

MEETING OF THE BOARD OF DIRECTORS OF THE
MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

Jointly with the
PLANNING & OPERATIONS COMMITTEE

March 4, 2019, 8:30 a.m.

Conference Room 101

P&O Committee:

Director Yoo Schneider, Chair
Director Tamaribuchi
Director Dick

Staff: R. Hunter, K. Seckel, J. Berg,
H. De La Torre, K. Davanaugh

Ex Officio Member: Director Barbre

MWDOC Committee meetings are noticed and held as joint meetings of the Committee and the entire Board of Directors and all members of the Board of Directors may attend and participate in the discussion. Each Committee has designated Committee members, and other members of the Board are designated alternate committee members. If less than a quorum of the full Board is in attendance, the Board meeting will be adjourned for lack of a quorum and the meeting will proceed as a meeting of the Committee with those Committee members and alternate members in attendance acting as the Committee.

PUBLIC COMMENTS - Public comments on agenda items and items under the jurisdiction of the Committee should be made at this time.

ITEMS RECEIVED TOO LATE TO BE AGENDIZED - Determine there is a need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda. (Requires a unanimous vote of the Committee)

ITEMS DISTRIBUTED TO THE BOARD LESS THAN 72 HOURS PRIOR TO MEETING -- Pursuant to Government Code section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available for public inspection in the lobby of the District's business office located at 18700 Ward Street, Fountain Valley, California 92708, during regular business hours. When practical, these public records will also be made available on the District's Internet Web site, accessible at <http://www.mwdoc.com>.

INFORMATION ITEMS (The following items are for informational purposes only – background information is included in the packet. Discussion is not necessary unless a Director requests.)

1. WEROC JANUARY 2019 DISASTER EXERCISE AFTER ACTION REPORT
2. REPORT ON POSEIDON UPDATE AT THE SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD MEETING ON FEBRUARY 8, 2019
3. REPORT ON SECOND LOWER FEEDER SHUTDOWN POTENTIALLY IMPACTING LA PALMA AND GOLDEN STATE WATER COMPANY

4. STATUS REPORTS

- a. Ongoing MWDOC Reliability and Engineering/Planning Projects
- b. WEROC
- c. Water Use Efficiency Projects
- d. Water Use Efficiency Programs Savings and Implementation Report

5. REVIEW OF ISSUES RELATED TO CONSTRUCTION PROGRAMS, WATER USE EFFICIENCY, FACILITY AND EQUIPMENT MAINTENANCE, WATER STORAGE, WATER QUALITY, CONJUNCTIVE USE PROGRAMS, EDUCATION, DISTRICT FACILITIES, and MEMBER-AGENCY RELATIONS**ADJOURNMENT**

NOTE: At the discretion of the Committee, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated, and may be subject to action by the Committee. On those items designated for Board action, the Committee reviews the items and makes a recommendation for final action to the full Board of Directors; final action will be taken by the Board of Directors. Agendas for Committee and Board meetings may be obtained from the District Secretary. Members of the public are advised that the Board consideration process includes consideration of each agenda item by one or more Committees indicated on the Board Action Sheet. Attendance at Committee meetings and the Board meeting considering an item consequently is advised.

Accommodations for the Disabled. Any person may make a request for a disability-related modification or accommodation needed for that person to be able to participate in the public meeting by telephoning Maribeth Goldsby, District Secretary, at (714) 963-3058, or writing to Municipal Water District of Orange County at P.O. Box 20895, Fountain Valley, CA 92728. Requests must specify the nature of the disability and the type of accommodation requested. A telephone number or other contact information should be included so that District staff may discuss appropriate arrangements. Persons requesting a disability-related accommodation should make the request with adequate time before the meeting for the District to provide the requested accommodation.



INFORMATION ITEM

March 4, 2019

TO: Planning & Operations Committee
(Directors Yoo Schneider, Dick, Tamaribuchi)

FROM: Robert Hunter, General Manager

Staff Contact: Francisco Soto, WEROC Specialist

SUBJECT: WEROC January 2019 Disaster Exercise After Action Report

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee review the WEROC Orange Crush Exercise 2019 After Action/Corrective Action Report.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

WEROC and 23 of its member agencies participated in the county-wide exercise titled Orange Crush 2019. WEROC assisted its agencies and staff to prepare for the exercise by facilitating training and planning meetings starting in July 2018. WEROC provided training to EOC staff which focused on tackling the issues that were identified at last year's exercise, and then used staff feedback during those trainings as building blocks for the WEROC EOC Functional Exercise on January 30, 2019. WEROC and MWDOC staff also participated in the Orange County Operational Area's (OA) Functional EOC Exercise on January 31, 2018.

In accordance with the California Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS) guidelines, WEROC staff has conducted a hot wash process of the exercise and written an After Action/ Corrective Action Report. More information regarding the training, planning process, exercise and lessons learned are available in the attached After Action Report.

Budgeted (Y/N): Y	Budgeted amount:	Core X_	Choice __
Action item amount: \$0	Line item:		
Fiscal Impact (explain if unbudgeted): Budgeted as a component of annual WEROC program activities.			

Staff recommends the Planning & Operations Committee review the WEROC Orange Crush Exercise 2019 After Action/Corrective Action Report.

Attachment A: WEROC Orange Crush Exercise 2019 After Action/Corrective Action Report

ORANGE CRUSH EXERCISE 2019
WEROC AFTER ACTION / CORRECTIVE ACTION REPORT
March 4, 2019

Exercise Name

Orange Crush Exercise 2019

Exercise Summary

This exercise involved multiple agencies simulating a 48-hour post event response to a magnitude 7.8 earthquake along the San Andreas Fault. Exercises allow the WEROC Emergency Operations Center (EOC) and WEROC Member Agencies to practice the facilitation of a response to improve collaboration and communication, and to ensure they are prepared for a real event. Additionally, the 48 hours post event scenario gives an opportunity for staff to get past the initial damage assessment phase and start to work on coordination amongst agencies.

While the scenario remains the same, agencies participated in the exercise at different levels to facilitate the best learning environment for their particular agency. Various levels of exercise and real time interaction facilitate certain types of lessons based on the needs of the agency. Here is a brief breakdown on each:

- Functional Exercise with Real-time Interaction is an exercise in which participants interact with each other within their own EOC and with other agency EOCs as if the actual disaster is occurring. It is typically considered to be the most realistic and challenging. It should be used to test already developed processes, procedures and policies.
- Functional Exercise with Simulated Interaction is an exercise in which participant interact with only their own agency's staff as if the disaster is actually occurring and simulate interaction with outside agencies. This is still very realistic, but allows the Exercise Director to control the discussion and actions of staff. It should be used to test already developed processes, procedures and policies. Typically, this more closed format is beneficial when very specific processes need to be tested.
- Tabletop Exercises do not involve real-time simulation, but rather present a disaster scenario for participants to discuss. This is an excellent format to identify processes, procedures or policies.

Below is a chart of the participating organizations and their level of participation in the exercise.

Participating Organizations with Real Time Interaction	Level of Participation
State	
Division of Drinking Water, Orange County District (DDW)	Functional (@ WEROC EOC)
Orange County	
Operational Area EOC	Functional (Following day)
City	
Anaheim	Functional (@ Anaheim EOC)
Huntington Beach	Functional (@Huntington Beach EOC)
Orange	Functional (@ Orange EOC)
Westminster	Functional (@ Westminster EOC)
Special Districts	
Irvine Ranch Water District (IRWD)	Functional (Support @ Irvine EOC)
Midway City Sanitation District (MCSD)	Functional (Support @Westminster EOC)
Orange County Sanitation District (OCSD)	Functional (@ OCSD EOC)
Water Emergency Response Orange County (WEROC)	Functional (@ WEROC SEOC)

Participating Organizations with Simulated Interaction	Level of Participation
City	
Brea	Tabletop
Buena Park	Functional (@Buena Park EOC)
Fountain Valley	Tabletop
La Habra	Tabletop
La Palma	Tabletop
Laguna Beach	Functional (@Laguna Beach EOC)
Newport Beach	Functional (@Newport Beach EOC)
San Clemente	Tabletop
San Juan Capistrano	Tabletop
Seal Beach	Tabletop
Tustin	Tabletop
Special Districts	
East Orange County Water District (EOCWD)	Tabletop
El Toro Water District (ETWD)	Tabletop
Emerald Bay Services District	Tabletop

Training Overview

Over the last year, WEROC in coordination with the Orange County Emergency Management Organization (OCEMO) conducted a training and exercise process focused on responding to a magnitude 7.8-earthquake. Each of the trainings below were provided to help build the knowledge necessary to help WEROC water and wastewater utilities and our response partners to quickly and safely respond to the immediate and cascading effects of an earthquake. Additionally, WEROC staff provided trainings to assist those emergency coordinators who had limited experience in developing exercises. Below is the list of trainings that were conducted leading up to the exercise.

WEROC Incident Command System Training

Francisco Soto provided three separate Standard Emergency Management System (SEMS)/National Incident Management System (NIMS)/ Incident Command System (ICS) courses for our EOC staff and Member Agencies. These training courses are required for all staff of agencies trying to meet NIMS and SEMS compliance.

Approximately 60 Member Agency staff were trained, as well as 5 MWDOC staff. The following trainings were completed:

- September 10, 2018, at Moulton Niguel Water District
- September 11, 2018, at Santa Ana Corporate Yard
- September 19, 2018, at Yorba Linda Water District

WEROC 800 MHz Radio Training

Francisco hosted three (3) 800 MHz Radio Trainings for WEROC EOC staff and two (2) trainings for Member Agencies. The trainings focused on reviewing the purpose, function, and protocols for using the radio system. Trainings provided EOC staff an opportunity for hands-on training and testing.

WEROC Operational Area (OA) Emergency Operation Center (EOC) Liaison Training

Kelly Hubbard provided this training and it was conducted exclusively for MWDOC staff who are assigned to report to the OA EOC. Training consisted of an overview of the position, specific functions, OA EOC facility information and lessons learned from past activations at the Operational Area EOC. Feedback received as part of this training was incorporated into WEROC processes.

WEROC Incident Action Plan and Situational Summary Development Training

Francisco provided EOC staff training on developing the Incident Action Plan and Situation Summaries. EOC Action Plans (EAP) provide a framework for EOC staff to respond to the situation by providing them with the objectives and the steps required to complete them. The Situational Summary provides stakeholders and readers a quick understanding of the current situation, countywide assessment, WEROC EOC details, impacts to water and wastewater utilities, and resource requests.

WEROC Planning & Intelligence Section Training

Kelly provided EOC training for staff assigned to the Planning and Intelligence Section of the WEROC EOC. The training focused on reviewing the EOC report, identifying where to locate information, reviewing each position's role in the overall response, and how each position interacts with the others.

WEROC Public Information Officer and Social Media Analyst Training

Kelly provided Public Information Officer training with MWDOC Public Affairs Staff and WEROC Staff. The training was structured to provide lessons and tools identified from the Camp Fire, and to discuss how to incorporate those concepts into the WEROC program.

WEROC Logistics Section Training

Kelly provided EOC training for staff assigned to the Logistic Section of the WEROC EOC. The training focused on the resource request process, important information needed for mutual aid coordination and the FEMA approved Water and Wastewater Mutual Assistance Resource Typing Manual.

OCOMO Introduction to Exercise Design Training

Kelly provided Introduction to Exercise Design Training for all interested agencies participating in the county-wide exercise. The training reviewed the differences between types of exercises and then resources and tools to develop each.

OCOMO Master Sequence of Events List Training

WEROC attended and presented at the countywide exercise planning meeting at the City of Huntington Beach Emergency Operations Center. The meeting focused on assisting participating agencies in developing their Master Sequence of Events List, and teach participants how/where to enter information into WebEOC for the exercise.

Exercise Scenario Summary

Simulated event description for the WEROC EOC and majority of the participating agencies. THIS WAS FOR THE EXERCISE ONLY:

On January 28, 2019 at 5:45pm, a magnitude 7.8 earthquake struck along the San Andreas Fault. At 6:18 pm a magnitude 7.0 aftershock occurred. Since the main rupture there have been nine aftershocks over magnitude 4.5.

Shaking was most intense in Northwest OC and lasted for as long as 35 seconds. There is widespread, heavy damage to structures and infrastructure. The media is still reporting people trapped in rubble.

There were post-earthquake fires that spread to conflagrations in the many, older communities. Most fires have been extinguished. Serious impacts to the water system make fire a lasting danger.

