,715.90			0.00	3,100,000.00	13,387,715.90
				16,487,715.90			0.00	3,100,000.00	13,387,715.90
		<b>Total</b>	<b>100.000%</b>	<b>83,873,411.79</b>			<b>31,608,125.63</b>	<b>29,331,619.70</b>	<b>86,149,917.72</b>

**Month End  
Duration Report  
Sorted by Investment Type - Investment Type  
Through 06/30/2016**

Security ID	Investment #	Fund	Issuer	Investment Class	Book Value	Par Value	Market Value	Current Rate	YTM 360	Current Yield	Maturity/Call Date	Modified Duration
3134G5A47	2301	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,005,720.00	.6500000	0.641	0.078	12/30/2016	0.498
3136G23G0	2304	99	Federal National Mortgage Assoc	Fair	2,000,000.00	2,000,000.00	2,001,040.00	1.050000	1.036	1.004	08/15/2017	1.108
3133EELR9	2317	99	Federal Farm Credit Bank	Fair	1,999,713.89	2,000,000.00	2,000,000.00	.6250000	0.616	0.625	01/27/2017	0.568
3133EEYE4	2320	99	Federal Farm Credit Bank	Fair	2,000,000.00	2,000,000.00	2,000,020.00	1.000000	0.986	0.999	01/16/2018	1.518
3133EEXC9	2323	99	Federal Farm Credit Bank	Fair	2,000,000.00	2,000,000.00	2,000,040.00	.6900000	0.681	0.688	04/06/2017	0.759
3130A56B0	2325	99	Federal Home Loan Bank	Fair	1,200,000.00	1,200,000.00	1,200,048.00	1.120000	1.105	1.118	05/04/2018	1.815
3136G2R665	2334	99	Fannie Mae	Amort	2,000,000.00	2,000,000.00	2,001,300.00	1.150000	1.134	1.122	11/19/2018	2.341
3135G0G64	2336	99	Fannie Mae	Amort	2,000,000.00	2,000,000.00	2,000,240.00	1.100000	1.085	1.095	10/29/2018	2.287
3130A6UZ8	2338	99	Federal Home Loan Bank	Amort	2,000,000.00	2,000,000.00	2,006,340.00	1.375000	1.356	1.245	12/28/2018	2.442
3130A72G9	2339	99	Federal Home Loan Bank	Amort	2,000,000.00	2,000,000.00	2,001,640.00	1.500000	1.479	1.468	01/29/2019	2.504
3134G8KL2	2340	99	Federal Home Loan Mortgage	Amort	2,000,000.00	2,000,000.00	2,001,620.00	1.300000	1.282	1.269	02/26/2019	2.588
3136G2ZW0	2342	99	Federal National Mortgage Assoc	Amort	1,030,000.00	1,030,000.00	1,030,556.20	1.125000	1.110	1.104	02/26/2019	2.597
3136G2ZW0	2343	99	Federal National Mortgage Assoc	Fair	2,705,000.00	2,705,000.00	2,706,460.70	1.125000	1.110	1.104	02/26/2019	2.597
3134G8Q44	2344	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,001,020.00	1.350000	1.332	1.331	03/29/2019	2.676
3134G8NM7	2345	99	Federal Home Loan Mortgage	Amort	2,000,000.00	2,000,000.00	2,001,280.00	.8500000	0.838	0.798	09/29/2017	1.233
3130A7H73	2346	99	Federal Home Loan Bank	Fair	2,000,000.00	2,000,000.00	2,003,680.00	1.000000	0.986	0.894	03/29/2018	1.721
3134G9AW7	2347	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,002,900.00	1.150000	1.134	1.098	04/26/2019	2.761
3134G8XA2	2348	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,002,300.00	1.000000	0.986	0.944	07/27/2018	2.042
3134G8WW5	2349	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,000,180.00	.8500000	0.838	0.843	10/27/2017	1.309
3134G9AF4	2350	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,000,900.00	1.050000	1.036	1.025	04/26/2018	1.794
3134G8ZM4	2351	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,000,480.00	1.300000	1.282	1.291	04/29/2019	2.761
3130A7WK7	2352	99	Federal Home Loan Bank	Fair	2,000,000.00	2,000,000.00	2,006,780.00	1.250000	1.233	1.131	05/24/2019	2.835
3134G9GB7	2353	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,000,160.00	1.200000	1.184	1.197	11/02/2018	2.292
3133EGBG9	2354	99	Federal Farm Credit Bank	Fair	2,000,000.00	2,000,000.00	2,000,940.00	1.000000	0.986	0.978	08/23/2018	2.114
3130A85A7	2355	99	Federal Home Loan Bank	Fair	2,000,000.00	2,000,000.00	2,000,480.00	.9000000	0.888	0.885	02/26/2018	1.635
3134G9SL2	2356	99	Federal Home Loan Mortgage	Amort	2,000,000.00	2,000,000.00	2,006,220.00	1.300000	1.282	1.194	06/28/2019	2.926
3133EGCZ6	2357	99	Federal Farm Credit Bank	Fair	2,000,000.00	2,000,000.00	2,007,080.00	1.300000	1.282	1.177	06/06/2019	2.865
3130A8KR3	2358	99	Federal Home Loan Bank	Fair	2,000,000.00	2,000,000.00	2,002,680.00	.8200000	0.809	0.753	07/06/2018	1.509
3133EGGS8	2359	99	Federal Farm Credit Bank	Fair	2,000,000.00	2,000,000.00	2,001,060.00	1.200000	1.184	1.182	06/27/2019	2.927

Portfolio OTAY

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**Month End  
Duration Report  
Sorted by Investment Type - Investment Type  
Through 06/30/2016**

Security ID	Investment #	Fund	Issuer	Investment Class	Book Value	Par Value	Market Value	Current Rate	YTM 360	Current Yield	Maturity/ Call Date	Modified Duration
3134G9ZR1	2360	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	2,000,360.00	1.000000	0.986	0.993	12/28/2018	2.454
3134G9D38	2363	99	Federal Home Loan Mortgage	Fair	2,000,000.00	2,000,000.00	1,999,940.00	.7000000	0.690	0.702	12/29/2017	1.484
3135G0YE7	2286	99	Federal National Mortgage Assoc	Fair	2,000,178.03	2,000,000.00	2,000,460.00	.6250000	0.558	0.579	08/26/2016	0.153
3133EEC73	2329	99	Federal Farm Credit Bank	Amort	1,998,239.59	2,000,000.00	1,999,700.00	.5500000	0.661	0.571	03/27/2017	0.735
2050003183-7	2341	99	California Bank & Trust	Amort	81,833.21	81,833.21	81,833.21	.0300000	0.030	0.030	01/22/2018	1.558 †
LAIF	9001	99	STATE OF CALIFORNIA	Fair	6,330,235.92	6,330,235.92	6,331,635.28	.5760000	0.568	0.576		0.000
LAIF BABS 2010	9012	99	STATE OF CALIFORNIA	Fair	0.00	0.00	0.00	.2670000	0.263	0.267		0.000
SD COUNTY	9007	99	San Diego County	Fair	13,387,715.90	13,387,715.90	13,386,000.00	.8190000	0.808	0.819		0.000
<b>Report Total</b>					<b>84,732,916.54</b>	<b>84,734,785.03</b>	<b>84,793,093.39</b>			<b>0.925</b>		<b>1.483 †</b>

† = Duration can not be calculated on these investments due to incomplete Market price data.

