MEETING OF THE BOARD OF DIRECTORS OF THE
MUNICIPAL WATER DISTRICT OF ORANGE COUNTY
Jointly with the
PLANNING & OPERATIONS COMMITTEE
August 1, 2016, 8:30 a.m.
MWDOC Conference Room 101

Teleconference Site:
20989 Park Lane
Rollins, MT 59931
(406) 844-2282

Members of the Public may attend and participate in the meeting at both locations.

P&O Committee:
Director L. Dick, Chair
Director S. Hinman
Director J. Finnegan

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

Ex Officio Member: W. Osborne

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.

DISCUSSION

1. SUMMARY OF POTENTIAL PROJECTS TO IMPROVE WATER RELIABILITY IN ORANGE COUNTY

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.)

2. SUMMARY OF RECENT SJBA WORKSHOP ON THE SAN JUAN WATERSHED PROJECT

3. 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

4. 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.

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

Item No. 1

DISCUSSION ITEM
August 1, 2016

TO: **Planning & Operations Committee**
(Directors Dick, Hinman, Finnegan)

FROM: **Robert Hunter, General Manager**

Staff Contact: Karl Seckel

SUBJECT: **Summary of Potential Projects to Improve Water Reliability in OC**

STAFF RECOMMENDATION

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

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

OVERVIEW

In a recent Joint Workshop meeting, one of the participants in the meeting from a member agency suggested the concept of convening a group of "water managers" from throughout OC to weigh in on prioritizing future supply projects in the County. It was noted at the time that "all of the information required has already been collected" by way of the OC Water Reliability Study. This concept was briefly discussed by MWDOC's Executive Committee and was suggested for addition to the upcoming P&O Committee to prompt discussion by the Committee and Board. Staff was requested to provide the listing of projects compiled from our agencies as part of the OC Water Reliability Study. Comments on the list of projects include:

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

- A number of the projects are at the conceptual stage of development and so detailed information was not necessarily available.
- The attached document includes a listing of 29 projects, including projects from our agencies, MET, and projects that may be done by others.
- Some of the project listings are simply placeholders for what might happen in the future (Direct Potable Reuse, Water Use Efficiency, Stormwater Capture)
- The only projects in OC where information on the capital, O&M and financing costs were used were with the SOC Reliability Analysis are listed below. For that illustrative evaluation in the OC Water Reliability Study, the attached Tables 4 and 5 from the draft Technical Memorandum #4 for the OC Water Reliability Study includes the following SOC projects:
    - LBCWD connection to the OCWD Basin (project is being implemented at this time)
    - SJBA Groundwater Basin Expansion (additional work is underway on this project)
    - Doheny Ocean Desal (additional work is underway on this project)
    - Poseidon Ocean Desal (additional work is underway on this project)
    - Cadiz
    - Central Valley Water Banking (this is a project the SOC agencies may be interested in)
    - OCWD Emergency Water Capacity (additional work is underway on this project)
- Of the other projects on the master list, additional work is now being completed on:
    - Purchase of upstream SAR water rights
    - Santa Ana River Conservation and Conjunctive Use Program (SARCCUP)
    - Prado Basin Storage
    - Water Recycling
    - Expansion of GWRS
    - IRWD Strand Ranch
    - San Diego County/Camp Pendleton Ocean Desalination
    - West Orange County Enhanced Pumping Project
    - Capture of Stormflows
    - Extraordinary Water Supply Project in OC

- Purchase and Storage of Imported water in the OCWD Basin for Drought Protection and Enhanced Yield
- Expansion of the Irvine Interconnection Project
- EOCWD Treatment Plant in Peters Canyon
- MET Indirect Potable Reuse Project to provide water to OCWD
- MET Support for Local Projects in MET Service Area, Ocean Desalination by MET, Additional WUE in MET Service Area, Water Exchanges and Transfers, California WaterFix
- MET PVID Land Purchase
- BOR Colorado River Basin Plan
- MET Emergency Water Storage South of the Tehachapi's

As a reminder, the Scope of Work for the OC Water Reliability Study specifically did not include an evaluation and ranking of projects included on the master list. This position was recommended by our agencies because there can be many reasons why certain projects proceed or not based on local situations which are known better by our agencies. In essence, the MWDOC study was requested to shed light on the supply, demand and GAP analysis and then to be turned over to our agencies for evaluation and implementation.

Below are the DRAFT CONCLUSIONS and RECOMMENDATIONS included in TM#4 from the OC Water Reliability Study which is out and circulating for comments at this time:

4.1 Conclusions

A number of conclusions can be drawn from both Phase 1 and Phase 2 of the OC Study, these being:

- Projected water supply shortages, both in terms of likelihood and size, are too great to sustain for the MET region and Orange County without NEW investments in water supply over today's existing supply levels. Without NEW investments, water shortages in Orange County are anticipated to occur in 8 of 10 years by year 2040.
- The cost of water will continue to increase over time, and at higher rates than the cost of inflation to deal with these reliability issues.
- Water supply and system reliability in Orange County is dependent on both investments made by others (MET and MET member agencies) AND investments made locally within Orange County. Further, water supply reliability is not entirely under Orange County's total control. This is because all of Southern California falls under MET's IRP and Orange County's water costs and reliability are dependent on the collective response within that regional plan.

- A Recommended Planning Scenario (MET Portfolio B) was developed to guide the Orange County water investment strategy towards resolving shortages projected for 2030 initially. Based on "high impact" issues that will be resolved in the next several years, changes in the investment strategy may be necessary (Adaptive Management). The "high impact" issues include the following:

    1. California WaterFix/Governor Brown's Term – some have indicated it is imperative that the California WaterFix construction be initiated while the state has a supportive Governor in office; if this does not occur, the likelihood of success for the project could suffer substantially.

    2. MET's Carson IPR Project, Go/No go – MET's Carson IPR project is a regional project that would tap and develop significant local wastewater resources for replenishing groundwater basins in Southern California. MET's plans are to complete a feasibility and cost study by early 2017; if the project proceeds, operations could start as early as 2023.