Utility Impacts

- *Sections of the county initially lost power but large pockets have been restored.*
- *Initially, telecommunications were overwhelmed due to excessive use. Most forms of communication are working, but periodic outages still occur.*

Public Information is limited and Media is focused on Los Angeles. FEMA response is mostly focused on the Los Angeles metropolitan area.

The Orange County Emergency Operations Center has been activated to a Level I (Highest Level) and all critical positions are operational.

Participating water and wastewater utilities had scenarios that presented additional information regarding the possible effects of the simulated earthquake that were specific to their infrastructure and water quality concerns. Their staff had to determine alternate communication methods, what actions they would take to respond, what partner agencies should be notified, and determine resource needs to support the response.

WEROC Functional EOC Exercise Overview

WEROC participated in Orange Crush 2019 as a functional exercise on January 30, 2018 at its South Emergency Operations Center (EOC) from 9:00 am – 2:00 pm. The EOC was activated to a Level 1 (Highest Level). EOC staff were assigned positions that they will fill in a majority of exercises and events, and that closely relate to their day to day jobs. Kelly Hubbard was the Exercise Director for this exercise. Volunteers from Moulton Niguel Water District (MNWD), Orange County Water District (OCWD) and the private sector acted as both Evaluators and Simulators. As simulators they represented specific agencies (OC Operational Area EOC, Cities, and Water Utilities not actively participating in the exercise) that WEROC EOC Staff could discuss response concepts with in order to better understand how agencies may respond in a real event. This allowed for both the simulation of the exercise and a learning process at the same time.

Additionally, WEROC staff and assigned MWDOC staff participated in the Operational Area Functional Exercise on January 31, 2019 at the OA EOC from 9:00 am – 2:00 pm. The EOC was activated to a Level 1 (Highest Level). Harvey De La Torre and Melissa Baum-Haley fulfilled the WEROC positions, while Francisco Soto and Kelly Hubbard acted as simulators, and Tiffany Baca observed.

All of the comments and suggestions received as part of both exercises that pertain to the WEROC program are reflected in this report.

EOC Exercise Responding Staff

Special thanks must be given to the WEROC staff that come from MWDOC, the WEROC Member Agencies, Partner Agencies and the private sector volunteers.

- 24 MWDOC Staff
- 4 WEROC Member Agency Mutual Aid Staff
- 4 Private Sector Volunteers
- 1 DDW

EOC Exercise Activation Status

For the first time ever, the WEROC EOC conducted a shift change in the middle of the exercise to mimic an Operational Period. This meant that staff was divided into two shifts. The first shift started at 9:00 am, but then needed to brief the second shift at 11:30 am to turn over their outstanding actions to the incoming shift. The shift change

allowed WEROC to test real life scenarios, including a shortage in staffing for the second shift, which led to staff taking on multiple positions. This is the first time that WEROC has attempted this in an exercise and was very successful.

During the exercise, EOC staff received information via real time interactions from 7 participating water/wastewater utilities during the exercise and 2 Evaluator/Simulators representing various agencies or sectors. Information was collected, sorted, assessed, posted, shared, and responded to from the following sources:

- WebEOC
- Phone Calls
- Email
- WEROC 800 MHz Radio
- In Person Discussion with Simulators
- Simulated Injects from the Exercise Director
- All staff utilized 6 EOC information tracking boards to display and share information with others in the EOC.

A WEROC Radio Roll call was conducted during the exercise, but was largely just a drill and not an active component of the exercise.

SEMS/NIMS/ICS Evaluation

The WEROC EOC and Emergency Operations Plan (EOP) were developed based on the Standardized Emergency Management System (SEMS), the National Incident Management System (NIMS) and the Incident Command System (ICS) principles. These three systems reflect best management practices for emergency response, management and coordination nationally.

WEROC continues to utilize a traditional ICS structure for Area Command which includes EOC Sections for Management, Planning and Intelligence, Finance and Administration, and Logistics. In addition to these functions the WEROC EOC also integrates the Orange County office of the State Water Resources Control Board, Division of Drinking Water (DDW) into its EOC. DDW has the regulatory authority and directive to monitor and maintain safe drinking water in CA. During a disaster WEROC and DDW would work together to collect information on OC water and wastewater utilities and to understand the impacts on drinking water.

Evaluation of Core Capabilities and Lessons Learned

The purpose of facilitating disaster exercises is to evaluate the effectiveness of emergency response systems prior to a real event in order to learn what systems are working well, what can be improved upon and additional areas of planning that may be needed. In order to learn from our exercises, WEROC collects feedback from the following three sources:

1. Invites outside evaluators;
2. Conducts a hot wash (verbal and written) with EOC participants and Member Agencies; and
3. Reviews all actions taken during the exercise (via activity logs, notes, and observation).

The WEROC staff successfully responded to and facilitated an EOC response to support our member agencies. This exercise was different from past exercises in that it provided very specific objectives for each section and sometimes specific positions to accomplish. This allowed staff to spend more time focusing on the processes and tools to accomplish the objectives rather than spend time developing objectives.

Below are a few of the major exercise successes and areas of improvements identified through all 3 feedback methods.

WEROC Exercise Successes

Capability 1 – Emergency Operations Coordination -

- Staff in all areas of the EOC came up with recommendations and ideas that will help contribute to improved processes, tools and over all response effectiveness.
- Staff actively utilized their position resources to identify their role within the EOC and important actions they should be taking.
- The Management Section successfully performed a Situation Status Briefing and presented the EOC Action Plan.
- Management Section and Section Chiefs successfully delegated responsibilities to subordinates in order to reduce workload and stress.
- The EOC Director successfully facilitated a shift change to include a briefing and a review of the shift change form and procedures. This was the first time WEROC incorporated a shift change into an exercise.
- WEROC EOC Staff learned the critical steps of a shift change and the importance of documentation and communication as it relates to long-term response events.

Capability 2 – Finance and Administration Coordination –

- Finance and Administration were able to start the development of processes and documentation for the determination of MWDOC Initial Damage Estimate reporting.

Capability 3 – Situation Assessment -

- EOC staff were able to log into WebEOC and navigate the platform to identify most of the pertinent information.
- EOC staff utilized the EOC Whiteboards effectively to display and share information. More importantly they remembered to continually update and verify the information throughout the exercise.
- Staff successfully conducted a radio test using the newly implemented 800 MHz Radio System.
- An updated WEROC Water and Wastewater Situation Summary was completed and distributed to staff.

Capability 4 – Emergency Public Information and Warning -

- Developed a WEROC Member Agency Joint Press Release regarding a 25% water conservation for all Orange County residents. This still required a joint

review and approval process to be considered a “joint press release”, but the content, format and process was started and worked through.

- Created a list of Member Agency social media accounts and handles for WEROC to monitor during emergencies.
- A significant discussion between the Public Information Officer, EOC Manager, EOC Director and the Division of Drinking Water representative occurred on the likelihood of the need for various types of water quality notices following a major earthquake and the potential social, political, economic and response impacts of various notices. This was a valuable discussion that should be continued in meetings and tabletop exercises.

Capability 5 – Resource Coordination -

- Coordinated with participating Member Agencies to confirm and coordinate identified resource needs. This included the more complicated process of identifying a Type 3 Water Distribution Repair Team as mutual aid from another member agency.
- Developed a contact list of fuel supply companies (gas, diesel, propane) in and around Orange County that can provide fuel after an emergency.

Areas of Improvement

Capability 1 – Emergency Operations Coordination –

- Staff did not notify/update all identified coordination partners of the current situation. The EOC should identify and maintain a notification schedule to ensure proper notifications are being conducted to all partners and stakeholders.
- Although the shift change was successful, it was initially a little chaotic. Staff were unsure what to do if their replacement did not arrive on time, and there was no guidance on what to do when there is no replacement available for a position. WEROC staff will determine what enhancements can be made to shift change forms and checklists to facilitate a more seamless shift change.
- Management and Section Chiefs were not fully aware of their ability to move and adapt staffing positions and responsibilities in order to ensure that the EOC objectives are being met. Staff were instructed to stay within their assigned role to ensure that duties were not duplicated. However, this should not preclude them from fulfilling additional responsibilities if needed and assigned by their Section Chief. All staff learning this balance between assigned responsibilities, and the unique needs of an individual event will ensure all EOC staff are contributing to accomplishing the EOC’s objectives.

Capability 2 – Finance and Administration Coordination –

- The staff assigned felt that continued opportunities in disaster finance training will be critical to their ability to track costs and receive reimbursement.

Capability 3 – Situation Assessment –

- It continues to be difficult to simulate the true nature of back and forth communications between agencies during real events for the functional exercises. Continuing to improve this simulation concept will help staff to get a

greater understanding of the information collection, verification, and intelligence sharing process.

- Evaluators noted the need to ensure all information (action plans, situation summaries, press releases, etc.) is distributed to all EOC staff.
- Sometimes staff would focus on one method of collecting information and overlook other methods that could have been utilized. For example, the Operational Area Situation Summary that was received at 10:00 am obtained information and the status of impacted agencies. This document was not immediately followed up on or referenced for additional information.
- In several instances it was noted that interactive or real-time mapping would assist in developing the situation assessment and long-term water needs. Mapping solutions will be explored moving forward.

Capability 4 – Emergency Public Information and Warning –

- The discussion between WEROC EOC staff and the Division of Drinking Water representative led to delays in coordinating joint messaging and identified significant gaps in pre-identified procedures for Alert and Warning for certain extreme water quality events. This was a valuable discussion that should be continued in meetings and tabletop exercises.
- Public Information Officer training and tabletops with WEROC EOC staff and Member Agencies is needed to further develop targeted Alert and Warning messaging, materials and processes. Materials and processes should be developed for multiple scenarios to include emergency water conservation, Do Not Drink, Do Not Use, and Boil Order.

Capability 5 – Resource Coordination -

- There was the realization that not all the pertinent information needed to facilitate payroll, purchasing, billing and initial damage estimates was available at the EOC in a non-electronic format.

Corrective Actions and Process Evaluation

A corrective action list is created by comprehensive process in which staff review EOC Activity Logs, White Board postings, WebEOC postings, feedback forms and more to develop a list of ways to improve our training, preparedness and response. For each problem statement the following is noted: 1) possible solutions or corrective actions, 2) a lead agency or staff person responsible for implementation of each solution, 3) additional agencies or departments that should be invited to coordinate on certain solutions, and 4) a designated time frame which this corrective action should be addressed by. Staff are working to review the many pages of documentation and have discussions on best solutions and timelines for correction. Once finalized this documents serves as a working list of recommended actions for WEROC staff to facilitate to improve EOC operations, staff training and overall disaster response in the future.

Report Completed

This report was completed by the staff of the Water Emergency Response Organization of Orange County (WEROC), in coordination with MWDOC staff, and the WEROC

Member Agencies. The report was submitted to the MWDOC Board, and shared with WEROC Member Agencies, and the Orange County Operational Area in March 2019.



INFORMATION ITEM

March 4, 2019

TO: Planning & Operations Committee
(Directors Yoo Schneider, Dick, Tamaribuchi)

FROM: Robert Hunter, General Manager

Staff Contact: Karl Seckel

SUBJECT: Report on Poseidon Update at the Santa Ana Regional Water Quality Control Board meeting on February 8, 2019

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee receives and files the report below.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

On Friday February 8, 2019 Karl Seckel attended the Santa Ana Regional Water Quality Control Board (SARWQCB) (Regional Board) meeting where a Status Update report on the Poseidon Huntington Beach Ocean Desalination Project was scheduled. The presentation covered several hours and was provided by a combination of State Water Resources Control Board (SWRCB) staff, Regional Board staff and Poseidon staff, along with public comments by various parties. It had been over a year since the Poseidon Project had been discussed with members of the Regional Board. One of the outcomes of this meeting was that the board members requested more timely updates to keep them informed of the progress of the discussions. The update was comprehensive in nature and covered the variety of discussions and documents exchanged with Poseidon as the proponent and the Regional Board; it was noted that over 200 documents had been exchanged back and forth over the past several years.