**Month End  
Interest Earnings  
Sorted by Fund - Fund  
June 1, 2016 - June 30, 2016  
Yield on Beginning Book Value**

CUSIP	Investment #	Fund	Security Type	Ending Par Value	Beginning Book Value	Ending Book Value	Maturity Date	Current Annualized Rate	Annualized Yield	Adjusted Interest Earnings		
										Interest Earned	Amortization/ Accretion	Adjusted Interest Earnings
<b>Fund: Treasury Fund</b>												
LAIF	9001	99	LA1	6,330,235.92	4,930,235.92	6,330,235.92		0.576	0.645	2,614.99	0.00	2,614.99
UNION MONEY	9002	99	PA1	59,205.66	10,005.66	59,205.66		0.010	0.880	7.24	0.00	7.24
UNION OPERATING	9004	99	PA1	1,266,016.03	1,332,314.07	1,266,016.03		0.400	0.593	649.52	0.00	649.52
SD COUNTY POOL	9007	99	LA3	13,387,715.90	16,487,715.90	13,387,715.90		0.819	0.727	9,846.66	0.00	9,846.66
RESERVE-10 COPS	9010	99	PA1	2,263.42	2,263.11	2,263.42		0.010	0.011	0.02	0.00	0.02
RESERVE-10 BABS	9011	99	PA1	5,944.45	5,943.46	5,944.45		0.010	0.010	0.05	0.00	0.05
3135G0YE7	2286	99	FAC	2,000,000.00	2,000,275.14	2,000,178.03	08/26/2016	0.625	0.575	1,041.67	-97.11	944.56
3134G5A47	2301	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	12/30/2016	0.650	0.659	1,083.33	0.00	1,083.33
3136G23G0	2304	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	08/15/2017	1.050	1.065	1,750.00	0.00	1,750.00
3133EELR9	2317	99	MC1	2,000,000.00	1,999,672.22	1,999,713.89	01/27/2017	0.625	0.659	1,041.66	41.67	1,083.33
3133EEYE4	2320	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	01/16/2018	1.000	1.014	1,666.67	0.00	1,666.67
3133EEXC9	2323	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	04/06/2017	0.690	0.700	1,150.00	0.00	1,150.00
3130A56B0	2325	99	MC1	1,200,000.00	1,200,000.00	1,200,000.00	05/04/2018	1.120	1.136	1,120.00	0.00	1,120.00
3134G6V264	2326	99	MC1	0.00	2,000,000.00	0.00	06/29/2018	1.250	1.267	1,944.44	0.00	1,944.44
3133EEC73	2329	99	FAC	2,000,000.00	1,998,041.05	1,998,239.59	03/27/2017	0.550	0.679	916.67	198.54	1,115.21
3136G2LZ8	2330	99	MC1	0.00	2,000,000.00	0.00	09/28/2018	1.250	1.267	1,875.00	0.00	1,875.00
3134G7XJ5	2331	99	MC1	0.00	2,000,000.00	0.00	12/18/2017	1.000	1.014	944.44	0.00	944.44
3134G7B75	2332	99	MC1	0.00	2,000,000.00	0.00	12/29/2017	1.016	1.030	1,580.64	0.00	1,580.64
3136G2R665	2334	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	11/19/2018	1.150	1.141	1,875.00	0.00	1,875.00
3135G0G64	2336	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	10/29/2018	1.100	1.115	1,833.34	0.00	1,833.34
3130A6UZ8	2338	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	12/28/2018	1.375	1.394	2,291.67	0.00	2,291.67
3130A72G9	2339	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	01/29/2019	1.500	1.521	2,500.00	0.00	2,500.00
3134G8KL2	2340	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	02/26/2019	1.300	1.318	2,166.67	0.00	2,166.67
2050003183-7	2341	99	BCD	81,833.21	81,833.21	81,833.21	01/22/2018	0.030	0.030	2.05	0.00	2.05
3136G2ZW0	2342	99	MC1	1,030,000.00	1,030,000.00	1,030,000.00	02/26/2019	1.125	1.141	965.63	0.00	965.63
3136G2ZW0	2343	99	MC1	2,705,000.00	2,705,000.00	2,705,000.00	02/26/2019	1.125	1.141	2,535.94	0.00	2,535.94
3134G8Q44	2344	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	03/29/2019	1.350	1.369	2,250.00	0.00	2,250.00
3134G8NM7	2345	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	09/29/2017	0.850	0.862	1,416.66	0.00	1,416.66
3130A7H73	2346	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	03/29/2018	1.000	1.014	1,666.67	0.00	1,666.67

Data Updated: SET\_ME8: 07/19/2016 14:55

Run Date: 07/19/2016 - 14:56

Portfolio OTAY  
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Report Ver. 7.3.5

Month End  
Interest Earnings  
June 1, 2016 - June 30, 2016

CUSIP	Investment #	Fund	Security Type	Ending Par Value	Beginning Book Value	Ending Book Value	Maturity Date	Current Annualized Rate	Yield	Adjusted Interest Earnings		
										Interest Earned	Amortization/ Accretion	Adjusted Interest Earnings
<b>Fund: Treasury Fund</b>												
3134G9AW7	2347	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	04/26/2019	1.150	1.166	1,916.67	0.00	1,916.67
3134G8XA2	2348	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	07/27/2018	1.000	1.014	1,666.67	0.00	1,666.67
3134G8WW5	2349	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	10/27/2017	0.850	0.862	1,416.66	0.00	1,416.66
3134G9AF4	2350	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	04/26/2018	1.050	1.065	1,750.00	0.00	1,750.00
3134G8ZM4	2351	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	04/29/2019	1.300	1.318	2,166.67	0.00	2,166.67
3130A7WK7	2352	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	05/24/2019	1.250	1.267	2,083.33	0.00	2,083.33
3134G9GB7	2353	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	11/02/2018	1.200	1.217	2,000.00	0.00	2,000.00
3133EGBG9	2354	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	08/23/2018	1.000	1.014	1,666.67	0.00	1,666.67
3130A85A7	2355	99	MC1	2,000,000.00	2,000,000.00	2,000,000.00	02/26/2018	0.900	0.913	1,500.00	0.00	1,500.00
3134G9SL2	2356	99	MC1	2,000,000.00	0.00	2,000,000.00	06/28/2019	1.300	1.318	216.67	0.00	216.67
3133EGCZ6	2357	99	MC1	2,000,000.00	0.00	2,000,000.00	06/06/2019	1.300	1.318	1,805.56	0.00	1,805.56
3130A8KR3	2358	99	MC1	2,000,000.00	0.00	2,000,000.00	07/06/2018	0.820	0.831	364.44	0.00	364.44
3133EGGS8	2359	99	MC1	2,000,000.00	0.00	2,000,000.00	06/27/2019	1.200	1.217	266.67	0.00	266.67
3134G9ZR1	2360	99	MC1	2,000,000.00	0.00	2,000,000.00	12/28/2018	1.000	1.014	166.67	0.00	166.67
3134G9D38	2363	99	MC1	2,000,000.00	0.00	2,000,000.00	12/29/2017	0.700	0.710	77.78	0.00	77.78
<b>Subtotal</b>				<b>86,068,214.59</b>	<b>83,783,299.74</b>	<b>86,066,346.10</b>			<b>0.967</b>	<b>67,801.09</b>	<b>143.10</b>	<b>67,944.19</b>
<b>Total</b>				<b>86,068,214.59</b>	<b>83,783,299.74</b>	<b>86,066,346.10</b>			<b>0.967</b>	<b>67,801.09</b>	<b>143.10</b>	<b>67,944.19</b>



## STAFF REPORT

TYPE MEETING:	Regular Board	MEETING DATE:	August 3, 2016
SUBMITTED BY:	Rita Bell, Finance Manager, <i>RKB</i> Treasury & Accounting Services	W.O./G.F. NO:	DIV. NO.
APPROVED BY:	Joseph Beachem, Chief Financial Officer (Chief)		
APPROVED BY:	German Alvarez, Assistant General Manager (Asst. GM)		
SUBJECT:	Accounts Payable Demand List		

**PURPOSE:**

Attached is the list of demands for the Board's information.