    3. MET Member Agency Projects, Go/No go – there are a myriad of significant local projects and the success of these projects coming to fruition will have a direct impact on the regional reliability of supplies within the MET IRP.

    4. What happens if/when we reach the Lake Mead Trigger Elevation? Lake Mead is projected to reach this level within the next 2 years; conventional thinking is that the primary shortage impacts on the Colorado River will fall to Arizona and Nevada before California, but politically, other arrangements could prevail that result in impacts to California's and MET's water resources.

    5. Policy issues at MET (water rates, LRP funding, groundwater replenishment) – the Phase 2 of MET's 2015 IRP will consider a number of issues that could improve regional reliability; until those issues are teed up and acted upon, uncertainty exists.

- Although the California WaterFix is the lowest-cost solution to improving regional supply reliability, there are multiple other paths to achieve reliability if this project is not implemented as planned.

- Under an assumed MET Portfolio B (developed by the OC Workgroup) in which the California WaterFix is not implemented, but in its place MET develops the Carson IPR project and additional water transfers, as well as supports the development of more member agency local projects, supply reliability is greatly improved in Orange County. However, some water shortages still exist under this planning scenario, with shortages for Orange County as a whole occurring roughly 1 in 4 years (25 percent of the time).

- For the Brea/La Habra and Orange County Basin areas of the county, implementation of MET Portfolio B would result in shortages that are fairly manageable in size by a combination of mandatory water demand curtailments in extreme droughts, additional groundwater management, and some increases in long-term water use efficiency.

- For the South Orange County area, remaining water shortages with MET Portfolio B are too great to be managed without new supply investments, especially when coupled with emergency system needs under MET treated imported water disruptions.
    - For South Orange County, there are multiple paths (supply portfolios) to achieving full supply and system reliability, even without a California WaterFix, and the cost-effectiveness of these multiple paths is very similar—even under a wide range of financial assumptions. In fact, there is little downside risk of making local supply/system reliability investments even if they are made and MET becomes fully reliable with the implementation of the California WaterFix.
    - Investment decisions should be tested against changes that would result in "over-investing" or "under-performing" (Adaptive Management) to fully understand potential implications. Illustrative examples were presented for the South Orange County area to demonstrate this.

4.2 Recommendations

While the overall purpose of the OC Study was not to make specific recommendations as to which local water supply project should be implemented by which local water agency, there are a number of recommendations that can be made to advance reliability for the region and county as a whole. These recommendations are as follows:

Statewide Level:

1. Orange County should continue to support and strongly advocate for the implementation of the California WaterFix, as it represents the most cost-effective large-scale reliability solution to improving regional water supply reliability and hence the reliability for Orange County.
2. Orange County should advocate for leaving mandatory water use restrictions up to regional and local decision-makers, but if the state is to enforce mandatory demand restrictions during severe droughts again it should account for local investments made in conservation and alternative water supplies (e.g., recycled water and desalination).

Regional Level:

1. Orange County should advocate for MET to refill regional storage and increase its water banking accounts in the interim until the California WaterFix is operational or not implemented at all, as this has the benefit of increasing near-term reliability in the most cost-effective manner.
2. Orange County should support MET and other water agencies in evaluating alternative water supply projects, such as the Carson IPR project, if they are cost-effective and provide regional benefits.
3. Orange County should continue to work with MET to develop fair and effective programs that aid in long-term replenishment of groundwater using MET regional water supplies.

4. Orange County should continue to advocate for fair and effective LRP funding of local water supply projects that produce regional benefits.

5. Orange County should continue to advocate for MET funding of cost-effective water conservation programs.

6. Orange County should work with MET and its member agencies to address how new local projects are accounted for in MET's Water Supply Allocation Plan (WSAP), specifically addressing the equity issues of making substantial investments while only getting a fraction of supply benefits from a MET imported water allocation.

7. Orange County should work with MET and its member agencies to ensure that MET's fixed expenditures are covered by appropriate revenue mechanisms, as it is important to the region that MET is financially healthy.

8. Orange County should work with MET and DWR, as well as other interested member agencies, to evaluate MET's emergency water storage reserves to deal with a catastrophic outage in the Delta; or a concurrent outage of the Edmonston Pump Station, East Branch of the SWP, and Colorado River Aqueduct.

<u>Local Level:</u>

1. OCWD, MWDOC, and South Orange County water agencies should work to expand an emergency supply program that would allow pre-delivered imported water stored in the OC Basin to be used by South County during emergencies such as a system outage of MET treated imported water.

2. Orange County should closely monitor the progress of the California WaterFix and MET's Carson IPR project, as they would have significant impacts to Orange County reliability if implemented.

3. Orange County would benefit from an adaptive management approach to supply reliability, with periodic re-assessment of water demands and supplies at the regional and local levels.

4. Follow-up work in OC Study should involve:

    a. MWDOC work with SOC and MET regarding investigating a water banking arrangement with Semitropic Water Storage Bank, if the SOC agencies are interested. This follow-up work would deal with pricing and MET wheeling.

    b. Work on moving groundwater and/or Poseidon water through the EOCF#2 or other avenues for reliability in South County.

    c. MWDOC's WUE Department to prioritize future WUE investments in Orange County, based on remaining conservation potential.

    d. Additional work with OCWD on groundwater basin management including opportunities to develop an extraordinary water supply within the OC Basin and to expand the use of the MET Conjunctive Use Storage account.

Staff has provided the above information at the request of the Executive Committee who suggested the MWDOC Board discuss and evaluate the idea of convening a group of "water managers" from throughout OC to weigh in on prioritizing future supply projects in the County and to provide direction to staff on if, how and when to proceed.

Attached is the Master List of Projects from the OC Water Reliability Study.