Budgeted (Y/N):	Budgeted amount:	Core __	Choice __
Action item amount:	Line item:		
Fiscal Impact (explain if unbudgeted):			

Key issues of discussion:

- The “need” for the project will not be a deciding point for the Regional Board permit – they will rely on information provided by water agencies regarding the interest in the project.
- The Regional Board must require use of a subsurface intake, unless it is not feasible; they appear to be looking at the potential of using a subsurface intake for a portion of the project with the remaining capacity coming from the open intake.
- Questions were addressed on the 2003-04 ocean sampling for fish and larval concentrations and whether an update was needed to develop an estimate of the Area of Production Foregone (APF) determination for mitigation which had been estimated at 422 acres. The acres are prorated based on productivity and it appears that the Poseidon investment in the Bolsa Chica Wetlands would be sufficient mitigation.
- The updated design of the diffuser was also discussed.
- The Regional Board indicated that the permit would be back in front of the Board in late fall 2019.

Attached is the list of documents posted on the Regional board website.

2017 Renewal of the Huntington Beach Desalination Facility Permit

- Presentations from the February 8, 2019 Board Meeting
 - [Regional Staff's Presentation](#)
 - [Poseidon Presentation](#)
- Amendment to the June 30, 2016 ROWD (submitted on April 9, 2017)
 - [Alden Brine Diffuser Design Memo Dated February 23, 2017](#)
 - [Michael Baker International - Revised Brine Diffuser Hydraulic Analysis Dated February 28, 2017](#)
 - [Response to SLC Request for Additional Information Dated March 22, 2017](#)
 - [GHD Memo - Attachment 1 to the Response to SLC Notice of Incomplete Application Dated March 20, 2017](#)
 - [Alden Memo - Attachment 2 to the Response to SLC Notice of Incomplete Application March 22, 2017](#)
 - [Supporting spreadsheet to Attachment 2 to the Response to SLC Notice of Incomplete Application](#)
- [California Coastkeeper Alliance Electronic Mail to Regional Board, dated October 10, 2016, Regarding Additional Analysis for Desalination Permits](#)
- [California Coastal Commission, Santa Ana Regional Water Quality Control Board and California State Lands Commission Interagency Permit Sequencing Framework Agreement, dated October 3, 2016](#)
- [Poseidon Letter to Regional Board, dated September 22, 2016, Regarding 30-day Extension to Deem Water Code Section 13142.5\(b\) Application Complete](#)

- Poseidon's Response to Regional Board's July 29, 2016 Letter
 - [Cover Letter](#)
 - [Attachment 1](#)
 - [Attachment 2](#)
 - [Attachment 3A](#)
 - [Attachment 3B](#)
 - [Attachment 4](#)
 - [Attachment 5](#)
 - [Attachment 6](#)
 - [Attachment 7](#)
 - [Attachment 8](#)
 - [Attachment 9](#)
- [Orange County Water District Letter to Regional Board, Dated August 3, 2016 Regarding Desalination Amendment Chapter III.M.2.b.\(2\)](#)
- [Poseidon Letter to Regional Board, Dated August 2, 2016 Regarding Amendment and Renewal of Order No. 2012-0007 and California Water Code Section 13142.5\(b\) Compliance Determination](#)
- [Regional Board Letter to Poseidon, Dated July 29, 2016 Regarding California Water Code Section 13142.5\(b\) Determination and Report of Waste Discharge](#)
- [Report of Waste Discharge](#) (Submitted on June 30, 2016) Please note, this is a large file (approximately 1 GB) and will take some time to download. The link will open our FTP site. You will need to open the **Poseidon** folder and download the file named **ROWD_Submittal.zip**. As an alternative, you may request a copy of this report on DVD via email from [Julio Lara](#)

California Water Code Section 13142.5(b) Determination

- [Audio Recording of Meeting with third Party Peer Reviewer Pete Raimondi, Agencies staff, and Poseidon held on July 26, 2018 in Sacramento **NEW!**](#)
- [January 8, 2019 – Superior Court of California, County of Sacramento, Ruling on Submitted Matter Re: Petition for Writ of Mandate: California Coastkeeper Alliance, California Coastal Protection Network, and Orange County Coastkeeper, Petitioners v. California State Lands Commission, Respondent. Poseidon Resources \(Surfside\) LLC, Real Party in Interest. **Appendix KKKKK**](#)
- [December 11, 2018 – Poseidon Water Letter to Regional Water Board – Huntington Beach Desalination Project Slant Well Analyses \(*in response to December 6, 2018 Regional Water Board letter*\)](#)
- [December 6, 2018 - Regional Water Board Letter to Poseidon Water – Request for Information: Seafloor Sediment Characteristics and Lithological Data in Area Offshore of the Proposed Huntington Beach Seawater Desalination Facility](#)
- [November 28, 2018 – TWB Environmental Research and Consulting, Inc. to Poseidon Water on a Technical Memorandum: Copper Nickel Corrosion Estimates for the Proposed Huntington Beach Desalination Plant – **Appendix IIIII** \(*in regards to a request by Poseidon Water to use a copper-nickel wedgewire screen*\)](#)
- [November 27, 2018 – Poseidon Resources \(Surfside\) LLC's Response to Residents for Responsible Desalination Comments on Water Code Section 13142.5\(b\) Determination –](#)

Appendix HHHHH (in response to October 15, 2018 letter from Residents for Responsible Desalination)

- November 27, 2018 – Dudek to Poseidon Water on Huntington Beach Desalination Plant Response to Request for Information Regarding Environmental Analysis of the 2018 Diffuser Modifications – **Appendix BBBB2** (in response to State Lands Commission letter to clarify information regarding the revised brine diffuser design)
- November 22, 2018 – Poseidon Surfside to Regional Water Board – **Appendix GGGGG** – Response to August 7, 2018 Request for Information Regarding the Treatment Process for Seawater Desalination at the Proposed Huntington Beach Desalination Project (with two attachments included below)
 - October 10, 2018 – Nautilus Environmental to Poseidon Water, LLC – Acute Toxicity Test Results from the Carlsbad Desalination Plant (Sample ID: M-001; Sample Collection Dates: 8/29/18, 9/6/18, and 9/18/18)
 - Figure 6 – Huntington Beach Desalination Project Permanent Standalone Process Diagram
- Table of Contents Technical Appendices October 10, 2018
- Letter to Regional Board from Poseidon dated October 10, 2018
- Letter from Residents for Responsible Desal (R4RD) in regards to Poseidon Application: Comments on Poseidon's Response to the CA Coastkeeper Alliance Letter and Reports
- Letter from Regional Board to Scott Maloni Dated October 1, 2018
- Appendix DDDDD1 Technical Memorandum - MLE Analysis Rationale September 7, 2018
- Appendix DDDDD2 Review Microsoft Excel Spreadsheet
- Appendix DDDDD3 MLE Meeting Presentation August 30, 2018
- Appendix EEEEE HB MLE Meeting Presentation September 27, 2018
- MLE Intake Location Report
- MLE APF All Stations Analysis Microsoft Excel Spreadsheet
- Email letter to Poseidon dated September 27, 2018, Transmitting State Lands Commission letter
- Letter from State Lands Commission, dated September 25, 2018 " Proposed Diffuser Change: Poseidon Huntington Beach (PRC 1980.1)
- Letter from Poseidon to the Regional Board, dated August 21, 2018, entitled "Re: Appendix CCCCC - Response to California Coastkeeper Alliance June 21st and July 9th 2018 submittals regarding the proposed Huntington Beach Desalination Project", transmitting the following documents:
 - Apendix CCCCC - Executive summary (7 pages) and detailed response (41 pages) to Coastkeeper's Subsurface Intake submittals
 - Letter from Latham & Watkins to the Regional Board, dated August 21, 2018 letter regarding the legal standard for assessing the feasibility of subsurface intakes at the proposed Huntington Beach desalination plant
 - Geosyntec technical memorandum from Geosyntec Consultants to Poseidon, dated October 18, 2013, entitled " Response to Requests from California Coastal Commission Regarding Geosyntec' s Feasibility Assessment of Shoreline Subsurface Collectors Huntington Beach Seawater Desalination Project, September 2013 (Geosyntec 2013b)
 - Updated Table of Contents of all the technical appendices provided to the Regional Board since the March 2016 submittal of the application

- [Email from the Regional Board to Poseidon, dated August 17, 2018 transmitting comments on the ALDEN Technical Memorandum revised brine diffuser design](#)
 - [Comments on the Revised Diffuser Design](#)
- [Letter from the Regional Board to Poseidon, dated August 7, 2018 entitled "Request for Information Regarding the Treatment Process for Seawater Desalination at the Proposed Huntington Beach Desalination Project"](#)
- [Letter from Poseidon to the Regional Board, dated August 3, 2018 transmitting the revised brine diffuser design and environmental analysis](#)
 - [ALDEN Technical Memorandum to Poseidon, dated July 31, 2018 entitled "Linear Diffuser Optimization and Design for Poseidon's Huntington Beach Desalination Plant"](#)
 - [DUDEK Memorandum to Poseidon, dated August 3, 2018 regarding Huntington Beach Desalination Plant 2018 Diffuser Modifications Environmental Analysis"](#)
- [July 12, 2018 Letter from Poseidon to the Regional Board submitting the following documents for inclusion into the Huntington Beach Desalination Project Administrative Record](#)
 - [Orange County Water District letter to the State Lands Commission, dated Sept 8, 2017](#)
 - [Metropolitan Water District letter to the State Lands Commission, dated October 2, 2017](#)
 - [Department of Water Resources letter to the State lands Commission, October 16, 2017](#)
 - [Orange County Water District letter to the State Lands Commission, dated October 18, 2017](#)
 - [Latham & Watkins June 27, 2016 legal brief in response to Coastkeeper's petition to re-open the 2012 permit](#)
 - [State Lands Commission Final Supplemental Environmental Impact Report certified on October 19, 2017 - Zip File \(101 MB\)](#)
- [Letter from Orange County Water District to the Regional Board, dated July 12, 2018 regarding the June 21, 2018 letter from the California Coastkeeper Alliance Letter](#)
- [E-mail from CCKA to the Regional Board, dated July 9, 2018 transmitting CCKA Memo – Huntington Beach Subsurface Feasibility](#)
 - [Memorandum from CCKA to the Regional Board dated July 9, 2018 entitled " RE: Evidence to Demonstrate ISTAP Flaws in the Poseidon – Huntington Beach Subsurface Feasibility Analysis"](#)
- [Letter from California Coastkeeper Alliance to the Regional Board, dated June 21, 2018 , entitled "Expert Reports to Demonstrate Fatal Flaws in the Poseidon Huntington Beach Application"](#)
 - [HydroFocus Expert Report, Huntington Beach Seawater Desalination Facility Groundwater Model Evaluation, dated September 23, 2016](#)
 - [Fryer Expert Report, A Review of Water Demand Forecasts for the Ocean County Water District, dated July 2016](#)
 - [Hanemann Expert Report, An Assessment of the Reports on the Proposed Huntington-Poseidon Seawater Desalination Project Prepared by the Independent Scientific Technical Advisory Panel, dated June 16, 2018](#)
- [Letter from OCWD to the Regional Board, dated May 18, 2018, Review of Geosyntec Report prepared for Poseidon to Evaluate the Feasibility of Subsurface Seawater Intakes in Bolsa, Sunset, and Alamitos Gaps for the Proposed Huntington Beach Desalination Plant dated July 25, 2017](#)
- [E-mail from the Regional Board to Poseidon, dated May 10, 2018 transmitting meeting summary with outstanding questions regarding ETM/APF analysis following April 13, 2018 meeting](#)