**FISCAL IMPACT:**

SUMMARY FOR PERIOD 6/23/2016 - 7/20/2016	NET DEMANDS
CHECKS (2046197 - 2046438)	\$ 3,712,139.31
VOID CHECKS (58)	(\$ 15,530.52)
TOTAL CHECKS	\$ 3,696,608.79
WIRE TO:	
CALPERS - OTHER POST EMPLOYMENT BENEFITS (MONTHLY)	\$ 123,900.00
CITY TREASURER - RAW WATER TREATMENT (MAR 2016)	\$ 88,189.50
OTAY WATER DISTRICT - BI-WEEKLY PAYROLL DEDUCTION	\$ 658.00
OTAY WATER DISTRICT - BI-WEEKLY PAYROLL DEDUCTION	\$ 644.00
PREFERRED BENEFIT INSURANCE - DENTAL & COBRA CLAIMS (JUNE 2016)	\$ 23,385.12
SAN DIEGO COUNTY WATER AUTH - WATER DELIVERIES & CHARGES (MAY 2016)	\$ 3,434,905.83
STATE DISBURSEMENT UNIT - BI-WEEKLY PAYROLL DEDUCTION	\$ 237.69
STATE DISBURSEMENT UNIT - BI-WEEKLY PAYROLL DEDUCTION	\$ 621.22
STATE DISBURSEMENT UNIT - BI-WEEKLY PAYROLL DEDUCTION	\$ 237.69
STATE DISBURSEMENT UNIT - BI-WEEKLY PAYROLL DEDUCTION	\$ 621.22
UNION BANK - BI-WEEKLY PAYROLL TAXES	\$ 146,396.46
UNION BANK - BI-WEEKLY PAYROLL TAXES	\$ 174,284.72
UNION BANK NA - COPS 1996 (MONTHLY)	\$ 3,212.19
UNION BANK NA - COPS 1996 (QUARTERLY)	\$ 21,708.62
<b>TOTAL CASH DISBURSEMENTS</b>	<b>\$ 7,715,611.05</b>

**RECOMMENDED ACTION:**

That the Board received the attached list of demands.

Jb/Attachment

**CHECK REGISTER**

**Otay Water District**

**Date Range: 6/23/2016 - 7/20/2016**

<b>Check #</b>	<b>Date</b>	<b>Vendor</b>	<b>Vendor Name</b>	<b>Invoice</b>	<b>Inv. Date</b>	<b>Description</b>	<b>Amount</b>	<b>Check Total</b>
2046323	07/13/16	08488	ABLEFORCE INC	6841	07/06/16	SHAREPOINT SERVICES (JUNE 2016)	1,937.50	1,937.50
2046384	07/20/16	03317	ADVANCED CALL PROCESSING INC	20163675	06/10/16	PHONE SOFTWARE MAINT (7/1/16-6/30/17)	38,667.09	
				20163695	07/05/16	SERVICE CALL	130.00	
				20163696	07/05/16	SERVICE CALL	130.00	38,927.09
2046385	07/20/16	13901	ADVANCED INDUSTRIAL SVCS INC	506302016	06/30/16	980-1 RESERVOIR (ENDING 6/30/16)	302,266.25	
				706302016	07/01/16	711-1 & 2 RESERVOIR (ENDING 6/30/16)	198,735.25	501,001.50
2046254	07/06/16	12174	AECOM TECHNICAL SERVICES INC	41	06/14/16	DISINFECTION SYSTEM	6,549.88	6,549.88
2046386	07/20/16	12174	AECOM TECHNICAL SERVICES INC	42	06/28/16	DISINFECTION SYSTEM (ENDING 6/24/16)	1,562.79	1,562.79
2046255	07/06/16	11462	AEGIS ENGINEERING MGMT INC	1414	06/15/16	DEVELOPER PLAN REVIEW (5/14/16-6/10/16)	14,195.12	14,195.12
2046387	07/20/16	11462	AEGIS ENGINEERING MGMT INC	1415	06/29/16	DEVELOPER PLAN REVIEW (6/11/16-6/24/16)	7,892.56	7,892.56
2046256	07/06/16	07732	AIRGAS SPECIALTY PRODUCTS INC	131441557	06/08/16	AQUA AMMONIA	2,311.80	
				131441556	06/08/16	AQUA AMMONIA	742.80	3,054.60
2046388	07/20/16	13753	AIRGAS USA LLC	9937622166	06/30/16	BREATHING AIR BOTTLES	52.02	52.02
2046389	07/20/16	15024	AIRX UTILITY SURVEYORS INC	506282016	06/28/16	UTILITY LOCATING SERVICES (6/1/16-6/28/16)	11,948.00	11,948.00
2046197	06/29/16	16212	ALAMERI INC	0513062816	06/28/16	W/O REFUND D0513-090185	1,712.76	1,712.76
2046198	06/29/16	17350	ALTISOURCE SINGLE FAMILY INC.	Ref002461996	06/27/16	UB Refund Cst #0000224565	18.13	18.13
2046199	06/29/16	17348	AM ORTEGA	Ref002461994	06/27/16	UB Refund Cst #0000223876	2,135.37	2,135.37
2046324	07/13/16	06166	AMERICAN MESSAGING	L1109570QG	07/01/16	PAGERS (JUNE 2016)	143.56	143.56
2046257	07/06/16	02730	AMERICAN PAYROLL ASSOCIATION	20860053116	05/31/16	MEMBERSHIP DUES (ANNUAL)	219.00	219.00
2046325	07/13/16	16827	ANA YOLIMA JULIO	Ref002450215	10/19/15	UB Refund Cst #0000214626	29.43	29.43
2046258	07/06/16	08967	ANTHEM EAP	55674	06/29/16	EMPLOYEE ASSIST PROG (JULY-SEPT 2016)	929.91	929.91
2046390	07/20/16	03357	APEX ADVERTISING INC	338431	06/27/16	ANNUAL T-SHIRTS	3,435.97	3,435.97
2046326	07/13/16	16568	APRIL KRUSE	Ref002446725	07/15/15	UB Refund Cst #0000188725	33.34	33.34
2046259	07/06/16	03492	AQUA-METRIC SALES COMPANY	0061157IN	06/15/16	OMNI C2 METER	7,200.73	7,200.73
2046200	06/29/16	13171	ARCADIS US INC	0790188	05/27/16	AS-NEEDED DESIGN (ENDING 5/22/16)	17,675.50	17,675.50
2046201	06/29/16	17264	ARTIANO SHINOFF	214142	06/15/16	LEGAL SERVICES (MAY 2016)	36,912.74	36,912.74
2046327	07/13/16	07785	AT&T	000008278709	07/02/16	TELEPHONE SERVICES (6/2/16-7/1/16)	5,911.76	5,911.76
2046391	07/20/16	05500	AT&T MOBILITY	Ref002463503	07/14/16	Refund receipt #: 161880210018	78.83	78.83
2046260	07/06/16	12810	ATKINS	1839736	06/14/16	2015 WFMP UPDATE (2/1/16-5/15/16)	53,979.08	53,979.08

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046392	07/20/16	12810	ATKINS	1840775	07/03/16	DESIGN SERVICES (ENDING 6/30/16)	8,400.00	8,400.00
2046202	06/29/16	17345	AUSTIN WILLIAMS	Ref002461991	06/27/16	UB Refund Cst #0000221237	61.87	61.87
2046328	07/13/16	07446	BANK OF NEW YORK MELLON, THE	2521957352	07/04/16	ADM FEES 1996 COPS	3,147.50	3,147.50
2046261	07/06/16	15932	BART JARVIS	Ref002437823	01/26/15	UB Refund Cst #0000121291	95.00	95.00
2046262	07/06/16	16290	BIDSYNC	SI1632	05/01/16	SOFTWARE SERVICES (7/1/16-6/30/17)	8,000.00	8,000.00
2046329	07/13/16	17387	BOB EASTON AIA ARCHITECT	WOD0866	06/30/16	W/O REFUND D0866-060091	1,724.66	1,724.66
2046263	07/06/16	10970	BRENNTAG PACIFIC INC	BPI631722	06/09/16	SODIUM HYPOCHLORITE	2,589.95	
				BPI634161	06/16/16	SODIUM HYPOCHLORITE	2,343.84	
				BPI631515	06/09/16	SODIUM HYPOCHLORITE	2,051.22	
				BPI634160	06/16/16	SODIUM HYPOCHLORITE	1,618.11	8,603.12
2046393	07/20/16	10970	BRENNTAG PACIFIC INC	BPI637808	06/30/16	SODIUM HYPOCHLORITE	2,761.45	
				BPI636159	06/23/16	SODIUM HYPOCHLORITE	2,718.81	
				BPI637809	06/30/16	SODIUM HYPOCHLORITE	2,526.00	
				BPI636158	06/23/16	SODIUM HYPOCHLORITE	2,184.94	10,191.20
2046264	07/06/16	08156	BROWNSTEIN HYATT FARBER	643035	06/30/16	LEGISLATIVE ADVOCACY (THRU 6/24/16)	2,093.50	2,093.50
2046394	07/20/16	14112	BSE ENGINEERING INC	75400403	06/30/16	ELECTRICAL SERVICES (ENDING 6/30/16)	7,956.25	
				75400501	06/30/16	ELECTRICAL SERVICES (ENDING 6/30/16)	6,620.00	
				75400601	06/30/16	ELECTRICAL SERVICES (ENDING 6/30/16)	3,570.00	
				75400302	06/30/16	ELECTRICAL SERVICES (ENDING 6/30/16)	450.00	18,596.25
2046265	07/06/16	15447	CANNON, LARRY	062816	06/30/16	SAFETY BOOTS REIMBURSEMENT	150.00	150.00
2046203	06/29/16	15447	CANNON, LARRY	06222016LC	06/23/16	TUITION REIMBURSEMENT	1,436.70	1,436.70
2046204	06/29/16	04071	CAPITOL WEBWORKS LLC	27818	04/30/16	OUTSIDE SERVICES	45.00	45.00
2046266	07/06/16	16490	CARLA SNEAD	Ref002444794	06/15/15	UB Refund Cst #0000204360	28.53	28.53
2046395	07/20/16	02758	CARMEL BUSINESS SYSTEMS INC	8041	06/24/16	DESTRUCTION SERVICES (6/20/16)	77.00	77.00
2046396	07/20/16	15177	CAROLLO ENGINEERS INC	149971	06/27/16	DESIGN FOR 870-2 PS (5/1/16-5/31/16)	35,991.25	35,991.25
2046205	06/29/16	17341	CARRIE CASAGRANDE	Ref002461987	06/27/16	UB Refund Cst #0000204979	54.96	54.96
2046206	06/29/16	17351	CARRILLO PROPERTY INVS LLC	Ref002461997	06/27/16	UB Refund Cst #0000225150	18.80	18.80
2046330	07/13/16	17391	CARRILLO PROPERTY INVS LLC	WOD0939	06/30/16	W/O REFUND D0939-090221	1,138.75	1,138.75
2046331	07/13/16	17022	CASTLE ACCESS INC	0223091559	07/01/16	COLOCATION SERVICES	2,453.34	2,453.34
2046397	07/20/16	14673	CGR MANAGEMENT CONSULTANTS LLC	6019	06/30/16	CONSULTING SERVICES	9,560.19	9,560.19