Table 4. Summary of Potential South Orange County Water Supply Projects

Supply Project		Supply (AFY)	Capital Cost [1] ($)	Capital Cost [2] ($/AF)	O&M Cost ($/AF)	MET LRP [3] ($/AF)	Total Cost ($/AF)
LBCWD Groundwater		2,000	$2,000,000	$51	$490	($0)[4]	$541
SJB GW Expansion	Small	4,900	$152,700,000	$1,590	$400	($475)	$1,515
	Large	7,400	$313,600,000	$2,162	$400	($475)	$2,087
Doheny Desal	Small	5,600	$85,000,000	$774	$1,061	($475)	$1,360
	Large	11,200	$170,000,000	$774	$1,061	($475)	$1,360
Poseidon Desal		11,000	MET Treated Water Rate + Premium			Inlcuded[5]	$1,870
Cadiz Transfer	Small	5,000	MET Treated Water Rate + Wheeling[6]			($0)[4]	$1,086
	Large	10,000	MET Treated Water Rate + Wheeling[7]			($0)[4]	$1,261
Water Banking		As needed	Purchased Water + Banking Costs + Wheeling			($0)[4]	$1,900
MET Treated Rate (Tier 1)		As needed	MET Tier 1 Treated Rate + RTS + Capacity Chrg.			--	$998

[1] All capital cost estimates include construction contingencies (20%) and professional services (18%).
[2] Annualized capital costs assume 3% debt financing for 30 years.
[3] MET LRP incentives are for 15 years and based the program as it is today, which may change in future.
[4] Does not fit within MET's current LRP program definition and thus was not assumed to be eligible for LRP funding.
[5] LRP is included as a condition of Poseidon Desal terms for Orange County Water District.
[6] For first 5,000 AFY, SMWD receives a discount of $350/AFY.
[7] Represents weighted cost for Cadiz, where first 5,000 AFY receives discount and the second 5,000 AFY does not.

Table 5. Conceptual Emergency Supply Project Cost
(15 CFS Sized Project)

Project Component	Total Project	SOC's Share
Wells	$ 16,800,000	$ 5,600,000
Land	$ 1,200,000	$ 400,000
Pipelines	$ 8,610,000	$ 8,610,000
Connector to EOCF #2	$ 700,000	$ 700,000
Chloramine Station	$ 840,000	$ 840,000
Pump Station	$ 4,200,000	$ 4,200,000
Total	**$ 32,350,000**	**$ 20,350,000**

* All capital costs include 20% contigency and 18% services costs.

The total cost for a 15 cfs emergency supply project for South Orange County is estimated to be $20.3 million. If more than 15 cfs is required for emergency system needs, the costs were expanded proportionally.

Potential Projects to Improve Water Supply Reliability in Orange County Besides Those Already Under Development										
Ref #	Listing of Projects	Characterization of Potential/Supply Yield	Type of Supply	Potential Start Year	Located in OC	Hydrologic Resilience	Orange County Seismic Resilience	Local Control	Capital Cost ($ M)	O&M Cost ($M/yr)
Supply Projects										
1	Huntington Beach Desalination Project	56,000 AF/yr produced by Poseidon in Huntington Beach with distribution in Orange County by OCWD and MWDOC.	Base Load	2019	Yes	Yes	Yes	Partial		
2	Doheny Desalination Project	16,000 AF max potential; first phase being pursued at 4,000 to 5,000 AF/yr by South Coast WD as a demonstration project.	Base Load	2019	Yes	Yes	Yes	Yes		
3	Expansion of WUE in Orange County	40,000 AF± of demand reduction over 20 years; funding from outside sources as well as from OC agencies; this total includes passive, MWELO and active (20% of turf in Orange County can be converted to California Friendly Landscape).	Demand Reduction	Builds over time	Yes	Yes	Yes	Partial		
4	Purchase of Upstream Santa Ana River supplies	Placeholder for OCWD discussions with upstream water entities to purchase recycled water or other water resources to stabilize the replenishment of the OCWD groundwater basin.	Base Load	Builds over time	Yes	Yes	Yes	Yes		
5	Santa Ana River Conservation and Conjuntive Use Program (SARCCUP)	The SARCCUP program is an overall effort by a number of agencies in the SAR Watershed to coordinate on (1) Habitat Creation & Arundo Removal, (2) Water Use Efficiency efforts involving outreach & technical support for Budget- Based Rates, and (3) development of regional Water Banking opportunities. The groundwater basins involved include the Chino Basin, the Elsinore Basin, the San Bernardino Basin and the San Jacinto Basin as well as the OCWD Basin. The vision is to create 180,000 AF of total storage with 60,000 AFY of Dry-Year Yield Supply (3 years out of 10), of which, each SAR Agency receives water bank capacity of 12,000 AFY Dry-Year Yield. The benefits to Orange County include: • Dry year water supplies at a cost of approximately $991 per AF • Use of existing recharge basins and infrastructure in upper watershed without OCWD having to pay for their capital cost • Storage in water bank upstream of Orange County without having to pay a storage fee • Purchasing supplies for the water bank through the combined efforts of the five agencies, including Valley District, which is a State Water Project contractor • Approximately 50 percent of Arundo removal cost funded through the grant, for up to 640 acres of Arundo removal.	Dry Year Supplies	???	No	Yes	No	No		