- [Summary of Report of Waste Discharge Technical Appendices submitted by Poseidon to the Regional Board on May 15, 2018](#)
- [Letter from Miller Marine Sciences to Poseidon, dated May 6, 2018](#)
 - [Entrainment Analysis Spreadsheet](#)
- [Letter from Miller Marine Sciences to Poseidon, dated April 26, 2018 responding to Regional Board email request for clarification of entrainment analysis calculations following April 13, 2018 meeting, Appendix YYYY](#)
- [Poseidon PowerPoint Presentation entitled “ETM/APF calculations for the Proposed Huntington Beach Desalination Project” presented at the April 13, 2018 meeting with California Coastal Commission and Water Boards staff, Appendix XXXX](#)
- [Letter from the Regional Board to OCWD, dated April 23, 2018 requesting review of the Geosyntec Report prepared for Poseidon to Evaluate the Feasibility of Subsurface Seawater Intakes in Bolsa, Sunset, and Alamitos Gaps, dated July 25, 2017](#)
- Diffuser design considerations and method to meet the requirements of the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and its application to the proposed Huntington Beach Desalination Facility
 - [Brine Diffusers and Shear Mortality, Roberts, Philip J.W., dated April 18, 2018](#)
 - [Brine Diffusers and Shear Mortality: Application to Huntington Beach, Roberts, Philip J.W., dated April 18, 2018](#)
- [Poseidon Letter to Regional Board, Dated March 29, 2018, Regarding Permit Streamlining Act Time Extension for a California Water Code Section 13142.5\(b\) Determination](#)
- [Latham & Watkins LLP Letter to Regional Board, Dated January 19, 2018, Regarding Marine Life Mitigation for the Huntington Beach Desalination Plant](#)
- [Poseidon's Errata for Appendix T, Dated December 13, 2017, Regarding Huntington Beach Desalination Facility Diffuser APF](#)
- [Poseidon's Revised Response to RCF 22, Dated December 13, 2017, Regarding Estimated Area of Production Forgone \(APF\) for each Station Sampled in 2003-2004](#)
- [Poseidon Response Letter, Dated December 13, 2017, to Regional Board's Independent Scientific Peer Review Additional Information Request Email](#)
- [Poseidon's Document Submittal to Regional Board, Dated December 7, 2017, Regarding Taylor Micro-Scale Methods for Estimating Injury and Mortality to Marine Organisms Entrained by a Diffuser at Huntington Beach Desalination Facility](#)
- [Poseidon's Document Submittal to Regional Board, Dated November 29, 2017, Regarding Alternative Hydrodynamic Model Analysis of the Alden Designed 3-Port Duckbill Diffuser Retrofit at Huntington Beach Desalination Facility](#)
- [Poseidon's Revised Draft Technical Memorandum, Dated November 13, 2017, Regarding Review and Analysis of Expected Entrainment Effects at and near Poseidon's Proposed Huntington Beach Desalination Project by Tom Luster and Laurie Koteen, Ph.D., Coastal Commission](#)
- [Poseidon Response to California Coastal Commission's February 27, 2017 Comment Letter, Dated September 19, 2017](#)
- [Poseidon Letter to Regional Board, Dated September 13, 2017, Regarding Neutral Third Party Review for Proposed Huntington Beach Desalination Project](#)
- [Regional Board Letter to Poseidon, Dated September 12, 2017, Regarding Neutral Third Party Review for Proposed Huntington Beach Desalination Project](#)

- [Regional Board Letter to Poseidon, Dated August 28, 2017, Regarding Notice of Complete Application for California Water Code Section 13142.5\(b\) Determination and Report of Waste Discharge for the Proposed Poseidon Water Huntington Beach Desalination Project](#)
- [Poseidon's Response to Phil Roberts July 26, 2017 Comment Letter on the CA State Lands Commission Draft SEIR for Huntington Beach Desalination Plant, Dated August 17, 2017](#)
- [Poseidon's Response to Regional Board's May 23, 2017 Letter \(submitted on July 28, 2017\)](#)
- [NGO Letter to Governor Brown and Honorable Chairpersons Dated July 26, 2017 in Opposition to Poseidon Huntington Beach Desalination Plant as Proposed](#)
- [Regional Board Letter to California State Lands Commission Dated July 26, 2017 Regarding Comments on Draft Supplemental Environmental Impact Report for the Poseidon Resources Proposed Huntington Beach Desalination Project](#)
- [Poseidon Letter to Regional Board, Dated June 7, 2017, Regarding Ocean Plan Desalination Amendment Shearing Mortality Guidelines](#)
- [Regional Board Letter to Poseidon, Dated May 23, 2017, Regarding Application for California Water Code Section 13142.5\(b\) Determination and Report of Waste Discharge: Remaining Outstanding Information Requests and Topics for Third Party Review](#)
- [Poseidon Letter to California Fish and Game Commission Dated May 9, 2017 Regarding Huntington Beach Desalination Project](#)
- [OCWD Letter to Regional Board Dated March 20, 2017 - Status of OCWD Water Purchase Agreement with Poseidon Resources Regarding the Proposed Huntington Beach Desalination Project](#)
- [California Coastal Commission's Letter, Dated February 27, 2017, Regarding Coastal Commission Staff Comments on Poseidon's January 2017 Draft Sea Level Rise Hazard Assessment](#)
- [California Fish and Game Commission Letter to California Coastal Commission Dated February 1, 2017 Regarding Huntington Beach Desalination Project](#)
- [Regional Board Letter to California State Lands Commission Dated December 21, 2016 Regarding Notice of Preparation of a Supplemental Environmental Impact Report for the Poseidon Resources Proposed Huntington Beach Desalination Project](#)
- [OCSD Letter to Regional Board Dated November 21, 2016 Regarding Feasibility of Use of OCSD Ocean Discharge Facilities for Poseidon Recycled Water Reject Flow](#)
- [Regional Board Letter to Poseidon, Dated October 31, 2016, Regarding Application for California Water Code Section 13142.5\(b\) Determination: Request for Additional Information](#)
- [State Board Letter to Poseidon Dated June 1, 2016 Regarding Potential Need to Request for Exception to State's Water Quality Control Plan for the Ocean Waters of California](#)
- Poseidon's Document Submittal in Response to Regional Board's 13142.5(b) Determination Request:
 - [Whitepaper - Questions Regarding Certain Portions of the ISTAP Phase 2 Report Related to Economic Analysis Dated August 8, 2016](#)
 - [Technical Memo: Comparison of Existing Offshore Ichthyoplankton Data for the Huntington Beach Desalination Plant Dated August 8, 2016](#)
 - [Orange County Water District Letter to Regional Board Dated July 7, 2016 Regarding the Huntington Beach Desalination Project](#)
 - [Municipal Water District of Orange County Letter to Regional Board Dated July 7, 2016 Regarding the Proposed Huntington Beach Desalination Project](#)

- [Final MWDOC's 2015 Urban Water Management Plan \(submitted via email on June 8, 2016\)](#)
- [Orange County Sanitation District Letter to Poseidon Dated May 27, 2016 Regarding Inquiry to Discharge Concentrated Seawater to OCSD Treatment Plant No. 2](#)
- [Technical Memo: Huntington Beach Desalination Project Brine Discharge Evaluation \(submitted via email on May 27, 2016\)](#)
- [Technical Memo: Factors Considered Independently and Then Collectively \(submitted via email on May 23, 2016\)](#)
- [Orange County Water District's 2015 Groundwater Management Plan \(submitted via email on May 2, 2016\)](#)
- [Whitepaper - Water Demand Need \(submitted via email on May 2, 2016\)](#)
- [Technical Memo: Evaluation of a Long-Distance Offshore Intake for the Huntington Beach Desalination Plant \(submitted via email on April 29, 2016\)](#)
- [Technical Memo: Comparison between Onshore Traveling Water Screens and Offshore Cylindrical Wedgewire Screens for the Huntington Beach Desalination Plant \(submitted via email on April 29, 2016\)](#)
- [Poseidon's 13142.5\(b\) Determination Request Submittal](#) (via email on March 15, 2016) Please note, this is a large file (approximately 1 GB) and will take some time to download. The link will open our FTP site. You will need to open the **Poseidon** folder and download the file named **Poseidon_Determination_Request_Submittal.zip**. As an alternative, you may request a copy of this report on DVD via email from [Julio Lara](#)
- [Stanford Law School Letter to Regional Board Dated February 22, 2016 Regarding Petition to Reopen Order No. R8-2012-0007](#)
 - [Latham & Watkins LLP Letter to State Board Dated June 10, 2016 Regarding Petition to Re-Open Order No. R8-2012-0007](#)
 - [Stanford Law School Letter to State Board Dated June 3, 2016 Regarding Petition to Reopen Order No. R8-2012-0007](#)
 - [California Coastkeeper Alliance Letter to Regional Board Dated May 26, 2016 Regarding Petition to Reopen Order No. 2012-0007](#)
 - [Regional Board Letter to Stanford Law School Dated May 5, 2016 Regarding Response to Petition to Reopen Order No. R8-2012-0007](#)
- [Poseidon Letter to Regional Board Dated February 17, 2016 Regarding Request for Water Code 13142.5\(b\) Determination](#)
- [Regional Board Letter to Poseidon Dated February 9, 2016 Regarding Request for Poseidon Water to Submit California Water Code 13142.5\(b\) Determination Request](#)
- [State Board Letter to California Coastal Commission Dated February 8, 2016 Regarding Request for Consultation Regarding Ocean Plan Compliance Evaluation](#)
- [Regional Board Letter to California Coastal Commission Dated October 30, 2015 Regarding Coastal Development Permit Application No. 9-15-1731](#)



INFORMATION ITEM

March 4, 2019

TO: Planning & Operations Committee
(Directors Yoo Schneider, Dick, Tamaribuchi)

FROM: Robert Hunter, General Manager

Staff Contact: Karl Seckel

SUBJECT: Report on Second Lower Feeder Shutdown Potentially Impacting La Palma and Golden State Water Company

STAFF RECOMMENDATION

Staff recommends the Planning & Operations Committee receives and files the report below.

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

SUMMARY

MET will be shutting down the Second Lower Feeder (SLF) March 11 through September 11, 2019. MWD OC had discussed this shutdown as a potential to work with MET to provide assistance to the local agencies in sustaining the shutdown through the summer period and to develop a policy framework for MET providing assistance during future shutdowns. Our belief is that allowing MET to incur longer shutdowns will lower the cost of the work to MET and some of the savings can be used to make improvements to enable the local agencies to sustain summer shutdowns. MET indicated they would entertain further discussions on such a policy but would not be able to come to agreement prior to the start of this shutdown. On February 20, MET, MWD OC, Buena Park, La Palma and Golden State Water Company met to go over the final details on the shutdown. MET had previously agreed to install a bulkhead part-way through the shutdown to enable La Palma and Golden State Water Company to take water starting on June 11. What we did not realize at the time MET

Budgeted (Y/N):	Budgeted amount:	Core __	Choice __
Action item amount:	Line item:		
Fiscal Impact (explain if unbudgeted):			

committed to the bulkhead was that after installation of the bulkhead, it requires the agencies to take 2 to 4 cfs of MET water to maintain acceptable water quality in the bulk-headed section; if the local agencies don't take MET water, it may take a week or so for the line to be flushed and refilled, prior to service. Once the local agencies became aware of the requirement to take MET water, they indicated that the installation of the bulkhead is not very useful or would cost a considerable amount to them in the form of MET water purchases (\$200k to \$400k). Typically, in the summer period, the agencies only use MET as an emergency supply to turn on if they have a problem with their wells.

The following should be noted:

- Without the bulkhead, La Palma's only MET connection and two of Golden State's connections on the SLF will be out of service for the entire shutdown.
- Buena Park is not affected by the shutdown, but they have a very robust system for both the ability to produce groundwater and the ability to take MET water and they have offered to help if it does not result in costing them more money.
- La Palma and Golden State are installing interconnections with Buena Park and having these connections may get them through if a well goes down. La Palma also has an interconnection with Cerritos, but the cost of MET water is marked up 25%. Golden State is still reviewing their options. If problems occur, Buena Park will feed both agencies either groundwater or MET water, but they do not want to incur any extra costs. An agreement with OCWD will be required to share groundwater production between Buena Park, La Palma and Golden State. Actually, OCWD has requested all three of these agencies to pump as much as possible due to their location near the County boundary to help minimize water from flowing across the County boundary.
- Staff has discussed the bulkhead issue with MET staff and indicated that MWDOC is awaiting a final decision from Golden State. MET staff will provide a schedule for the fabrication and installation of the bulkhead so we know the latest date to cancel the work and save MET some costs. This is also a good opportunity to understand the issues and costs involved in shutdowns so we know with some certainty how much funding can be saved by MET and a portion of the savings can be put toward interconnections or other work ahead of future shutdowns.

Staff will keep the Committee apprised of the shutdown decisions and the work progress.

Attached are two maps, one showing the general location of the work on the SLF and the second map showing more details as to where the bulkhead will be installed relative to the locations of the three service connections.