## CHECK REGISTER

## Otay Water District

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046207	06/29/16	17354	CHRISTINA MILANO	Ref002462000	06/27/16	UB Refund Cst #0000226235	33.06	33.06
2046208	06/29/16	17338	CHULA VISTA R-14 LLC	Ref002461983	06/27/16	UB Refund Cst #0000186310	129.96	129.96
2046332	07/13/16	12674	CITY OF CHULA VISTA	071060PU0040716	07/06/16	UTILITY PERMITS (4/1/16-6/30/16)	2,970.00	2,970.00
2046333	07/13/16	00234	CITY TREASURER	1000171624	07/06/16	LABORATORY ANALYSIS (JUNE 2016)	999.00	999.00
2046267	07/06/16	00234	CITY TREASURER	1000169594	06/10/16	LABORATORY ANALYSIS (MAY 2016)	1,220.00	1,220.00
2046209	06/29/16	04119	CLARKSON LAB & SUPPLY INC	84933	05/31/16	BACTERIOLOGICAL TESTING (5/23/16)	186.00	
				84928	05/31/16	BACTERIOLOGICAL TESTING (5/9/16)	178.00	
				84930	05/31/16	BACTERIOLOGICAL TESTING (5/12/16)	178.00	
				84931	05/31/16	BACTERIOLOGICAL TESTING (5/16/16)	178.00	
				84932	05/31/16	BACTERIOLOGICAL TESTING (5/17/16)	178.00	898.00
2046398	07/20/16	04119	CLARKSON LAB & SUPPLY INC	84929	06/30/16	BACTERIOLOGICAL TESTING (5/11/16-5/13/16)	510.00	
				85370	06/30/16	BACTERIOLOGICAL TESTING (6/2/16-6/4/16)	382.00	
				84927	06/30/16	BACTERIOLOGICAL TESTING (5/3/16)	302.00	
				85371	06/30/16	BACTERIOLOGICAL TESTING (6/8/16)	302.00	
				84934	06/30/16	BACTERIOLOGICAL TESTING (5/28/16)	268.00	
				85372	06/30/16	BACTERIOLOGICAL TESTING (6/27/16)	188.00	1,952.00
2046210	06/29/16	17263	COMPLETE INTEGRATED SOLTNS LLC	11391	05/31/16	TOUGHBOOKS	7,662.00	7,662.00
2046334	07/13/16	08160	COMPLETE OFFICE	18465800	05/23/16	COPY PAPER	1,338.77	
				18362190	05/12/16	OUTREACH SUPPLIES	1,182.60	2,521.37
2046268	07/06/16	16088	CONNIE CHAVIRA	Ref002438853	02/09/15	UB Refund Cst #0000012669	75.00	75.00
2046399	07/20/16	15049	CORELOGIC SOLUTIONS LLC	81704115	06/30/16	DATA SERVICES (JUNE 2016)	605.00	
				81701619	06/30/16	DATA SERVICES (JUNE 2016)	525.00	1,130.00
2046335	07/13/16	12334	CORODATA MEDIA STORAGE INC	DS1274002	06/30/16	TAPE STORAGE (JUNE 2016)	373.32	373.32
2046400	07/20/16	05622	CORRPRO COMPANIES INC	388899	06/30/16	COATING INSPECTION (6/1/16-6/30/16)	6,690.50	6,690.50
2046336	07/13/16	05622	CORRPRO COMPANIES INC	383504	05/31/16	COATING INSPECTION (5/1/16-5/31/16)	12,114.50	12,114.50
2046337	07/13/16	02612	COUNCIL OF WATER UTILITIES	071916	07/12/16	BUSINESS MEETING	25.00	25.00
2046211	06/29/16	02612	COUNCIL OF WATER UTILITIES	06212016	06/21/16	BUSINESS MEETING	25.00	25.00
2046269	07/06/16	00099	COUNTY OF SAN DIEGO	DPWAROTAYMW	06/13/16	EXCAVATION PERMITS (MAY 2016)	1,941.02	1,941.02
2046338	07/13/16	00184	COUNTY OF SAN DIEGO	2003193E6023406	06/27/16	SHUT DOWN TEST (6/27/16)	923.00	923.00
2046270	07/06/16	02122	COUNTY OF SAN DIEGO	070116	07/01/16	PERMITS FOR 2 NEW PORTABLE PUMPS	7,142.50	7,142.50