Potential Projects to Improve Water Supply Reliability in Orange County Besides Those Already Under Development										
Ref #	**Listing of Projects**	**Characterization of Potential/Supply Yield**	**Type of Supply**	**Potential Start Year**	**Located in OC**	**Hydrologic Resilience**	**Orange County Seismic Resilience**	**Local Control**	**Capital Cost ($ M)**	**O&M Cost ($M/yr)**
6	Prado Basin Operations with the Corps of Engineers (storage and sediment issues)	Increase conservation pool for additional capture of Santa Ana River water – 6,000 AF ±; this is part of OCWD's long term goal of capturing additional stormwater and percolating it in the groundwater basin	Periodic Supply	2021±	Yes	No	Yes	Yes		
7	Expansion of Water Recycling in Orange County	Placeholder for projects that go above and beyond the current vision for water recycling in the County; it can include expansions of purple pipe projects as well as additional elements of IPR and DPR type of projects. A separate placeholder is included for GWRS type of expansions being considered by OCWD and OCSD.	Base Load	Based on expansion projects	Yes	Yes	Yes	Yes		
8	Expansion of GWRS or Reuse from OCSD Beyond 130,000 AF per year	It has already been assumed that GWRS will be expanded to 130,000 AF per year by 2022 (details are under study by OCWD and OCSD). This project is a placeholder for using even more of future wastewater flows coming into OCSD; if the flows materialize, this placeholder assumes another 10 to 20,000 AF per year of water could be produced. This yield could also be part of the GWRS Urban Runoff Diversion Project to capture additional urban runoff for recycling purposes.	Base Load	2025+	Yes	Yes	Yes	Yes		
9	Lower San Juan Creek Groundwater Management	The project would involve construction of rubber dams on San Juan Creek to capture additional stormflow for percolation into the groundwater basin. A second phase would involve streamflow recharge with polished tertiary treated recycled water into the San Juan Creek for capture and percolation into the groundwater basin for replenishment purposes. The water would blend and commingle with native groundwater and then be fully treated by RO and Advanced Oxidation Processes (AOP) when it is pumped out for beneficial uses; the project will likely be implemented in phases with a potential of up to 7,000 AF of increased supply, in addition to the natural yield of the basin, which ranges between 7,700 and 8,600 AF per year based on hydrology. The feasibility study for these efforts is just now being completed in March 2016; if desired by the local agencies, preliminary design and CEQA work would be initiated.	Base Load	Builds over time	Yes	No	Yes	Yes		

Potential Projects to Improve Water Supply Reliability in Orange County Besides Those Already Under Development										
Ref #	Listing of Projects	Characterization of Potential/Supply Yield	Type of Supply	Potential Start Year	Located in OC	Hydrologic Resilience	Orange County Seismic Resilience	Local Control	Capital Cost ($ M)	O&M Cost ($M/yr)
10	Production in San Mateo Groundwater Basin	Currently, the City of San Clemente pumps between 500 and 1000 AF from this source. Issues with wells and high chloride levels have hampered additional production. A project was considered in the 1990's that would have required a joint venture with the Marine Corps Base Camp Pendleton; the 1990's project anticipated a potential groundwater basin yield of about 2,000 AF ± and also considered storage of imported water for use for emergency purposes in an arrangement with the Marine Base. No current discussions or contacts have been made with the Marine Base involving this expanded opportunity. Environmentalists consider this the last pristine basin in or nearby to OC and want to protect it from outside influences.	Emergency or Base Load	Unkown	Yes	No	Yes	No		
11	Purchase Additional Water from Cal Domestic Water Company	Simply a placeholder for discussions with Cal Domestic.	Unknown	Unkown	No	Unknown	Yes	Yes		
12	Cadiz Water Project	The Cadiz Project includes a total yield of 50,000 AF per year that could C14 produced and mined from the Fenner Valley groundwater basin. The water would require treatment for Chromium VI and would be conveyed via a pump station and pipeline about 40 miles to MET's Colorado Rive Aqueduct. SMWD has an option for 5,000 expandable to 15,000 AF; OCWD is considering the water supply. Work is underway to develop the terms and conditions for conveying the water via the Colorado River Aqueduct into Southern California. The cost of water at the Aqueduct is $960 per AF. The water would have to be wheeled through the MET system.	Base Load	2019	No	Yes	No	Partial		
13	IRWD Strand Ranch Banking Project for other OC Agencies	This would involve an expansion of the IRWD Project for service beyond IRWD to other agencies in OC. The IRWD Board has not yet considered the terms and conditions for such a project. The Strand Ranch Project is up and operating and has about 23,000 AF stored for IRWD's benefit. By agreement, the water is defined to be an "Extraordinary Supply" by MET and counts essentially 1:1 during a drought/water shortage condition under MET Water Surplus and Drought Management Plan (WSDM).	Drought	Unkown	No	Partial	No	Partial		

Potential Projects to Improve Water Supply Reliability in Orange County Besides Those Already Under Development										
Ref #	Listing of Projects	Characterization of Potential/Supply Yield	Type of Supply	Potential Start Year	Located in OC	Hydrologic Resilience	Orange County Seismic Resilience	Local Control	Capital Cost ($ M)	O&M Cost ($M/yr)
14	Other Water Banking Projects (e.g., Semi-Tropic)	Semi-Tropic Water Storage District has several rate schedules for storing and retrieving water from storage when needed. Their schedules do not include the actual water or the cost of water, which needs to be secured. They have a program with a capital payment and another program without a capital payment. Without any cost of water going into storage, the program cost for storing and retrieving water runs on the order of $600 to $800 per AF; the water must then be wheeled to get it into the Metropolitan service area. Considering the cost of central valley water at $350 per AF, the all in costs of this source for dry year supply from this source would be about $1700 to $1800 per AF for years in which drought protection would be needed.	Drought	Unkown	No	No	No	No		
15	San Diego County/Camp Pendleton Ocean Desalination	An ocean desalination plant by SDCWA at a southern Camp Pendleton location is still under consideration. Work on various types of intake facilities is still being studied. Work completed in 2009 indicated the cost of water at $1,400 to $1,500 per AF. MWDOC staff estimated an additional cost of about $500 per AF to get the water integrated into SOC.	Base Load	2025+	No	Yes	Partial	No		
16	West Orange County Enhanced Pumping Project	A conceptual project by OCWD to enhance groundwater production in the county and reduce the loss of water stored in the OCWD basin into LA County. Conceptually, additional pumping reduces basin losses by up to 40 percent to 50 percent of the additional pumping. The project concept involves four new production wells with total pumping of 10,000 AFY with the water to be conveyed to the West OC Water Board pipelines for the benefit of the groundwater producers. This project is estimated to reduce losses of groundwater flow from OC to LA County by approximately 5,000 AFY.	Base Load	2020±	Yes	No	Yes	Yes		
17	Capture of Stormflows	A placeholder for all parts of the County to examine the potential opportunity for water to be captured, primarily to increase the capture and replenishment into groundwater basins where possible. In certain situations, the supplies may be able to be introduced into recycled systems to increase irrigation supplies.	Unknown	Unkown	Yes	No	Yes	Partial		