Distribution System



Second Lower Feeder

- Constructed 1967
- 39 miles long
- Welded steel – 14.5 miles
- PCCP – 24.5 miles (2018)

Reach 4
(1.9 miles)

Second Lower
Feeder

Diemer Plant

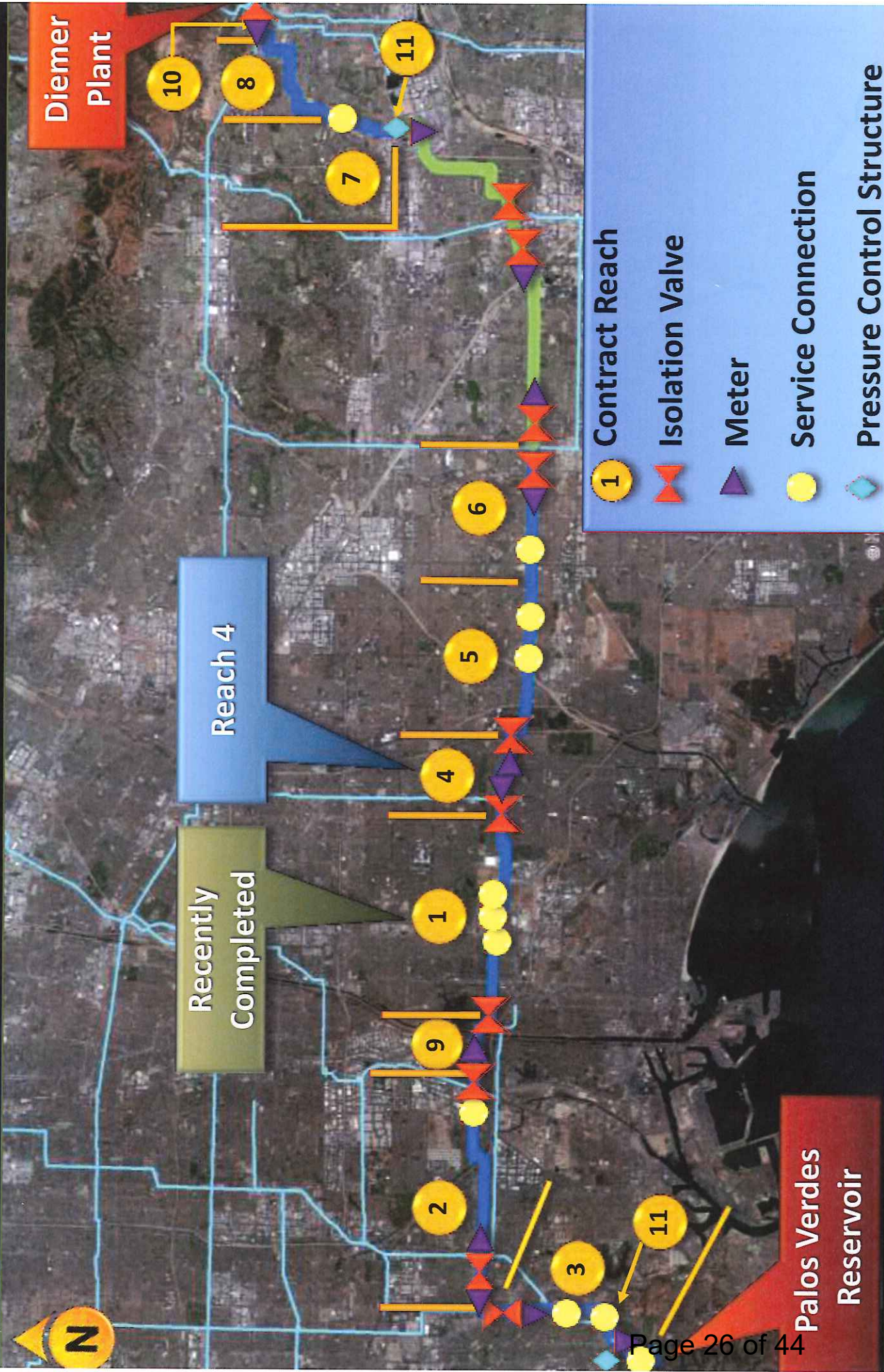
Palos Verdes Reservoir

PACIFIC OCEAN

LAKE PERRIS

LAKE MATHEWS

2nd Lower Feeder PCCP Rehabilitation

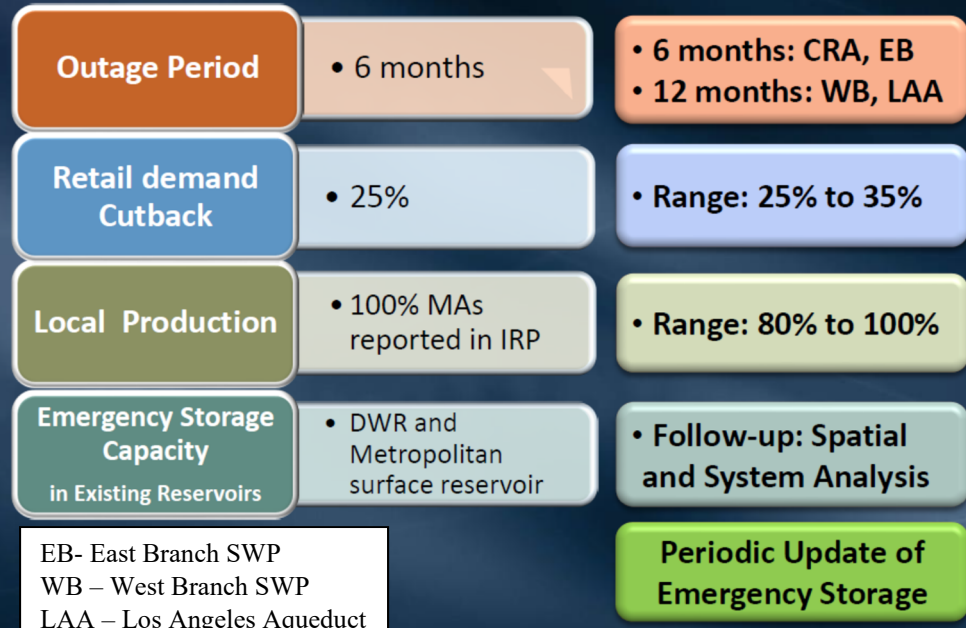


ENGINEERING & PLANNING	
Orange County Reliability Study	<p>The Final OC Reliability Study is now available on the website at: https://www.mwdoc.com/your-water/water-supply/local-water-supply/orange-county-water-supply-reliability-study/</p> <p>Spin off work from the Reliability Study to further analyze the Strand Ranch Extraordinary Water Supply program is now in progress.</p>
South Orange County Emergency Service Program	<p>Dudek continues to assist MWDOC and IRWD to determine if the existing IRWD South Orange County Interconnection capacity for providing emergency water to South Orange County can be expanded and/or extended beyond its current time horizon of 2030. The draft Planning Level Reliability Alternatives Analysis Report is currently under review. The next step is to share the information with South OC agencies.</p>
Strand Ranch Project	<p>MWDOC is using the modeling from the Orange County Reliability Study to evaluate how “extraordinary supplies” from the Strand Ranch Project can be utilized by the MWDOC agencies to provide drought protection over the next 7 to 11 years or longer. The analysis is currently in progress.</p>
MET Evaluation of Regional Storage Portfolio (ERSP)	<p>MET Evaluation of Regional Storage Portfolio (ERSP).</p> <p>Metropolitan’s emergency water storage objective is based on the potential for major earthquake damage to the State Water Project and Colorado River aqueducts that transport imported water supplies to Southern California (following the San Andreas M7.8 ‘Great ShakeOut’ scenario developed by the US Geological Survey).</p> <p>MET established a Member Agency Workgroup to consider updates to MET’s emergency storage objective, including:</p> <ol style="list-style-type: none"> 1. Updating emergency criteria 2. Revising the framework for determining emergency storage volume. The new framework would shift from a traditional single equation for determining emergency storage volume, to an updated evaluation that considers various combinations of criteria to determine a storage amount that provides an envelope of alternatives for MET’s emergency storage that could provide reliability during the outage period. 3. Proposing periodic re-evaluation of emergency storage volume to coincide with completion of each new IRP (every 5 years). <p>MET released a Final Draft of a White Paper on January 28, 2019 which expended on these issues. The paper discusses a methodology for review and update of emergency criteria and re-evaluation of Metropolitan’s emergency storage.</p> <p>Charles Busslinger attended the fourth Workgroup meeting on January 31, 2019 on emergency storage evaluation. Highlights of the recommended changes include changes to emergency criteria and moving the storage volume from</p>

630,000 AF to 700,000 AF with a recommendation to re-visit these changes upon completion of the 2020 IRP.

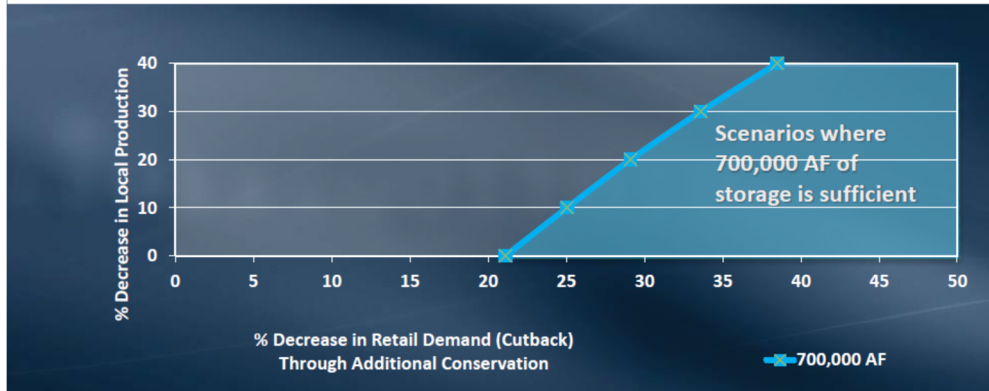
Recap: Emergency Criteria

Current and New Recommendations



Emergency Storage at 700 TAF

Decrease in Local Production	Retail Demand Cut Back										
	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
40%	1,646,900	1,522,600	1,398,300	1,274,000	1,149,600	1,025,300	901,000	779,200	665,800	555,700	463,000
30%	1,510,000	1,385,700	1,261,400	1,137,000	1,012,700	892,900	779,500	669,100	572,600	482,000	392,000
20%	1,373,106	1,248,780	1,124,455	1,006,577	893,196	782,534	682,257	591,516	501,104	412,369	332,543
10%	1,236,191	1,120,286	1,006,905	895,950	791,927	701,012	610,592	520,333	434,113	356,664	281,931
0%	1,120,613	1,009,366	901,596	810,662	720,080	629,669	540,384	457,299	380,874	308,086	254,521



	MET staff will be presenting its recommendations to the Water Planning and Stewardship Committee in March 2019.
Poseidon Resources	See Informational Item in this packet.
SMWD Rubber Dams Project	(Nothing New to Report) SMWD continues to work on additional technical studies to complete the response to comments on the Draft Environmental Impact Report (DEIR).
Doheny Ocean Desalination Project	(Nothing New to Report) South Coast WD released the Doheny Ocean Desalination Project Draft Environmental Impact Report (EIR) on May 17, 2018. A Public Meeting for the EIR was held on June 26, 2018, and the EIR public comment period closed on August 6, 2018. Consultant GHD is currently finishing up additional technical studies to address comments received. South Coast WD staff submitted a grant application for up to \$20 million for project construction through Bureau of Reclamation 'Water SMART: Desalination Construction Projects under the WIIN Act'. SCWD is waiting for official notification from Bureau of Reclamation.
Meetings	
	Charles Busslinger participated in the South OC IRWM Project Review Ad Hoc Committee meetings on February 5 th and 14 th . The committee reviewed 13 projects submitted in response to the November 2018 Call for Projects for Prop 1 IRWM grant funding. \$2.33 million is available to South OC for this funding round with a 2 nd round anticipated in 2022. The Ad Hoc committee is waiting on the State to release the final grant guidelines to complete the scoring of projects.
	Charles Busslinger attended the 7 th Annual CalDesal Conference on February 7 th and 8 th . The conference was very informative and topics included – Implementing the Ocean Plan Amendments and Salinity Management. State Water Board staff made presentations explaining the consistency determination process for the Ocean Plan Amendments in order to obtain a permit from DWR; which starts with the ocean intake feasibility determination, through site, design, mitigation, and finally best technology determinations. Several desalination experts also presented case studies which helped to explain multiple nuances with various aspects of the Ocean Plan amendments; including how the State's process for handling 'groundwater' differs from 'water flowing underground'.
	On February 11, 2019, MWDOC staff coordinated a presentation, hosted by Black & Veatch, on the Tampa Bay Water (TBW) regional hydraulic model. The model helps TBW coordinate and manage an extensive water supply portfolio across multiple member governments. TBW's supply portfolio includes the Tampa Bay Seawater Desalination Plant and 14 other supply sources including both groundwater and surface water supplies, most of which are owned and operated by local jurisdictions within the TBW boundary. The presentation was made by technical experts who helped create the model and

	included experts on the operation of the system. The presentation was attended by several MWDOC member agencies and was well received.
	Kevin Hostert, Chris Lingad and Charles Busslinger met with South Coast Water District staff on February 13 th to discuss water production accounting.
	MWDOC staff met with staff from Buena Park, La Palma, Golden State Water, and MET on February 20 th to discuss the upcoming shutdown of the 2 nd Lower Feeder as part of the Pre-stressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program. A portions of the 2 nd Lower Feeder will be shut down from March to September 2019 to install a steel lining to reinforce the PCCP.
	Charles Busslinger participated in the North/Central OC IRWM Project Review Ad Hoc Committee meetings on February 21 st . The Ad Hoc committee is currently scoring projects but is also waiting on the State to release the final grant guidelines to complete scoring of projects.
	Karl Seckel participated on an interview panel for an open MET Operations position.