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046271	07/06/16	02122	COUNTY OF SAN DIEGO	2016042905668	06/30/16	PERMIT FEES # 05668 (JUL 2016-JUL 2017)	356.00	356.00
2046339	07/13/16	03086	COUNTY OF SAN DIEGO	LC16-29	07/01/16	OTHER AGENCY FEES	56,184.99	56,184.99
2046272	07/06/16	02756	COX COMMUNICATIONS INC	6702062416	06/24/16	TELECOMM SVCS / METRO-E (6/24/16-7/23/16)	4,452.74	4,452.74
2046401	07/20/16	00693	CSDA, SAN DIEGO CHAPTER	16-28	06/15/16	MEMBERSHIP RENEWAL	150.00	150.00
2046212	06/29/16	17349	CW DRIVER	Ref002461995	06/27/16	UB Refund Cst #0000224171	840.68	840.68
2046213	06/29/16	17339	DALILA RODRIGUEZ	Ref002461984	06/27/16	UB Refund Cst #0000193415	75.00	75.00
2046214	06/29/16	17340	DANIELLE LACASSE	Ref002461985	06/27/16	UB Refund Cst #0000193628	198.29	198.29
2046273	07/06/16	03341	DEPARTMENT OF CONSUMER AFFAIRS	3008070516	07/05/16	CPA RENEWAL	120.00	120.00
2046402	07/20/16	17395	EDUCATION & TRAINING SVCS LLC	071416	07/14/16	TRAINING REGISTRATION	549.00	549.00
2046340	07/13/16	14323	EDWARDS, JEFFREY	061416	07/08/16	SAFETY BOOTS	150.00	150.00
2046274	07/06/16	08023	EMPLOYEE BENEFIT SPECIALISTS	0076097IN	05/31/16	EMPLOYEE BENEFITS (MAY 2016)	675.00	675.00
2046403	07/20/16	08023	EMPLOYEE BENEFIT SPECIALISTS	0076765IN 0076729IN	07/18/16 06/30/16	1094C TAX FILING (2015) EMPLOYEE BENEFITS (JUNE 2016)	5,000.00 675.00	5,675.00
2046215	06/29/16	17335	ENRIQUETA GALLEGOS	Ref002461980	06/27/16	UB Refund Cst #0000122872	92.00	92.00
2046275	07/06/16	03227	ENVIROMATRIX ANALYTICAL INC	6060657 6060839	06/13/16 06/20/16	LAB ANALYSIS (5/26/16-6/9/16) LAB ANALYSIS (6/2/16-6/9/16)	695.00 480.00	1,175.00
2046404	07/20/16	03227	ENVIROMATRIX ANALYTICAL INC	6061008	06/27/16	LAB ANALYSIS (6/10/16-6/16/16)	445.00	445.00
2046216	06/29/16	16169	ENVIROSUPPLY & SERVICE INC	1534174	05/17/16	GASTECH FILTERS	79.80	79.80
2046276	07/06/16	14298	ERA HOMETEAM	Ref002437621	01/12/15	UB Refund Cst #0000059336	113.98	113.98
2046217	06/29/16	17326	ERNEST PINUELAS	Ref002461971	06/27/16	UB Refund Cst #0000002975	65.22	65.22
2046405	07/20/16	14320	EUROFINS EATON ANALYTICAL INC	L0270795	06/29/16	OUTSIDE LAB SERVICES (6/7/16)	265.00	265.00
2046341	07/13/16	17390	FAIRFIELD CHULA VISTA LP	WOD0919	06/30/16	W/O REFUND D0919-090192	1,090.39	1,090.39
2046218	06/29/16	03546	FERGUSON WATERWORKS # 1083	0557628	06/23/16	INVENTORY	13,867.44	13,867.44
2046277	07/06/16	03546	FERGUSON WATERWORKS # 1083	0559165 0555984	06/28/16 05/31/16	INVENTORY INVENTORY	10,475.67 3,090.96	13,566.63
2046406	07/20/16	12187	FIRST AMERICAN DATA TREE LLC	9003400616	06/30/16	ONLINE DOCUMENTS (MONTHLY)	99.00	99.00
2046407	07/20/16	16469	FIRST CHOICE SERVICES	063321	07/01/16	COFFEE SERVICES	500.85	500.85
2046278	07/06/16	11962	FLEETWASH INC	x788540	06/10/16	VEHICLE WASHING	84.24	84.24

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046342	07/13/16	01612	FRANCHISE TAX BOARD	Ben2463458	07/14/16	BI-WEEKLY PAYROLL DEDUCTION	100.00	100.00
2046219	06/29/16	01612	FRANCHISE TAX BOARD	Ben2462037	06/30/16	BI-WEEKLY PAYROLL DEDUCTION	100.00	100.00
2046408	07/20/16	13563	FRIENDS OF THE WATER	328	06/28/16	GARDEN TOURS (JUNE 2016)	2,100.00	2,100.00
2046343	07/13/16	17393	GABRIEL GONZALES & CHRISTINA	WOD0949	06/30/16	W/O REFUND D0949-090239	2,026.20	2,026.20
2046344	07/13/16	17384	GABRIEL YU	Ref002463358	07/11/16	UB Refund Cst #0000225459	167.70	167.70
2046220	06/29/16	17328	GILBERT L NINNESS	Ref002461973	06/27/16	UB Refund Cst #0000017651	31.83	31.83
2046279	07/06/16	10291	GOIN, JEFF	06232016JG	06/30/16	TUITION REIMBURSEMENT	215.00	215.00
2046345	07/13/16	09715	GUTIERREZ, JUAN	06222016JG	07/11/16	TUITION REIMBURSEMENT	145.00	145.00
2046280	07/06/16	00174	HACH COMPANY	9967276	06/09/16	SAMPLER REPAIR	1,257.91	1,257.91
2046221	06/29/16	00201	HARRINGTON INDL PLASTICS LLC	004G6081	06/06/16	ANALYZER TUBING	105.84	105.84
2046409	07/20/16	00201	HARRINGTON INDL PLASTICS LLC	004G6681 004G6547	06/27/16 06/22/16	CPVC FITTINGS CPVC FITTINGS	1,150.04 269.44	1,419.48
2046281	07/06/16	16217	HARRY BANKS	Ref002440523	04/03/15	UB Refund Cst #0000008622	161.98	161.98
2046282	07/06/16	10973	HDR ENGINEERING INC	23	06/13/16	CORROSION SERVICES (3/27/16-5/28/16)	5,330.48	5,330.48
2046283	07/06/16	17360	HECTOR MERAUX	8974062916	06/30/16	CUSTOMER REFUND	729.13	729.13
2046410	07/20/16	02008	HELIX ENVIRONMNTL PLANNING INC	20	06/21/16	ENVIRONMENTAL SERVICES (6/1/16-6/30/16)	12,478.95	12,478.95
2046284	07/06/16	00062	HELIX WATER DISTRICT	061516	06/15/16	WTR CONS DATABASE SVCS (7/1/15-6/30/16)	1,583.97	1,583.97
2046222	06/29/16	00062	HELIX WATER DISTRICT	4283060916 3300060916	06/09/16 06/09/16	WATER USAGE (4/8/16-6/7/16) WATER USAGE (4/8/16-6/6/16)	43.55 43.55	87.10
2046346	07/13/16	02096	HELIX WATER DISTRICT	062816	06/28/16	EMERGENCY INTERCONNECTION REIMB	286,368.66	286,368.66
2046223	06/29/16	04209	HIDDEN VALLEY PUMP	000310790000 000310780000	06/23/16 06/22/16	REWIND 350 HP MOTOR 803-1 PUMP #3 40 HP MOTOR FOR RECIRC PUMP AT 711-3	17,269.00 17,080.88	34,349.88
2046285	07/06/16	13349	HUNSAKER & ASSOCIATES	2016050002	06/08/16	LAND SURVEYING (5/1/16-5/31/16)	3,818.00	3,818.00
2046411	07/20/16	15622	ICF JONES & STOKES INC	0115533 0115583	07/01/16 06/21/16	ENVIRONMENTAL SERVICES (4/30/16-5/27/16) ENVIRONMENTAL SERVICES (4/20/16-5/27/16)	3,551.25 2,428.92	5,980.17
2046412	07/20/16	17084	INDUSTRIAL SAFETY SUPPLY CORP	1034650	06/21/16	CONFINED SPACE EQUIPMENT	44,641.33	44,641.33
2046413	07/20/16	08969	INFOSEND INC	107629 107628 107807	06/30/16 06/30/16 07/01/16	BILL PRINTING SERVICES (JUNE 2016) BILL PRINTING SERVICES (JUNE 2016) BILL PRINTING SERVICES (JUNE 2016)	12,718.41 4,546.34 2,091.35	19,356.10