Potential Projects to Improve Water Supply Reliability in Orange County Besides Those Already Under Development										
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18	Extraordinary Water Supply Project in OC	A conceptual project whereby water from a non-MET source could be stored in the OCWD groundwater basin and reserved for use during MET Allocations. If the water is managed in this manner and is accessed during a WSDM allocation event, the water counts directly toward improving the reliability on a 1:1 basis, during the allocation event.	Drought	Unkown	Yes	Yes	Yes	Yes		
19	Purchase and Storage of Imported water in the OCWD Basin for Drought Protection and Enhanced Yield	Under this concept the availability of imported water, both treated and untreated, would be evaluated to enhance operations of the groundwater basin to maintain higher levels of storage.	Drought	2016	Yes	No	Yes	Partial		
System Reliability Only Projects										
20	Addition of Generators & Back-up Po	This program would involve working with various retail agencies around the county to improve emergency power to local production facilities for emergency events.	Emergency	2016	Yes	n/a	Yes	Yes		
21	Expansion of the Irvine Interconnection Project to SOC	An agreement completed in 2006 resulted in an investment by SOC agencies in the IRWD system to allow exchanges of water to be delivered by IRWD into SOC under emergency situations. Capacity was provided to move up to 30 cfs; the agreement allows moving up to 50 cfs, not to exceed 3,000 AF per emergency event. The ability of IRWD was projected to decline over time and go to zero by 2030. IRWD is examining their ability to increase the exchange and conveyance of water under this arrangement or extend the end date. Other options could also be implemented if arrangements can be worked out with OCWD and the groundwater producers.	Emergency	2018±	Yes	n/a	Yes	Yes		
22	Additional Reservoir Projects in SOC	SMWD led an effort to construct Upper Chiquita Reservoir at a capacity of 750 AF at a cost of $50 million in 2008 to provide emergency storage water in SOC. Other reservoir sites in SOC offer the ability to expand storage by an additional 1,000 to 4,000 AF. Another project that could be considered is to increase the storage capacity at Irvine Lake to allow more storage for emergency purposes.	Emergency	2019±	Yes	n/a	Yes	Yes		

Potential Projects to Improve Water Supply Reliability in Orange County Besides Those Already Under Development										
Ref #	**Listing of Projects**	**Characterization of Potential/Supply Yield**	**Type of Supply**	**Potential Start Year**	**Located in OC**	**Hydrologic Resilience**	**Orange County Seismic Resilience**	**Local Control**	**Capital Cost ($ M)**	**O&M Cost ($M/yr)**
23	EOCWD Treatment Plant in Peters Canyon	EOCWD has been studying the feasibility of constructing a 9 cfs water treatment plant in Peters Canyon that would treat untreated MET water via the Santiago Lateral and the Baker Pipeline. Findings to date indicate there is a long term economic benefit to the project compared to purchasing treated water from Metropolitan, but there is also a potential system reliability benefit from the project. This benefit is based on the Treatment Plant being able to continue providing potable water in the event of an outage of the Diemer Plant or other facilities in OC. A 9 cfs supply for 30 to 60 days would be equivalent to having storage in the amount of 500 to 1000 AF; based on the cost of regional storage, it provides a similar benefit equivalent to $40 to $80 million dollars if that same amount of water was held in a lined and covered emergency storage reservoir, similar to Upper Chiquita Reservoir in SOC.	Emergency	2021	Yes	n/a	Yes	Yes		
MET Projects										
24	MET Indirect Potable Reuse Project to provide water to OCWD	MET has begun investigations of a project to treat wastewater from the Carson Plant to better than drinking water standards (similarly to GWRS) and to distribute these flows through a regional distribution system for groundwater replenishment. The initial phase being investigated would provide between 20,000 and 65,000 AF per year, with OC being part of the Phase 1 project for up to 65,000 AF per year.	Base Load	2020±	Yes	Yes	Yes	No		
25	MET Support for Local Projects in MET Service Area, Ocean Desalination by MET, Additional WUE in MET Service Area, Water Exchanges and Transfers, California WaterFix	MET's initial 2015 IRP Analysis indicates a need for additional conservation, local projects and transfers and exchanges, especially prior to the benefits of the California WaterFix starting to accrue (MET has projected benefits from the WaterFix begin in 2020 even though the project will not be operational for another 10 years or so).	Base Load	Ongoing	No	Yes	No	No		
26	MET PVID Land Purchase	MET recently completed the purchase of Land in PVID that will ultimately result in an augmentation of CRA supplies in years when needed.	Drought	Ongoing	No	Yes	No	No		

Potential Projects to Improve Water Supply Reliability in Orange County Besides Those Already Under Development										
Ref #	**Listing of Projects**	**Characterization of Potential/Supply Yield**	**Type of Supply**	**Potential Start Year**	**Located in OC**	**Hydrologic Resilience**	**Orange County Seismic Resilience**	**Local Control**	**Capital Cost ($ M)**	**O&M Cost ($M/yr)**
27	BOR Colorado River Basin Plan	The Bureau of Reclamation (BOR) has underway a multi-year Basin Study to examine supplies and demands for Colorado River water. Results of the supply and demand analysis included that long-term historical flow was about 16.4 MAFY, and total consumptive use and losses in the Basin averaged approximately 15.3 MAFY. Consumptive use is projected to increase to a range of 18.1 to 20.4 MAFY by 2060 (depending on the scenario), which would result in a long-term projected imbalance in future supply and demand of about 3.2 MAFY to 2060. The study also included many potential ideas and projects to resolve the supply and demand imbalance, which were organized into four groups: 1) increasing Basin supply; 2) reducing Basin demand; 3) modifying operations; and 4) institutional and governance issues. All parties will need to work together to overcome the supply and demand imbalance to maintain reliability of the Colorado River supply.	Long Term Sustainability	Ongoing	No	Partial	No	No		
28	MET Emergency Water Storage South of the Tehachapi's	MET to review their ability to provide emergency water supplies out of storage in the event of a simultaneous rupture of the CRA and SWP supply systems by the San Andreas Fault	Emergency	2025±	No	No	No	No		
29	California WaterFix	DWR led effort on the Bay-Delta Conveyance for the SWP and CVP Projects and for habitat restoration under EcoRestore.	Long Term Sustainability	2030±	No	No	No	No		