**Status of Ongoing WEROC Projects
February 2019**

Description	Comments
<i>Coordination with WEROC Member Agencies</i>	<p><i>Ongoing: WEROC, with Michael Baker as the lead consultant, is facilitating 19 agencies through the process of updating the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan. Update: The Hazard Mitigation Plan was approved by Cal Office of Emergency Services (OES) and submitted to FEMA for review on Friday, February 15, 2019. It is expected that the plan will be returned by FEMA within 45 working days (April 19, 2019).</i></p> <p>The WEROC Quarterly meeting was on February 5. February topics and presentations included: Woolsey and Camp Fire Response, America's Water Infrastructure Act 2018, Orange Crush Exercise Debrief, WEROC Training, Planning, and Exercises, Dam Agency Planning. Additional recommendations are welcome.</p> <p>Francisco Soto and Kelly Hubbard participated in Orange County Water District's (OCWD) training on their newly revised Emergency Response Plan (ERP). WEROC staff provided input on how OCWD would coordinate with WEROC in a real event.</p> <p>WEROC and MWDOC staff participated in the annual county-wide exercise titled Orange Crush 2019 on January 30, 2019. The exercise was based on a 7.8 on the San Andreas Fault line 48 hours post-earthquake. The goal in facilitating an exercise 48 hours post-earthquake was to facilitate discussions that started to look at coordination of mutual aid. There were many lessons learned and a full report on the exercise can be found in a separate staff report to the March 2019 MWDOC Planning and Operations Committee.</p>
<i>Training and Programs</i>	<p>Kelly provided a presentation to Orange County Sanitation District operations and emergency response staff on WEROC and how to coordinate during an event.</p>
<i>Coordination with the County of Orange</i>	<p>Kelly attended the February OCEDO meeting in Mission Viejo. The OCEDO Exercise Design Committee chairs presented on the county-wide exercise. The CalOES representative reported on changes to the Stafford Act and funding mechanisms. Other presentation topics included OA Managers Report, Grant Updates, and Sub-committee updates.</p> <p>Francisco attended the County Communications meeting on the 800MHz Next Generation Updates to the county-wide radio systems.</p>

	<p>Francisco and Kelly met with management from the Orange County Environmental Health Division. The purpose was to better understand each agency's day to day role, as well as disaster response role. Often County Environmental Health is involved in water quality decisions and coordination with water utilities and the Division of Drinking Water (DDW). After discussing coordination issues and questions, it was determined that it would be beneficial to host a table-top exercise that includes all possible agencies who may have a role in water quality decisions.</p> <p>Kelly attended the OC Operational Area (OA) Executive Board Meeting as the voting representative of ISDOC. Kelly provided the OA Executive Board and the County's Emergency Management Council a copy of the letter to the CA Public Utility Commission (PUC) from Orange County water utilities. She provided a briefing on the 3/19/2019 PUC hearing as well. The Executive Board approved the newly revised Unified County of Orange and Orange County Operational Area Emergency Operations Plan with modifications suggested by Kelly. Those modifications were suggested to clarify concerns related to impacts to water utilities in a disaster.</p> <p>Francisco and Kelly participated in various conference calls throughout the month for the possible activation of the Holy Fire Debris Flow Plan and the Canyon 2 Debris Flow Plan due to rain events. The calls detailed the current rain forecast and each agency's response actions and concerns for possible debris flows. Trabuco Canyon Water District (TCWD) has infrastructure that can be impacted by the Holy Fire Debris Flow area. On February 20, 2019 Orange County Proclaimed a Local Emergency due to the storms that started on February 13, 2019. The County and local agencies (including 7 water agencies) sustained an estimated \$12 million in damages. The County is seeking a California Declaration of Emergency and state or federal funding to assist in the costs of recovery.</p> <p>WEROC and MWDOC staff participated in the Operational Area EOC Exercise on January 31, 2019 based on the same scenario as the county-wide exercise the day prior. The separate exercise allowed for greater participation of WEROC staff at both events. There were many lessons learned and a full report on the exercise can be found in a separate staff report to the March 2019 MWDOC Planning and Operations Committee.</p>
<p>Coordination with Outside Agencies</p>	<p><i>On-going: California Public Utilities Commission (PUC) proceedings regarding the Impacts from De-Energization with a Focus on First Responders and Local Government.</i> Kelly worked with Ryan Baron of BBK to file for Party Status on the proceedings process. Party Status ensures that we receive all communications regarding the proceedings and that our comments are included officially for consideration. On February 7, 2019 MWDOC submitted</p>

	<p>comments to the PUC from 19 OC participating water and wastewater agencies. Kelly attended the February 19, 2019 pre-conference hearing in Sacramento to provide support to the comments submitted and answer questions from the PUC. Kelly will be working with Mr. Baron and WEROC Member Agencies to continue to provide input throughout the hearing process. A schedule should be available within the next 2 weeks.</p> <p>Kelly has been assisting a group of water utilities in the Frazier Park/Grapevine area to organize themselves into a mutual assistance group. They reached out following last year's fires with a concern to be better coordinated. Kelly has provided them examples of agreements, SOPs, and other documents that may help. On February 20 she met with them during their monthly meeting in Frazier Park to answer outstanding questions.</p>
<i>EOC Readiness</i>	<p>Janine worked with ATT and Uverse to restore internet service at the North EOC.</p> <p>Janine has collected updated contact information from the 35 WEROC member agencies and some of our coordination partners. She will now work on updating this information in AlertOC, Outlook, SafetyCenter, and hard copy phone books in multiple locations. This is an annual effort that takes a significant amount of work.</p>

Status of Water Use Efficiency Projects

March 2019

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Smart Timer Rebate Program	MWDSC	Ongoing	Ongoing	<p>In January 2019, 147 residential and 11 commercial smart timers were installed in Orange County.</p> <p>For program water savings and implementation information, see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
Rotating Nozzles Rebate Program	MWDSC	Ongoing	Ongoing	<p>In January 2019, no rotating nozzles were installed in Orange County.</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
SoCal Water\$mart Residential Indoor Rebate Program	MWDSC	Ongoing	Ongoing	<p>In January 2019, 238 high efficiency clothes washers and 13 premium high efficiency toilets were installed through this program.</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
SoCal Water\$mart Commercial Rebate Program	MWDSC	Ongoing	Ongoing	<p>In January 2019, 23 commercial premium high efficiency toilets and 2,856 residential premium high efficiency toilets were installed through this program.</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
Industrial Process/ Water Savings Incentive Program (WSIP)	MWDSC	75%	July 2020	<p>This program is designed for non-residential customers to improve their water efficiency through upgraded equipment or services that do not qualify for standard rebates. Incentives are based</p>

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
				<p>on the amount of water customers save and allows for customers to implement custom water-saving projects. This fiscal year, two projects have been completed, which will save over 28 AFY.</p> <p>Total water savings to date for the entire program is 673 AFY and 3,480 AF cumulatively.</p>
Turf Removal Program	MWDOC	Ongoing	Ongoing	<p>In February 2019, 25 rebates were paid, representing \$58,815 in rebates paid this month in Orange County. To date, the Turf Removal Program has removed approximately 22 million square feet of turf.</p> <p>For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.</p>
Spray to Drip Conversion Program	MWDOC	Ongoing	Ongoing	<p>This is a rebate program designed to encourage residential and commercial sites to convert their existing conventional spray heads to low-volume, low-precipitation drip technology.</p> <p>To date, 241 residential sites and 63 commercial sites have completed spray to drip conversion projects.</p>
Recycled Water Retrofit Program	MWDSC	100%	September 2018	<p>This program provides incentives for commercial sites to convert dedicated irrigation meters to recycled water. To date, Metropolitan has provided a total of \$545,868.18 in funding to 33 sites irrigating 113 acres of landscape, and MWDOC has paid a total of \$56,950.00 in grant funding to 20 of those sites. The total potable water savings achieved by these projects is 331 AFY.</p>

Orange County

Water Use Efficiency Programs Savings and Implementation Report

Retrofits and Acre-Feet Water Savings for Program Activity

Program	Program Start Date	Retrofits Installed in	Month Indicated		Current Fiscal Year		Overall Program	
			Interventions	Water Savings	Interventions	Water Savings	Interventions	Cumulative Water Savings[4]
High Efficiency Clothes Washer Program	2001	January-19	238	0.68	1,712	19.27	118,257	30,426
Smart Timer Program - Irrigation Timers	2004	January-19	158	1.27	1,759	137.27	24,483	55,160
Rotating Nozzles Rebate Program	2007	January-19	0	0.00	2,965	35.56	567,272	26,650
Commercial Plumbing Fixture Rebate Program	2002	January-19	2,879	8.87	10,051	65.40	103,824	49,622
Industrial Process/Water Savings Incentive Program (WSIP)	2006	January-19	0	0.00	2	8.53	33	3,480
Turf Removal Program ^[3]	2010	February-19	30,248	0.35	531,379	27.69	22,126,457	13,379
High Efficiency Toilet (HET) Program	2005	January-19	13	0.05	166	7.06	60,269	19,280
Water Smart Landscape Program ^[1]	1997						12,677	72,668
Home Water Certification Program	2013						312	15,266
Synthetic Turf Rebate Program	2007						685,438	469
Ultra-Low-Flush-Toilet Programs ^[2]	1992						363,926	162,561
Home Water Surveys ^[2]	1995						11,867	1,708
Powerhead Replacements ^[2]	1991						270,604	19,083
Total Water Savings All Programs			11	548,034	301	24,345,419	52,502	454,501

^[1] Water Smart Landscape Program participation is based on the number of water meters receiving monthly Irrigation Performance Reports.

^[2] Cumulative Water Savings Program To Date totals are from a previous Water Use Efficiency Program Effort.

^[3] Turf Removal Interventions are listed as square feet.

^[4] Cumulative & annual water savings represents both active program savings and passive savings that continues to be realized due to plumbing code changes over time.