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

<b>Check #</b>	<b>Date</b>	<b>Vendor</b>	<b>Vendor Name</b>	<b>Invoice</b>	<b>Inv. Date</b>	<b>Description</b>	<b>Amount</b>	<b>Check Total</b>
2046414	07/20/16	02372	INTERIOR PLANT SERVICE INC	14708	06/20/16	PLANT SERVICES (JUNE 2016)	226.00	226.00
2046347	07/13/16	13899	INTERMEDIA.NET INC	1607001609	07/01/16	EMAIL SERVICES (6/2/16-7/2/16)	3,077.75	3,077.75
2046348	07/13/16	03250	INTERNATIONAL PUBLIC MGMT	07082016HR	07/08/16	MEMBERSHIP RENEWAL (07/01/16-06/30/17)	195.00	195.00
2046286	07/06/16	14737	IWATER INC	7413	04/01/16	LICENSE AGREEMENT (7/1/16-6/30/17)	40,000.00	40,000.00
2046349	07/13/16	17380	JAMES COLLINGS	Ref002463353	07/11/16	UB Refund Cst #0000047721	103.86	103.86
2046287	07/06/16	10563	JCI JONES CHEMICALS INC	691186	06/08/16	CHEMICALS FOR TREATMENT PLANT	1,123.10	1,123.10
2046224	06/29/16	17343	JESSICA LOUIS	Ref002461989	06/27/16	UB Refund Cst #0000214234	79.42	79.42
2046288	07/06/16	16764	JML CALIFORNIA PROPERTIES LLC	Ref002449008	09/21/15	UB Refund Cst #0000216747	103.76	103.76
2046225	06/29/16	17331	JOHN CARLSON	Ref002461976	06/27/16	UB Refund Cst #0000047424	223.56	223.56
2046226	06/29/16	17327	JOHN GROS	Ref002461972	06/27/16	UB Refund Cst #0000005121	155.54	155.54
2046350	07/13/16	17392	JOHN R & JULIA J ANGELI	WOD0947	06/30/16	W/O REFUND D0947-090236	2,273.71	2,273.71
2046351	07/13/16	01735	JOHNSON, PAMELA	070516	07/05/16	SAFETY BOOTS REIMBURSEMENT	126.92	126.92
2046227	06/29/16	17334	JONATHAN PANGANIBAN	Ref002461979	06/27/16	UB Refund Cst #0000093013	84.53	84.53
2046289	07/06/16	17297	JP GUNITE INC	13350	06/10/16	PSI MIX CONCRETE	586.93	586.93
2046352	07/13/16	17381	JUAN OCAMPO	Ref002463354	07/11/16	UB Refund Cst #0000088268	120.21	120.21
2046228	06/29/16	17344	KEEGAN LIEGEL	Ref002461990	06/27/16	UB Refund Cst #0000216282	59.41	59.41
2046229	06/29/16	17336	KEITH MAGENNI	Ref002461981	06/27/16	UB Refund Cst #0000168011	154.75	154.75
2046230	06/29/16	17353	KIM SAGE	Ref002461999	06/27/16	UB Refund Cst #0000225988	99.93	99.93
2046353	07/13/16	05840	KIRK PAVING INC	6179	06/30/16	ASPHALT CONCRETE PAVING	7,403.00	7,403.00
2046415	07/20/16	05840	KIRK PAVING INC	6176	06/30/16	ASPHALT PAVING SVCS	62,552.38	62,552.38
2046290	07/06/16	12276	KONECRANES INC	SDG01124381	06/29/16	HOIST INSPECTION	575.00	575.00
2046291	07/06/16	16424	KYLEIGH HUPFL	Ref002442588	05/18/15	UB Refund Cst #0000208116	15.96	15.96
2046292	07/06/16	15597	LEONARD H VILLARREAL	050516	05/05/16	PROFESSIONAL SERVICES	5,600.00	5,600.00
2046354	07/13/16	13749	LONDON GROUP REALTY ADVISORS	1226	07/05/16	OUTSIDE SERVICES (6/27/16)	525.00	525.00
2046231	06/29/16	17347	LUIS LONG	Ref002461993	06/27/16	UB Refund Cst #0000223274	20.61	20.61
2046232	06/29/16	17346	LUSARDI CONSTRUCTION CO.	Ref002461992	06/27/16	UB Refund Cst #0000222345	1,220.40	1,220.40
2046293	07/06/16	10512	MAIL MANAGEMENT GROUP INC	OWD-10032	06/14/16	PRINTING	4,596.57	4,596.57
2046294	07/06/16	06155	MANJARREZ, CONNIE	062616062816	07/01/16	TRAVEL EXPENSE REIMB (6/26/16-6/28/16)	144.00	144.00

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046233	06/29/16	17324	MARGARITA ALVAREZ	8058062316	06/23/16	CUSTOMER REFUND	381.85	381.85
2046234	06/29/16	17337	MARIA GARCIA	Ref002461982	06/27/16	UB Refund Cst #0000176202	29.35	29.35
2046295	07/06/16	16014	MARWIN SAMONTE	Ref002437833	01/26/15	UB Refund Cst #0000205886	15.96	15.96
2046416	07/20/16	05329	MASTER METER INC	153267	06/17/16	SUPPORT/MAINTENANCE (8/1/16-7/31/17)	1,500.00	1,500.00
2046417	07/20/16	17085	MENDEZ STRATEGY GROUP INC	716071	07/01/16	CONSULTANT SERVICES (JUNE 2016)	4,000.00	4,000.00
2046296	07/06/16	17085	MENDEZ STRATEGY GROUP INC	716061	06/08/16	CONSULTANT SERVICES (MAY 2016)	4,000.00	4,000.00
2046297	07/06/16	16942	MIGUEL MIRELES	Ref002453508	12/14/15	UB Refund Cst #0000016647	113.69	113.69
2046298	07/06/16	16613	MISSION RESOURCE CONSERVATION	366	07/01/16	HOME WATER USE EVALUATION	125.00	125.00
2046418	07/20/16	15136	MISSION UNIFORM SERVICE	502733738	06/21/16	UNIFORM SERVICES	400.31	
				502779405	06/28/16	UNIFORM SERVICES	377.12	
				502733737	06/21/16	UNIFORM SERVICES	104.79	
				502779404	06/28/16	UNIFORM SERVICES	104.79	
				502770618	06/27/16	UNIFORM SERVICES	85.77	1,072.78
2046299	07/06/16	15136	MISSION UNIFORM SERVICE	502687731	06/14/16	UNIFORM SERVICES	402.81	
				502650037	06/07/16	UNIFORM SERVICES	400.31	
				502678377	06/13/16	UNIFORM SERVICES	117.99	
				502650036	06/07/16	UNIFORM SERVICES	104.79	
				502687730	06/14/16	UNIFORM SERVICES	104.79	
				502723691	06/20/16	UNIFORM SERVICES	102.99	
				502649592	06/07/16	UNIFORM SERVICES	91.52	1,325.20
2046355	07/13/16	17383	MITRA NAVAEI	Ref002463356	07/11/16	UB Refund Cst #0000196968	63.01	63.01
2046300	07/06/16	16956	MONTGOMERY CONST SVCS INC	505312016	06/14/16	OPS YARD IMPROVEMENTS (ENDING 5/31/16)	120,658.55	120,658.55
2046356	07/13/16	15620	MY LITTLE PONY RIDES	120160A	07/01/16	EMPLOYEE EVENT	825.00	825.00
2046235	06/29/16	16255	NATIONWIDE RETIREMENT	Ben2462027	06/30/16	BI-WEEKLY DEFERRED COMP PLAN	9,830.12	9,830.12
2046357	07/13/16	16255	NATIONWIDE RETIREMENT	Ben2463448	07/14/16	BI-WEEKLY DEFERRED COMP PLAN	8,105.12	8,105.12
2046301	07/06/16	16505	NIGHTCLUBPOOL LLC	109	06/29/16	WEB CONSULTING	330.00	330.00
2046302	07/06/16	16462	NORMAN MILES	Ref002442831	06/01/15	UB Refund Cst #0000213415	25.26	25.26
2046419	07/20/16	00510	OFFICE DEPOT INC	847760142001	06/27/16	OFFICE SUPPLIES	358.55	
				848063203001	06/29/16	OFFICE SUPPLIES	147.72	
				848063315001	06/29/16	OFFICE SUPPLIES	64.79	
				848050279001	06/29/16	OFFICE SUPPLIES	46.96	618.02