INFORMATION ITEM
August 1, 2016

TO: **Planning & Operations Committee**
(Directors Dick, Hinman, Finnegan)

FROM: **Robert Hunter, General Manager**

Staff Contact: Karl Seckel

SUBJECT: **Summary of Recent SJBA Workshop on the San Juan Watershed Project**

STAFF RECOMMENDATION

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

COMMITTEE RECOMMENDATION

Committee recommends (To be determined at Committee Meeting)

OVERVIEW

On July 19, the San Juan Basin Authority (SJBA) conducted a workshop on the San Juan Watershed Project, also named the Basin Optimization Project. Over the past four years the San Juan Basin Authority (Authority) has been studying the options for a sustainable, long-term use of the San Juan Watershed as part of a Foundational Actions Fund (FAF) program through the Municipal Water District of Orange County and the Metropolitan Water District of Southern California. The FAF study, also known as the Basin Optimization plan, was completed in 2016 and submitted to Municipal Water District of Orange County (MWDOC).

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

Although the FAF Project identified four alternatives, the July workshop concentrated on the initial Phase 1 Project being the siting and construction of 3 to 7 rubber dams to capture and infiltrate storm water that otherwise would have run off to the ocean. It has been highlighted that the project planning and design efforts for the rubber dams strategy can be "fast-tracked" such that the rubber dam construction could be implemented within 24 months (estimated June 2018). Future efforts for introduction of recycled water to further enhance groundwater recharge would continue to be explored.

The key findings from the San Juan Basin Desalination and Optimization Program with respect to the construction of rubber dams includes:

- Utilization of rubber dams for stormwater capture is feasible from both regulatory and environmental perspectives and can be a cost-effective source for groundwater recharge.
- Utilization of rubber dams to promote groundwater recharge from recycled water during dry-periods is feasible from both regulatory and environmental perspectives and can be a cost-effective source for groundwater recharge.
- Incidental recharge of recycled water (also referred to as live stream recharge) is a viable alternative for groundwater recharge and has multiple environmental benefits for the local watershed.
- There is an adequate supply of recycled water from the existing wastewater treatment facilities, although some treatment modifications may be required at individual plants, provided that seasonal storage facilities are utilized (for off-peak water storage).

The Phase 1 project for the rubber dams is estimated to have a yield of between 1,120 afy to 1,980 afy and is expected to have a capital cost of about $34 million.

Discussions at the meeting included an examination of potential habitat and environmental benefits and impacts, including:

- Increased standing water / vegetated channel banks for habitat
- Creation of Pacific flyway migration habitat
- No impediment to fish migration
- Potential impacts to Arroyo Toad and Coastal California Gnatcatcher habitats
- Permanent structure installation and heavy equipment use in the soft bottom channel

It was noted that local, State, Federal agency permitting will be required for the project.

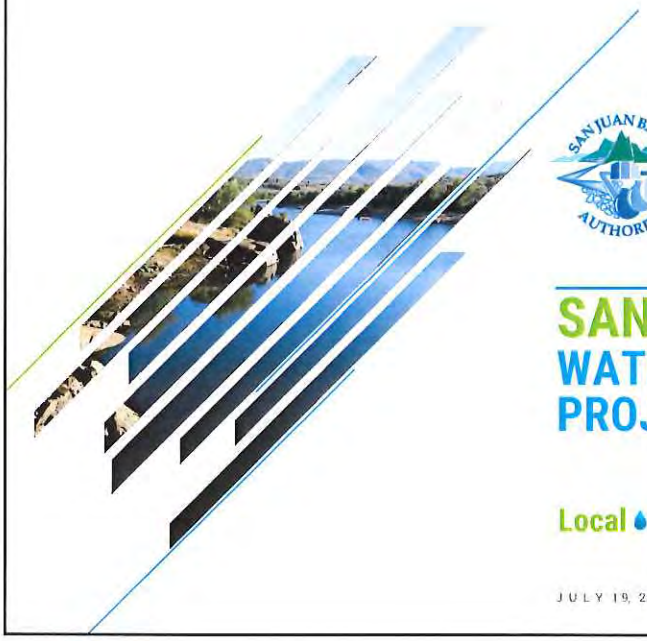
Financing issues were also highlighted at the meeting. The following items were noted:

- Low interest financing on the order of 2% is available
- An application for a $10M grant has been submitted to DWR for Prop 1 funds

- The project may be a way of assisting all of the MS4 City Permittees in the watershed to achieve compliance with their stormwater permits in conjunction with development of the project. This will take quite a bit of work at the Regional Board level but may create a NEW paradigm for how to efficiently implement such projects on a regional basis with multiple funding partners. If successful, a NEW stream of funding may be possible from the Cities to support the project with funds that otherwise would have been spent on their permit compliance.
- The estimated costs of the project are still very preliminary; the preliminary design being conducted at this time will provide better cost estimates for the project. The current estimates ranges from $1,350 to $1,770 (this includes the costs to capture, replenish, pump and treat the water - without any grants) based on only the additional stormwater that might be captured. Once the dams are constructed, if permission to utilize recycled water to augment recharge can be accomplished, the cost effectiveness of the project can be increased substantially.
- Santa Margarita is heading up the project; the city of San Juan Capistrano and South Coast Water District indicated their interest in the project; Moulton Niguel Water District indicated they are not interested at this time, but will remain open about participating in the project in the future.
- A number of questions from the Board and audience were discussed:
    - Basis of the cost estimates
    - Life of the Rubber Dams (10 to 20 years)
    - Basis of the available stormflow for capture and what the implications are of changing precipitation patterns
    - How many dams and the location of the dams (still to be determined)
    - Coordination with the OC Flood Control District
    - Maintenance required for the recharge basins (every 2 to 3 years depending on the frequency of large storms which naturally scour the basins)
    - Species of concern within the streambed location

The next steps include selection of the CEQA consultant, requests to the local water agencies for potential participation in the project, development of a water rights agreement, completion of the preliminary design report and development of a financing plan.