Item 4d

HIGH EFFICIENCY CLOTHES WASHERS INSTALLED BY AGENCY through MWDOC and Local Agency Conservation Programs

Agency	FY 12/13	FY13/14	FY14/15	FY15/16	FY16/17	FY17/18	FY18/19	Total	Current FY Water Savings Ac/Ft (Cumulative)	Cumulative Water Savings across all Fiscal Years	15 yr. Lifecycle Savings Ac/Ft
Brea	93	115	114	76	57	56	37	1,960	0.39	503.91	1,014
Buena Park	105	106	91	76	54	50	25	1,593	0.24	397.64	824
East Orange CWD RZ	10	8	8	8	3	1	4	197	0.03	53.85	102
El Toro WD	134	121	111	65	47	50	22	1,593	0.25	399.21	824
Fountain Valley	115	102	110	76	65	49	26	2,475	0.24	665.23	1,281
Garden Grove	190	162	165	251	127	87	47	3,697	0.50	948.77	1,913
Golden State WC	265	283	359	260	138	156	64	5,235	0.78	1,344.81	2,709
Huntington Beach	334	295	319	225	180	141	56	8,443	0.64	2,312.37	4,369
Irvine Ranch WD	1,763	1,664	1,882	1,521	1,373	1,203	588	26,437	6.15	6,423.00	13,679
La Habra	82	114	87	66	53	48	27	1,402	0.30	348.25	725
La Palma	34	25	34	29	10	14	4	476	0.05	120.42	246
Laguna Beach CWD	38	37	39	32	19	20	14	966	0.15	253.92	500
Mesa Water	114	86	89	113	80	54	26	2,598	0.30	708.52	1,344
Moulton Niguel WD	442	421	790	688	575	527	213	10,661	2.58	2,557.70	5,516
Newport Beach	116	92	95	66	61	51	31	2,706	0.36	750.53	1,400
Orange	218	163	160	124	80	74	38	4,010	0.44	1,101.97	2,075
Orange Park Acres					-	-	-	12	0.00	4.09	6
San Juan Capistrano	76	73	92	63	33	33	11	1,503	0.12	392.36	778
San Clemente	140	94	141	75	70	85	47	2,752	0.47	711.26	1,424
Santa Margarita WD	553	662	792	466	367	274	134	9,924	1.60	2,478.14	5,135
Seal Beach	31	29	38	23	9	17	6	625	0.05	163.13	323
Serrano WD	13	10	26	8	11	8	-	365	0.00	100.05	189
South Coast WD	89	79	68	43	44	36	19	1,639	0.21	424.11	848
Trabuco Canyon WD	30	45	47	34	28	22	4	824	0.03	212.03	426
Tustin	78	59	80	66	44	49	22	1,683	0.22	448.42	871
Westminster	121	82	109	149	84	65	26	2,677	0.27	696.67	1,385
Yorba Linda	181	167	156	123	56	67	25	3,844	0.32	1,056.40	1,989
MWDOC Totals	5,365	5,094	6,002	4,726	3,668	3,237	1,496	100,297	16.70	25,576.78	19,377
Anaheim	331	285	295	266	213	173	78	10,933	0.85	3,040.12	5,657
Fullerton	200	186	211	165	107	99	79	3,873	0.95	1,001.15	2,004
Santa Ana	163	131	132	259	141	124	59	3,154	0.76	808.22	1,632
Non-MWDOC Totals	694	602	638	690	461	396	216	17,960	2.56	4,849.50	3,470
Orange County Totals	6,059	5,696	6,640	5,416	4,129	3,633	1,712	118,257	19.27	30,426.27	22,847

SMART TIMERS INSTALLED BY AGENCY through MWDOC and Local Agency Conservation Programs

Agency	FY 12/13		FY 13/14		FY 14/15		FY 15/16		FY16/17		FY17/18		FY18/19		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm	Res	Comm.	
Brea	9	8	4	0	6	43	20	4	31	4	32	0	22	0	185	80	585.16
Buena Park	3	0	0	0	10	4	7	4	10	7	15	3	16	7	62	51	184.56
East Orange CWD RZ	2	0	0	0	0	2	1	0	11	1	6	0	1	0	32	1	26.86
El Toro WD	7	2	11	0	9	8	9	17	33	8	29	4	23	0	167	359	2,729.47
Fountain Valley	3	2	4	0	13	7	13	1	33	12	28	12	25	1	144	53	229.97
Garden Grove	5	2	9	0	14	10	13	11	28	0	27	2	25	0	153	40	209.31
Golden State WC	9	49	9	25	12	39	35	16	56	37	88	6	55	14	368	212	979.10
Huntington Beach	18	33	20	35	2	19	42	12	88	94	70	30	79	63	421	361	1,343.55
Irvine Ranch WD	414	135	71	59	310	67	239	207	344	420	416	78	263	83	2,448	2,447	13,143.92
La Habra	4	7	2	0	7	4	3	1	12	7	8	0	13	3	57	47	237.63
La Palma	1	0	2	0	0	2	3	2	1	0	5	0	2	0	17	2	8.34
Laguna Beach CWD	76	2	71	0	86	0	86	1	27	0	11	0	4	0	512	20	272.50
Mesa Water	10	2	15	2	17	28	36	12	149	41	49	0	25	55	392	209	893.73
Moulton Niguel WD	51	74	40	45	95	46	163	100	236	129	284	33	204	57	1,402	891	4,271.85
Newport Beach	242	26	168	75	11	11	28	43	30	12	24	0	16	0	1,078	409	2,941.28
Orange	20	24	13	9	31	18	51	13	69	10	61	13	65	26	411	204	1,094.84
San Juan Capistrano	14	18	6	11	19	6	20	8	22	8	23	5	16	0	261	130	746.15
San Clemente	26	7	28	2	24	28	26	3	37	13	38	41	25	0	1,114	415	3,015.21
Santa Margarita WD	53	171	64	93	321	53	189	136	326	221	273	220	163	19	1,590	1,611	6,934.81
Santiago CWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Seal Beach	1	0	1	36	12	1	2	2,446	2	4	5	0	2	0	14	2,502	6,804.43
Serrano WD	1	0	0	0	0	4	11	2	4	0	8	0	10	0	56	2	18.26
South Coast WD	13	16	8	4	73	104	9	11	7	0	15	2	5	7	298	221	1,312.12
Trabuco Canyon WD	6	0	2	0	6	6	16	50	13	3	20	0	22	0	145	157	1,063.40
Tustin	8	4	9	1	14	18	33	8	33	23	27	1	28	0	198	81	404.49
Westminster	1	1	2	0	17	13	7	1	17	12	22	0	18	0	105	44	232.45
Yorba Linda	20	0	12	5	32	32	61	27	72	71	68	10	53	4	459	197	989.06
MWDOC Totals	1,017	583	571	402	1,026	648	1,123	3,136	1,691	1,137	1,652	460	1,180	339	12,089	10,746	50,672.42

Anaheim	19	10	9	26	7	52	30	34	87	10	66	0	97	68	407	525	2,980.95
Fullerton	9	29	8	0	40	26	32	12	53	7	45	0	57	0	301	199	1,083.22
Santa Ana	8	19	7	8	9	27	22	26	15	3	16	0	18	0	116	100	423.47
Non-MWDOC Totals	36	58	24	34	56	105	84	72	155	20	127	0	172	68	824	824	4,487.64
Orange County Totals	1,053	641	595	436	1,131	704	1,207	3,208	1,846	1,157	1,779	460	1,352	407	12,913	11,570	55,160

**ROTATING NOZZLES INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs**

Agency	FY 12/13			FY 13/14			FY 14/15			FY 15/16			FY 16/17			FY 17/18			FY 18/19			Total Program			Cumulative Water Savings across all Fiscal Years
	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	65	120	0	84	0	0	157	45	0	74	2,484	0	0	0	0	0	0	0	0	0	0	572	2,749	0	89.29
Buena Park	65	0	0	53	0	0	248	0	0	45	98	0	0	0	0	0	0	0	0	0	0	509	173	2,535	1,087.46
East Orange	55	0	0	30	0	0	221	0	0	0	0	0	0	0	0	30	0	0	0	0	0	781	0	0	28.66
El Toro	23	6,281	0	56	3,288	0	1,741	28,714	0	730	4,457	0	55	242	0	36	0	0	0	0	0	3,405	46,222	890	1,880.40
Fountain Valley	35	0	0	0	0	0	107	0	0	222	0	0	0	0	0	85	0	0	283	0	0	795	283	0	30.48
Garden Grove	95	0	0	80	0	0	88	50	0	110	0	0	55	98	0	52	0	0	0	0	0	985	299	0	48.13
Golden State	257	2,595	0	192	0	0	583	1,741	0	1,088	0	0	207	6,008	0	161	-495	0	35	259	0	3,644	11,080	0	417.06
Huntington Beach	270	0	0	120	0	0	798	1,419	0	1,345	2,836	0	149	3,362	0	-37	0	0	0	0	0	3,760	12,526	2,681	1,787.65
Irvine Ranch	25,018	1,014	0	11,010	4,257	0	1,421	632	0	1,989	5,047	0	335	9,511	0	356	-215	0	0	0	0	47,493	94,346	2,004	6,656.81
La Habra	0	0	0	15	0	0	109	338	0	300	0	0	0	0	0	0	0	0	0	0	0	481	1,236	900	481.06
La Palma	0	0	0	0	0	0	0	0	0	46	505	0	0	2,385	0	33	0	0	0	0	0	89	2,890	0	61.95
Laguna Beach	3,596	0	0	2,948	878	0	2,879	1,971	0	1,390	0	0	0	0	0	0	0	0	0	0	0	12,139	2,896	0	481.53
Mesa Water	270	0	0	361	0	0	229	0	0	166	0	0	113	0	0	36	0	0	0	0	0	2,066	385	343	260.70
Moulton Niguel	512	1,385	0	361	227	0	1,596	4,587	0	5,492	1,441	0	153	5,872	0	893	0	647	38	0	0	13,414	20,553	2,945	2,408.63
Newport Beach	25,365	50	0	19,349	6,835	0	460	3,857	0	348	670	0	0	0	0	45	0	0	0	0	0	46,723	21,413	0	2,401.56
Orange	264	0	0	245	120	0	304	668	0	631	91	0	0	0	0	0	0	0	0	0	0	3,170	1,072	0	160.13
San Juan Capistrano	684	30	0	370	0	0	495	737	0	310	593	0	75	123	0	59	0	40	1,400	0	0	5,594	10,252	0	635.80
San Clemente	631	172	0	415	5,074	0	326	0	0	426	0	0	0	0	0	146	0	0	0	0	0	10,135	7,538	1,343	1,153.17
Santa Margarita	983	0	0	389	0	0	1,207	1,513	0	1,820	837	0	15	0	0	224	0	0	0	0	0	16,389	6,921	611	1,168.61
Seal Beach	0	0	0	0	0	0	40	5,261	0	0	2,300	0	0	0	0	0	0	0	0	0	0	155	7,852	0	223.48
Serrano	190	0	0	105	0	0	377	0	0	695	0	0	0	0	0	0	0	0	0	0	0	3,405	0	0	134.13
South Coast	435	0	0	70	0	0	4,993	13,717	0	1,421	2,889	0	16	0	0	0	0	0	0	0	0	8,130	18,870	0	796.62
Trabuco Canyon	34	0	0	0	0	0	56	0	0	130	0	0	0	4,339	0	0	0	0	0	0	2,086	5,130	0	218.14	
Tustin	378	0	0	329	0	0	408	0	0	317	386	0	65	-341	0	30	0	47	0	0	0	3,448	1,058	0	174.88
Westminster	15	0	0	0	0	0	54	0	0	73	0	0	105	0	0	50	0	42	0	0	0	556	0	0	17.85
Yorba Linda	730	0	0	40	990	0	921	0	0	1,715	0	0	213	0	0	0	0	34	0	0	0	6,115	4,359	500	638.19
MWDOC Totals	59,970	11,647	0	36,622	21,669	0	19,818	65,250	0	20,883	24,634	0	1,556	31,599	0	2,199	-710	0	845	1,980	0	196,039	280,103	14,752	23,442.37

Anaheim	459	813	0	338	0	0	498	712	0	794	5,221	0	147	3,953	0	0	0	0	0	0	0	4,020	49,799	105	0	2,007.03
Fullerton	119	0	0	107	0	0	684	1,196	0	521	7,015	0	65	3,034	0	0	0	140	0	0	0	3,050	11,309	1,484	0	996.79
Santa Ana	99	0	0	86	2,533	0	310	0	0	0	1,420	0	0	1,106	0	0	0	0	0	0	0	899	5,752	0	0	203.76
Non-MWDOC Totals	677	813	0	531	2,533	0	1,492	1,908	0	1,315	13,656	0	212	8,093	0	0	0	140	0	0	0	7,929	66,860	1,589	0	3,207.58
Orange County Totals	60,647	12,460	0	37,153	24,202	0	21,310	67,158	0	22,198	38,290	0	1,768	39,692	0	2,199	-710	0	985	1,980	0	203,968	346,963	16,341	0	26,649.95