**CHECK REGISTER**

**Otay Water District**

**Date Range: 6/23/2016 - 7/20/2016**

<b>Check #</b>	<b>Date</b>	<b>Vendor</b>	<b>Vendor Name</b>	<b>Invoice</b>	<b>Inv. Date</b>	<b>Description</b>	<b>Amount</b>	<b>Check Total</b>
2046303	07/06/16	00510	OFFICE DEPOT INC	844200427001	06/09/16	OFFICE SUPPLIES	199.32	
				845951987001	06/17/16	OFFICE SUPPLIES	151.30	
				844630456001	06/10/16	OFFICE SUPPLIES	75.05	
				844200122001	06/09/16	OFFICE SUPPLIES	9.27	434.94
2046236	06/29/16	00510	OFFICE DEPOT INC	843254243001	06/03/16	OFFICE SUPPLIES	90.50	90.50
2046304	07/06/16	12737	OLDCASTLE PRECAST INC	070195860	06/09/16	RINGS	1,818.04	1,818.04
2046358	07/13/16	17382	OSCAR HERNANDEZ	Ref002463355	07/11/16	UB Refund Cst #0000175026	32.01	32.01
2046359	07/13/16	01718	OTAY MESA CHAMBER OF COMMERCE	05062016	05/06/16	MEMBERSHIP RENEWAL	600.00	600.00
2046420	07/20/16	04571	OTAY RANCH COMPANY	07103071416	07/14/16	ANNEXATION REFUND	7,275.00	7,275.00
2046305	07/06/16	05497	PAYPAL INC	51222543	05/31/16	PHONE PAYMENT SVCS (MAY 2016)	54.10	
				52066960	06/30/16	PHONE PAYMENT SVCS (JUNE 2016)	54.10	108.20
2046306	07/06/16	00137	PETTY CASH CUSTODIAN	063016	06/30/16	PETTY CASH REIMBURSEMENT	477.22	477.22
2046421	07/20/16	15948	PICA PIPELINE INSPECTION AND	103A	06/21/16	INSPECTION/CONDITION ASSESSMENT	18,000.00	18,000.00
2046307	07/06/16	16204	PICR LP	Ref002440016	03/23/15	UB Refund Cst #0000214909	257.76	257.76
2046422	07/20/16	07346	PRIME ELECTRICAL SERVICES INC	16146	06/24/16	ELECTRICAL WORK	4,844.00	
				16147	06/24/16	ELECTRICAL WORK	4,758.00	9,602.00
2046423	07/20/16	13059	PRIORITY BUILDING SERVICES	49687	06/01/16	JANITORIAL SERVICES (JUNE 2016)	4,199.00	4,199.00
2046360	07/13/16	15082	PROJECT WET FOUNDATION INC	11141	05/09/16	OUTREACH SUPPLIES	1,322.56	1,322.56
2046424	07/20/16	15083	PUBLIC AGENCY SAFETY MGMT ASSN	07132016	07/13/16	2016 ANNUAL MEMBERSHIP	75.00	75.00
2046308	07/06/16	00078	PUBLIC EMPLOYEES RET SYSTEM	Ben2462029	06/30/16	BI-WEEKLY PERS CONTRIBUTION	187,397.81	187,397.81
2046425	07/20/16	00078	PUBLIC EMPLOYEES RET SYSTEM	Ben2463450	07/14/16	BI-WEEKLY PERS CONTRIBUTION	196,061.52	196,061.52
2046361	07/13/16	17394	QUALITY GENERAL ENG'G INC	WOD0952	06/30/16	W/O REFUND D0952-090244	6,681.95	6,681.95
2046362	07/13/16	16558	RAPID TATTS PHOTO &	071116	07/11/16	EMPLOYEE EVENT	525.00	525.00
2046426	07/20/16	15647	RFYEAGER ENGINEERING LLC	16113	07/03/16	CORROSION/COATING INSP (1/1/16-6/30/16)	4,000.00	4,000.00
2046309	07/06/16	00521	RICK POST WELD & WET TAPPING	11207	06/12/16	RICK POST WELDING	1,540.00	1,540.00
2046310	07/06/16	04542	ROBAK, MARK	031615083115	09/09/15	MILEAGE REIMBURSEMENT (3/16/15-8/31/15)	3.45	3.45
2046311	07/06/16	16005	ROBERT KAY	Ref002437822	01/26/15	UB Refund Cst #0000082205	24.06	24.06
2046237	06/29/16	17330	ROBERTO GATDULA	Ref002461975	06/27/16	UB Refund Cst #0000045626	38.52	38.52
2046238	06/29/16	02586	SAN DIEGO COUNTY ASSESSOR	2016143229	06/08/16	ASSESSOR DATA (MONTHLY)	125.00	125.00

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046363	07/13/16	02586	SAN DIEGO COUNTY ASSESSOR	2016172847	07/06/16	ASSESSOR DATA (MONTHLY)	125.00	125.00
2046427	07/20/16	00003	SAN DIEGO COUNTY WATER AUTH	0000001432	06/30/16	MWD SCWS - HEWS	2,459.96	2,459.96
2046239	06/29/16	00121	SAN DIEGO GAS & ELECTRIC	062016	06/20/16	UTILITY EXPENSES (MONTHLY)	36,897.78	
				062216	06/22/16	UTILITY EXPENSES (MONTHLY)	214.61	37,112.39
2046364	07/13/16	00121	SAN DIEGO GAS & ELECTRIC	062616	06/26/16	UTILITY EXPENSES (MONTHLY)	73,519.81	
				070516	07/05/16	UTILITY EXPENSES (MONTHLY)	60,878.60	
				062416	06/24/16	UTILITY EXPENSES (MONTHLY)	56,041.15	
				062316	06/23/16	UTILITY EXPENSES (MONTHLY)	4,514.84	194,954.40
2046428	07/20/16	00121	SAN DIEGO GAS & ELECTRIC	070516A	07/15/16	UTILITY EXPENSES (MONTHLY)	16,637.97	16,637.97
2046365	07/13/16	17385	SANDRA CARMICHAEL	Ref002463359	07/11/16	UB Refund Cst #0000225954	46.97	46.97
2046240	06/29/16	16196	SARA ALVIZ	Ref002461986	06/27/16	UB Refund Cst #0000196071	100.00	100.00
2046241	06/29/16	17352	SEAWORLD LLC	Ref002461998	06/27/16	UB Refund Cst #0000225314	1,917.91	1,917.91
2046366	07/13/16	17352	SEAWORLD LLC	Ref002463357	07/11/16	UB Refund Cst #0000225314	4,431.00	4,431.00
2046367	07/13/16	03955	SHEA HOMES LP	WOD0132	06/30/16	W/O REFUND D0132-060045	2,029.30	2,029.30
2046242	06/29/16	17342	SHIRLEY ROBERTS	Ref002461988	06/27/16	UB Refund Cst #0000207776	20.43	20.43
2046368	07/13/16	17388	SLF IV - MILLENIA LLC	WOD0876090146	06/30/16	W/O REFUND D0876-090146	4,697.41	
				WOD0876090148	06/30/16	W/O REFUND D0876-090148	2,600.77	
				WOD0876090147	06/30/16	W/O REFUND D0876-090147	1,021.75	
				WOD0876090145	06/30/16	W/O REFUND D0876-090145	182.83	8,502.76
2046369	07/13/16	17388	SLF IV - MILLENIA LLC	WOD0943	06/30/16	W/O REFUND D0943-090229	2,491.88	2,491.88
2046370	07/13/16	03439	SO CAL ALLIANCE OF PUBLICLY	03012016	03/01/16	MEMBERSHIP RENEWAL	538.00	538.00
2046312	07/06/16	14984	SOLARWINDS INC	IN278237	06/10/16	SOFTWARE RENEWAL (7/1/16 - 6/30/17)	7,381.00	7,381.00
2046371	07/13/16	17386	SOUTH COUNTY COMMERCE CTR LLC	WOD0707	06/30/16	W/O REFUND D0707-060030	2,856.15	2,856.15
2046372	07/13/16	03516	SPECIAL DISTRICT RISK	53644	05/17/16	2016-17 PROPERTY/LIABILITY PROGRAM	557,254.45	
				52971	05/12/16	2016-17 WORKERS' COMPENSATION	271,794.23	
				54010	06/30/16	PROPERTY & LIABILITY INS / PRORATED	320.32	829,369.00
2046373	07/13/16	01717	SPRING VALLEY CHAMBER OF	062016	06/01/16	MEMBERSHIP RENEWAL	500.00	500.00
2046429	07/20/16	01460	STATE WATER RESOURCES	1078080116	07/14/16	CERTIFICATION RENEWAL	120.00	120.00
2046243	06/29/16	17332	STEVE EDQUIBAN	Ref002461977	06/27/16	UB Refund Cst #0000053700	100.46	100.46
2046244	06/29/16	15974	SUN LIFE FINANCIAL	Ben2462025	06/30/16	MONTHLY CONTRIBUTION TO LTD	4,971.64	4,971.64