Attached are the presentation slides from the meeting.



SAN JUAN WATERSHED PROJECT

Local • Reliable

JULY 19, 2016

OVERVIEW

- Overview: San Juan Watershed Project
- Goals and Benefits
- Phase 1
- Next Steps
- Discussion

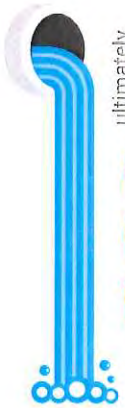
WHAT IS THE SAN JUAN WATERSHED PROJECT?

Long-term project

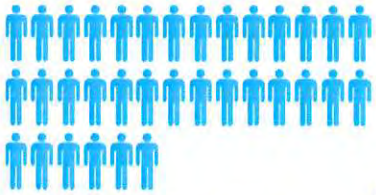
Optimize use of water within the basin

Local • Reliable

SAN JUAN WATERSHED PROJECT



ultimately Enough Water For 50K Families



For **ONE** Year

San Juan Watershed Project Local • Reliable

SAN JUAN WATERSHED PROJECT

GOALS and BENEFITS

LOCAL SUPPLY

WATER QUALITY

ECOLOGICAL ENHANCEMENTS

WATER STORAGE

San Juan Watershed Project Local • Reliable

SAN JUAN WATERSHED PROJECT

Phase 1

New Water: 1,120 to 1,980 AFY

Install rubber dams

Divert, capture and filter **stormwater**

Utilize Existing Facilities

PROJECT
PHASE 1

June 2016-2019

Current Partners:

Santa Margarita Water District

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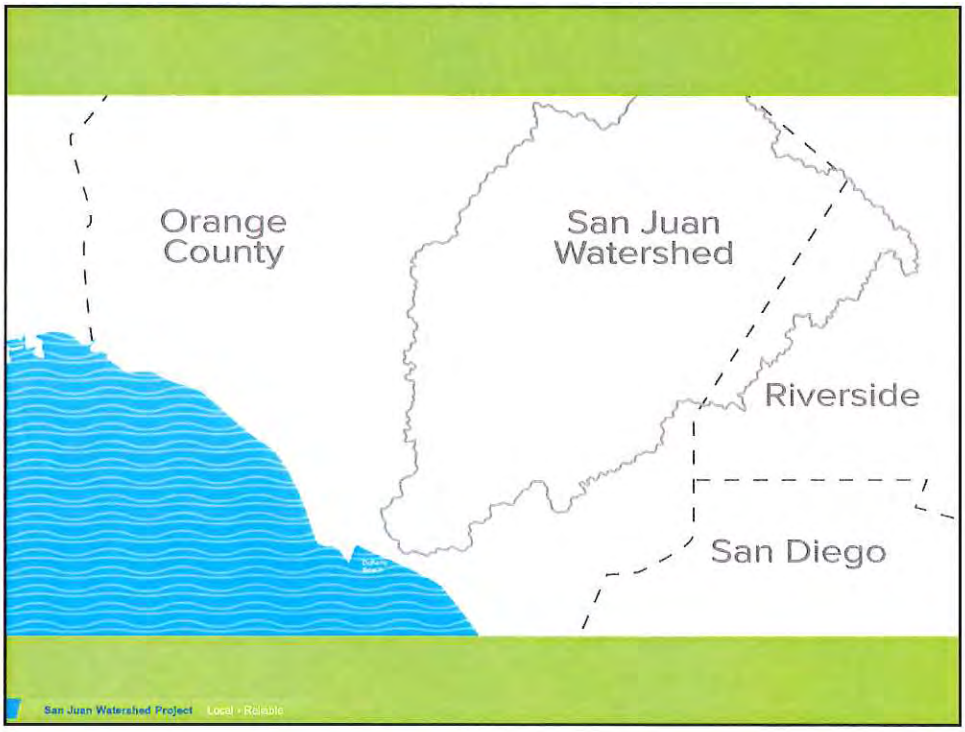