COMMERCIAL PLUMBING FIXTURES REBATE PROGRAM^[1]
INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs

Agency	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	Totals	Cumulative Water Savings across all Fiscal Years
Brea	234	0	10	91	734	242	0	1,607	586
Buena Park	5	23	56	591	133	49	0	2,538	1,363
East Orange CWD RZ	0	0	0	0	0	0	0	0	0
El Toro WD	0	212	6	268	35	737	717	2,516	750
Fountain Valley	0	0	0	1	249	0	895	1,767	755
Garden Grove	4	1	167	676	410	0	0	2,451	1,805
Golden State WC	0	1	0	1,008	53	93	0	2,958	2,278
Huntington Beach	104	144	7	783	641	10	0	2,964	1,942
Irvine Ranch WD	1,090	451	725	11,100	5,958	1,599	993	30,458	9,816
La Habra	0	0	0	340	42	0	0	925	664
La Palma	0	0	0	0	509	0	0	675	159
Laguna Beach CWD	0	27	0	0	0	0	0	446	373
Mesa Water	6	0	79	661	782	0	110	4,364	2,549
Moulton Niguel WD	0	0	3	413	281	506	4,391	6,174	1,194
Newport Beach	0	0	0	566	0	0	1,596	3,430	1,609
Orange	1	271	81	275	2,851	458	512	6,000	2,284
San Juan Capistrano	0	14	0	0	0	0	0	260	457
San Clemente	0	0	1	0	0	0	0	432	444
Santa Margarita WD	0	0	2	90	743	598	699	2,247	376
Santiago CWD	0	0	0	0	0	0	0	0	0
Seal Beach	0	0	0	0	184	278	0	816	519
Serrano WD	0	0	0	0	0	0	0	0	0
South Coast WD	148	0	382	0	0	0	0	1,320	646
Trabuco Canyon WD	0	0	0	0	0	0	0	11	18
Tustin	0	0	75	358	212	2	284	1,688	1,015
Westminster	1	28	0	146	177	25	0	1,163	1,191
Yorba Linda	1	0	0	226	84	338	0	933	684
MWDOC Totals	1,594	1,172	2,161	17,275	13,829	5,830	9,302	78,143	33,474
Anaheim	165	342	463	3,072	309	1,808	384	15,945	8,482
Fullerton	94	0	178	476	621	274	365	3,417	2,028
Santa Ana	16	17	5	1,293	238	582	0	6,319	5,637
Non-MWDOC Totals	275	359	646	4,841	1,168	2,664	749	25,681	16,148
Orange County Totals	1,869	1,531	2,807	22,116	14,997	8,494	10,051	103,824	49,622

^[1] Family 4-Liter HETs, Zero Water Urinals, High Efficiency Clothes Washers, Cooling Tower Conductivity Controllers, Ph Cooling Tower Conductivity Controllers, Flush Valve Retrofit Kits, Pre-rinse Spray heads, Hospital X-Ray Processor Recirculating Systems, Steam Sterilizers, Food Steamers, Water Pressurized Brooms, Laminar Flow Restrictors, and Ice Making Machines.

INDUSTRIAL PROCESS/WATER SAVINGS INCENTIVE PROGRAM

Number of Projects by Agency

Agency	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	Overall Program Interventions	Annual Water Savings[1]	Cumulative Water Savings across all Fiscal Years[1]
Brea	0	0	0	0	0	0	0	0	0	0	0
Buena Park	0	0	0	0	1	0	0	0	2	54	546
East Orange	0	0	0	0	0	0	0	0	0	0	0
El Toro	0	0	0	0	0	0	0	1	1	9	4
Fountain Valley	0	0	0	0	0	1	0	0	1	23	44
Garden Grove	0	0	0	0	1	0	0	0	1	0	1
Golden State	0	0	0	0	0	0	0	0	1	3	32
Huntington Beach	0	2	0	1	2	0	1	0	6	180	716
Irvine Ranch	1	1	1	0	2	1	1	0	10	119	732
La Habra	0	0	0	0	1	0	0	0	1	0	1
La Palma	0	0	0	0	0	0	0	0	0	0	0
Laguna Beach	0	0	0	0	0	0	0	0	0	0	0
Mesa Water	0	0	0	0	0	0	0	0	0	0	0
Moulton Niguel	0	0	0	0	0	0	0	0	0	0	0
Newport Beach	0	0	0	1	0	0	0	0	1	21	88
Orange	0	0	0	0	1	2	1	0	5	97	577
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0
San Clemente	0	0	0	0	0	0	0	0	0	0	0
Santa Margarita	0	0	0	0	0	0	0	0	0	0	0
Seal Beach	0	0	0	0	0	0	0	0	0	0	0
Serrano	0	0	0	0	0	0	0	0	0	0	0
South Coast	0	0	0	0	1	1	0	0	2	134	258
Trabuco Canyon	0	0	0	0	0	0	0	0	0	0	0
Tustin	0	0	0	0	0	0	0	0	0	0	0
Westminster	0	0	0	0	0	0	0	0	0	0	0
Yorba Linda	0	0	0	0	0	0	0	1	1	20	8
MWDOC Totals	1	3	1	2	9	5	3	2	32	662	3007
Anaheim	0	0	0	0	0	0	0	0	0	0	0
Fullerton	0	0	0	0	0	0	0	0	0	0	0
Santa Ana	0	0	0	0	1	0	0	0	1	11	473
OC Totals	1	3	1	2	10	5	3	2	33	673	3480

[1] Acre feet of savings determined during a one year monitoring period.
If monitoring data is not available, the savings estimated in agreement is used.

TURF REMOVAL BY AGENCY⁽¹⁾
through MWDOC and Local Agency Conservation Programs

Agency	FY 12/13		FY 13/14		FY 14/15		FY 15/16		FY 16/17		FY 17/18		FY 18/19		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	7,605	0	5,697	0	71,981	30,617	118,930	404,411	8,354	479	9,853	27,234	3,180	17,790	228,997	489,997	408.56
Buena Park	0	0	0	0	11,670	1,626	77,127	16,490	3,741	0	4,586	0	1,230	0	98,354	18,116	64.76
East Orange	0	0	1,964	0	18,312	0	27,844	0	0	0	0	0	0	0	48,120	0	30.06
El Toro	4,680	72,718	4,582	0	27,046	221,612	63,546	162,548	13,139	48,019	7,273	42,510	7,437	9,895	132,426	557,302	427.70
Fountain Valley	682	7,524	4,252	0	45,583	5,279	65,232	0	3,679	0	8,631	0	4,704	28,700	134,063	41,503	93.84
Garden Grove	4,534	0	8,274	0	67,701	22,000	177,408	49,226	11,504	0	4,487	0	0	0	287,921	117,403	281.06
Golden State	31,813	3,200	32,725	8,424	164,507	190,738	310,264	112,937	0	0	0	0	0	0	581,902	346,272	636.92
Huntington Beach	9,219	12,437	20,642	0	165,600	58,942	305,420	270,303	9,560	21,534	14,236	6,032	7,937	36,267	561,045	458,004	634.31
Irvine Ranch	32,884	32,384	36,584	76,400	234,905	317,999	782,844	2,675,629	231,483	46,725	86,893	61,037	44,189	131,717	1,461,655	3,356,351	2,697.53
La Habra	0	0	0	0	14,014	1,818	49,691	72,164	0	0	3,003	0	1,504	0	68,212	90,019	99.42
La Palma	0	0	0	0	4,884	0	10,257	59,760	0	0	0	0	0	0	15,141	59,760	42.63
Laguna Beach	2,664	1,712	4,586	226	13,647	46,850	47,614	0	3,059	0	589	0	0	0	75,670	48,788	82.86
Mesa Water	10,667	0	22,246	0	131,675	33,620	220,815	106,896	4,173	77,033	17,373	77,785	2,283	0	416,009	295,334	397.02
Moulton Niguel	11,538	84,123	14,739	40,741	314,250	1,612,845	889,748	1,059,279	220,749	0	98,271	0	78,697	0	1,633,431	2,840,054	2,768.68
Newport Beach	3,548	2,346	894	0	33,995	65,277	76,675	375,404	2,924	0	5,938	6,499	0	35,480	127,428	485,006	342.72
Orange	15,951	8,723	11,244	0	120,093	281,402	289,990	106,487	12,847	2,366	11,956	0	10,320	1,798	485,372	400,776	562.65
San Clemente	16,062	13,165	18,471	13,908	90,349	1,137	215,249	438,963	4,267	0	33,083	7,098	6,500	0	405,483	474,271	524.26
San Juan Capistrano	29,544	27,156	12,106	0	101,195	32,366	197,290	143,315	2,624	40,748	0	0	0	0	365,415	347,277	509.68
Santa Margarita	10,151	11,600	17,778	48,180	211,198	514,198	534,048	550,420	17,010	28,094	62,706	25,000	24,121	23,198	883,459	1,217,651	1,269.52
Santiago	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Seal Beach	3,611	0	0	0	15,178	504	17,349	15,911	1,234	0	752	0	0	0	38,124	16,415	33.87
Serrano	0	0	2,971	0	41,247	0	127,877	4,403	5,450	0	555	0	4,000	0	182,100	4,403	108.45
South Coast	9,429	4,395	15,162	116,719	84,282	191,853	181,102	128,290	14,967	0	13,319	7,806	5,990	0	331,057	465,387	532.10
Trabuco Canyon	1,542	22,440	2,651	0	14,771	0	42,510	88,272	1,465	0	4,788	0	1,536	0	69,535	110,712	111.78
Tustin	9,980	0	1,410	0	71,285	14,137	232,697	33,362	11,173	0	16,926	0	5,941	6,894	349,412	54,393	230.98
Westminster	0	0	0	0	14,040	34,631	71,833	23,902	11,112	0	10,033	0	5,461	0	112,479	58,533	95.92
Yorba Linda	0	0	0	0	112,136	12,702	360,279	116,985	19,420	0	9,529	3,696	12,590	12,020	525,303	145,403	384.25
MWDOC Totals	216,104	303,923	238,978	304,598	2,195,544	3,692,153	5,493,639	7,015,357	613,934	264,998	424,780	264,697	227,620	303,759	9,618,113	12,499,130	13,371.52

Anaheim	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Fullerton	0	0	0	9,214	0	0	0	0	0	0	0	0	0	0	0	9,214	7.74
Santa Ana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Non-MWDOC Totals	0	0	0	9,214	0	0	0	0	0	0	0	0	0	0	0	9,214	7.74

Orange County Totals	216,104	303,923	238,978	313,812	2,195,544	3,692,153	5,493,639	7,015,357	613,934	264,998	424,780	264,697	227,620	303,759	9,618,113	12,508,344	13,379
-----------------------------	----------------	----------------	----------------	----------------	------------------	------------------	------------------	------------------	----------------	----------------	----------------	----------------	----------------	----------------	------------------	-------------------	---------------

[1] Installed device numbers are listed as square feet

HIGH EFFICIENCY TOILETS (HETs) INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	Total	Cumulative Water Savings across all Fiscal Years
Brea	0	38	146	154	4	6	1	457	116.36
Buena Park	0	96	153	112	13	3	0	687	215.26
East Orange CWD RZ	0	13	26	24	0	0	0	86	24.09
El Toro WD	133	218	869	264	12	6	6	2,049	611.70
Fountain Valley	0	41	132	220	7	9	1	833	278.76
Garden Grove	0	63	350	363	7	4	4	1,492	475.04
Golden State WC	2	142	794	512	9	11	2	2,803	877.57
Huntington Beach	0	163	1,190	628	4	3	0	2,904	821.99
Invine Ranch WD	1,449	810	1,777	2,798	638	239	101	17,249	6,028.02
Laguna Beach CWD	0	45	112	81	1	4	0	392	118.10
La Habra	0	37	94	83	5	1	0	591	215.86
La Palma	0	21	59	52	4	2	3	227	66.14
Mesa Water	0	147	162	162	7	3	3	1,624	650.22
Moulton Niguel WD	0	400	2,497	1,939	49	40	12	5,742	1,344.82
Newport Beach	0	49	168	243	11	6	0	731	208.28
Orange	1	142	978	416	17	10	3	2,192	608.94
San Juan Capistrano	0	35	140	202	3	9	2	534	139.85
San Clemente	0	72	225	246	11	6	7	885	256.16
Santa Margarita WD	0	528	997	1,152	114	34	3	3,346	794.02
Seal Beach	2	17	50	69	-1	0	0	857	421.72
Serrano WD	0	2	40	55	3	0	0	121	28.68
South Coast WD	64	102	398	235	11	7	0	1,028	266.55
Trabuco Canyon WD	0	10	108	169	2	3	2	344	77.50
Tustin	0	64	132	201	12	10	4	1,520	589.95
Westminster	0	35	161	359	3	4	0	1,335	460.36
Yorba Linda WD	0	40	280	379	12	8	2	1,261	388.78
MWDOC Totals	1,651	3,330	12,038	11,118	958	428	156	51,290	16,084.73

Anaheim	0	156	1,188	614	70	19	5	5,889	2,193.20
Fullerton	0	61	293	286	14	9	4	1,068	314.09
Santa Ana	0	33	602	293	20	0	1	2,022	687.58
Non-MWDOC Totals	0	250	2,083	1,193	104	28	10	8,979	3,194.87

Orange County Totals	1,651	3,580	14,121	12,311	1,062	456	166	60,269	19,279.60
-----------------------------	--------------	--------------	---------------	---------------	--------------	------------	------------	---------------	------------------