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046374	07/13/16	16610	SVPR COMMUNICATIONS	1112	05/01/16	CONSULTANT SERVICES	4,000.00	4,000.00
2046313	07/06/16	00408	SWEETWATER AUTHORITY	5113409	06/10/16	OWD SHARE O&M	29,834.00	29,834.00
2046430	07/20/16	01905	SYMPRO INC	09002	05/10/16	SOFTWARE MAINT SUPPORT (7/1/16-6/30/17)	8,375.00	8,375.00
2046375	07/13/16	17389	TAVERA LP	WOD0913	06/30/16	W/O REFUND D0913-090181	1,443.52	1,443.52
2046431	07/20/16	02376	TECHKNOWSION INC	2661	06/29/16	SCADA UPGRADES	19,370.00	19,370.00
2046245	06/29/16	02376	TECHKNOWSION INC	2660	06/27/16	TP SCADA TAGS	5,258.00	5,258.00
2046246	06/29/16	17333	TERESITA MARQUEZ	Ref002461978	06/27/16	UB Refund Cst #0000086773	15.54	15.54
2046376	07/13/16	15926	TEXAS CHILD SUPPORT UNIT	Ben2463460	07/14/16	BI-WEEKLY PAYROLL DEDUCTION	184.61	184.61
2046247	06/29/16	15926	TEXAS CHILD SUPPORT UNIT	Ben2462039	06/30/16	BI-WEEKLY PAYROLL DEDUCTION	184.61	184.61
2046432	07/20/16	13564	THE STAR-NEWS PUBLISHING CO	00042027	05/12/16	NOTICE	247.50	247.50
2046248	06/29/16	13564	THE STAR-NEWS PUBLISHING CO	42108	06/10/16	OUTSIDE SVCS - COMMUNITY ADVERTISING	430.50	
				42180	06/09/16	OUTSIDE SVCS - COMMUNITY ADVERTISING	406.00	836.50
2046314	07/06/16	14177	THOMPSON, MITCHELL	060116063016a	06/30/16	MILEAGE REIMBURSEMENT (JUNE 2016)	60.40	
				060116063016	06/30/16	EXPENSE REIMBURSEMENT (JUNE 2016)	16.00	76.40
2046315	07/06/16	15398	TIMMONS GROUP INC	181165	06/07/16	CONSULTANT SERVICES (THRU 5/29/16)	396.00	396.00
2046316	07/06/16	03261	TYLER TECHNOLOGIES INC	045160614	06/01/16	SOFTWARE MAINTENANCE (7/1/16-6/30/17)	132,193.01	
				045162865	06/07/16	CASHIERING SOFTWARE (5/16/16-5/19/16)	4,200.00	136,393.01
2046433	07/20/16	00427	UNDERGROUND SERVICE ALERT OF	620160490	07/01/16	UNDERGROUND ALERTS (MONTHLY)	531.00	531.00
2046434	07/20/16	15675	UNITED SITE SERVICES INC	1144158729	06/22/16	PORTABLE TOILET RENTALS (6/16/16-7/13/16)	98.17	
				1144182903	06/29/16	PORTABLE TOILET RENTALS (6/24/16-7/21/16)	80.03	
				1144158847	06/22/16	PORTABLE TOILET RENTALS (6/17/16-7/14/16)	79.98	
				1144182900	06/29/16	PORTABLE TOILET RENTALS (6/25/16-7/22/16)	79.98	
				1144182902	06/29/16	PORTABLE TOILET RENTALS (6/24/16-7/21/16)	79.98	
				1144182901	06/29/16	PORTABLE TOILET RENTALS (6/24/16-7/21/16)	79.98	498.12
2046249	06/29/16	15675	UNITED SITE SERVICES INC	1144111661	06/09/16	PORTABLE TOILET RENTAL (6/8/16-7/5/16)	79.98	79.98
2046250	06/29/16	17355	URUN	Ref002462001	06/27/16	UB Refund Cst #0000226491	1,584.01	1,584.01
2046317	07/06/16	07674	US BANK	CC20160622116	06/22/16	CAL CARD EXPENSES (MONTHLY)	119,448.24	119,448.24
2046377	07/13/16	06829	US SECURITY ASSOCIATES INC	1324422	06/30/16	PATROLLING SERVICES (JUNE 2016)	110.00	110.00
2046251	06/29/16	01095	VANTAGEPOINT TRANSFER AGENTS	Ben2462033	06/30/16	BI-WEEKLY DEFERRED COMP PLAN	14,519.31	14,519.31
2046378	07/13/16	01095	VANTAGEPOINT TRANSFER AGENTS	Ben2463454	07/14/16	BI-WEEKLY DEFERRED COMP PLAN	14,755.25	14,755.25

**CHECK REGISTER**

**Otay Water District**

Date Range: 6/23/2016 - 7/20/2016

Check #	Date	Vendor	Vendor Name	Invoice	Inv. Date	Description	Amount	Check Total
2046379	07/13/16	06414	VANTAGEPOINT TRANSFER AGENTS	Ben2463456	07/14/16	BI-WEEKLY 401A PLAN	1,670.77	1,670.77
2046252	06/29/16	06414	VANTAGEPOINT TRANSFER AGENTS	Ben2462035	06/30/16	BI-WEEKLY 401A PLAN	1,770.77	1,770.77
2046380	07/13/16	03329	VERIZON WIRELESS	9767438729	06/21/16	CELLULAR & WIRELESS SVCS (5/22/16-6/21/16)	5,012.55	
				9767438733	06/21/16	CELLULAR & WIRELESS SVCS (5/22/16-6/22/16)	1,640.72	
				9767438738	06/21/16	CELLULAR & WIRELESS SVCS (5/22/16-6/21/16)	1,330.38	
				9767438734	06/21/16	CELLULAR & WIRELESS SVCS (5/22/16-6/21/16)	733.84	8,717.49
2046253	06/29/16	17329	WALLACE GOLDIE	Ref002461974	06/27/16	UB Refund Cst #0000022918	42.05	42.05
2046318	07/06/16	15807	WATCHLIGHT CORPORATION, THE	476398	06/15/16	SECURITY & ACCESS UPGRADE (6/1/16-6/10/16)	18,575.34	
				476955	06/28/16	SECURITY & ACCESS UPGRADE (6/13/16-6/22/16)	17,571.04	
				476397	06/15/16	SECURITY SYSTEM SERVICE CALL	136.00	36,282.38
2046381	07/13/16	15807	WATCHLIGHT CORPORATION, THE	476395	06/15/16	SECURITY AND ACCESS UPGRADE	4,383.11	
				473984	06/15/16	ALARM MONITORING (JULY 2016)	1,548.92	5,932.03
2046435	07/20/16	14879	WATER CONSERVATION GARDEN	1168	07/01/16	GARDEN COSTS (1ST QTR FY16-17)	24,405.50	24,405.50
2046382	07/13/16	00215	WATER EDUCATION FOUNDATION	03102016	03/10/16	MEMBERSHIP RENEWAL	1,725.00	1,725.00
2046319	07/06/16	15726	WATER SYSTEMS CONSULTING INC	1998	05/31/16	HYDRAULIC MODELING (ENDING 5/31/16)	1,745.00	1,745.00
2046436	07/20/16	15726	WATER SYSTEMS CONSULTING INC	2060	06/30/16	HYDRAULIC MODELING (ENDING 6/30/16)	12,435.00	12,435.00
2046383	07/13/16	03781	WATTON, MARK	06616061416	07/07/16	TRAVEL EXPENSE REIMB (6/6/16-6/14/16)	355.25	
				060116063016	07/12/16	MILEAGE REIMBURSEMENT (JUNE 2016)	224.10	579.35
2046320	07/06/16	01343	WE GOT YA PEST CONTROL	105629	06/08/16	BEE REMOVAL (6/8/16)	115.00	115.00
2046437	07/20/16	01343	WE GOT YA PEST CONTROL	105967	06/22/16	BEE REMOVAL (6/22/16)	115.00	
				105533	06/03/16	BEE REMOVAL (6/3/16)	115.00	
				105709	06/10/16	BEE REMOVAL (6/10/16)	115.00	
				105834	06/16/16	BEE REMOVAL (6/16/16)	115.00	460.00
2046321	07/06/16	05071	WINDSOR QUISMORIO	Ref002446852	07/27/15	UB Refund Cst #0000068283	45.62	45.62
2046438	07/20/16	15973	XC2 SOFTWARE LLC	8832	06/24/16	SOFTWARE MAINTENANCE	14,575.00	14,575.00
2046322	07/06/16	16011	YVONNE SOLORZANO	Ref002437830	01/26/15	UB Refund Cst #0000186671	19.80	19.80

**Amount Pd Total:** 3,712,139.31

**Check Grand Total:** 3,712,139.31