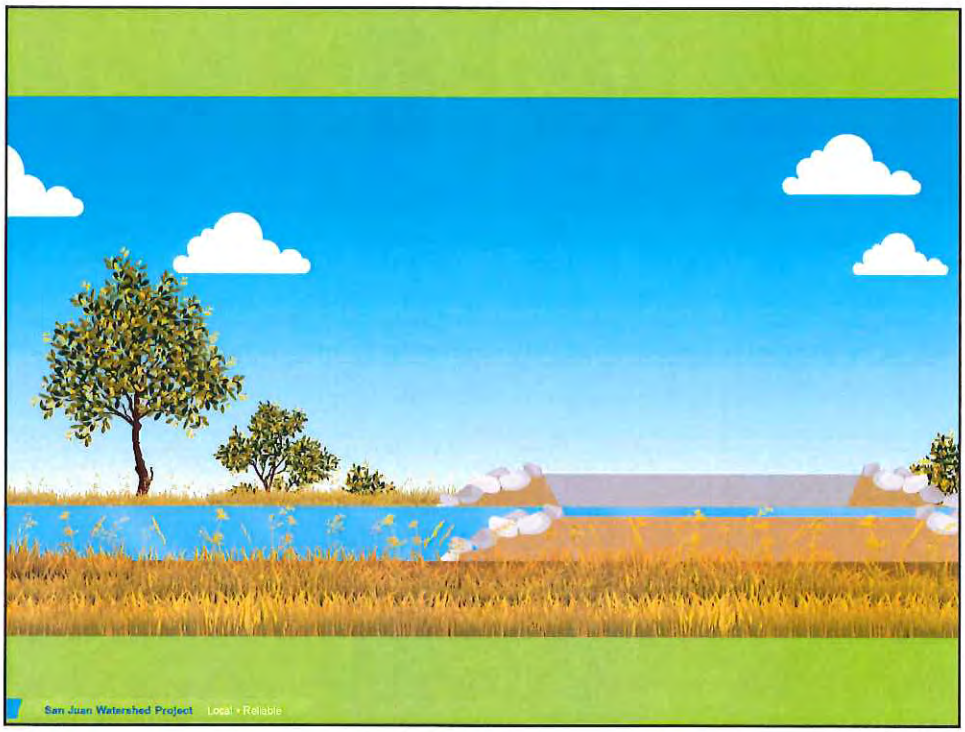
San Juan Watershed Project
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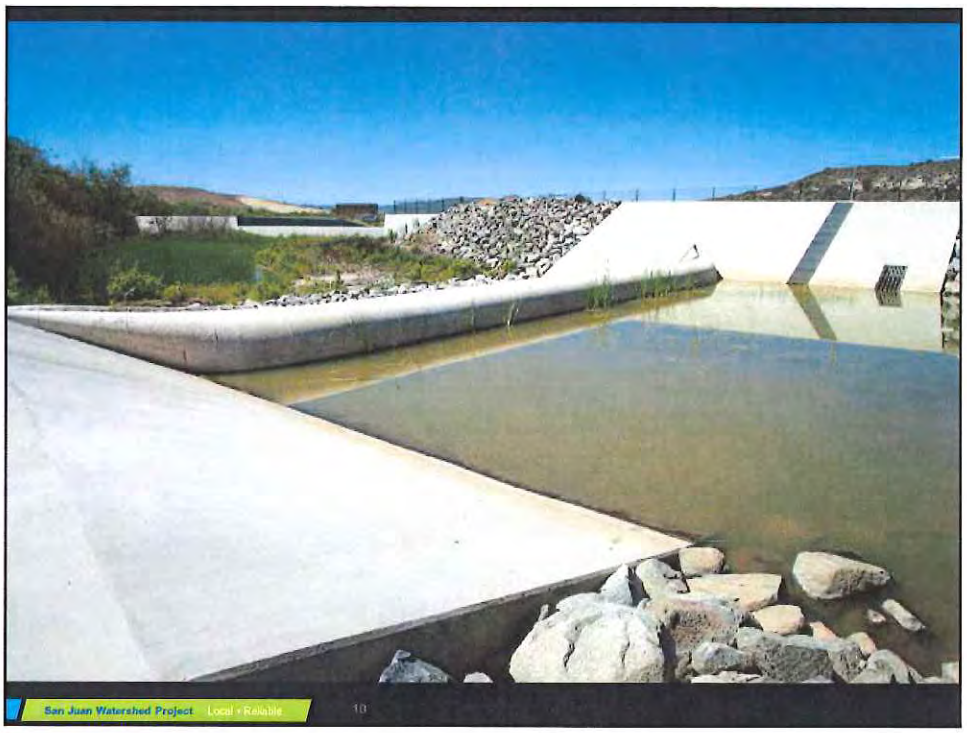
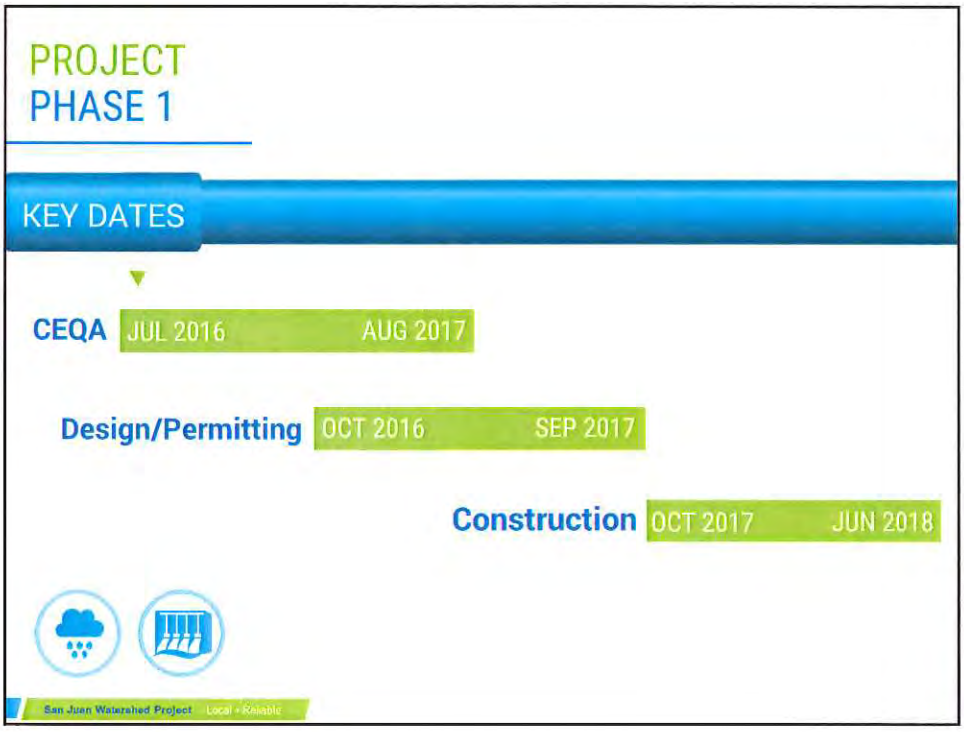

San Juan Watershed Project
Local • Reliable
10


LOCAL SUPPLY
WATER QUALITY
ECOLOGICAL ENHANCEMENTS
WATER STORAGE
PROJECT PHASE 1
BENEFITS
Water Supply
Enhance Reliability
Provide Drought Proofing
Utilize Existing Treatment Facilities
Watershed
Conform to MS4 Requirements
Environmental Enhancements
Stabilize Streambed
Benefits seen within 24-36 months
San Juan Watershed Project Local • Reliable


PROJECT PHASE 1
KEY DATES
CEQA JUL 2016 AUG 2017
Design/Permitting OCT 2016 SEP 2017
Construction OCT 2017 JUN 2018
San Juan Watershed Project Local • Reliable

SAN JUAN WATERSHED PROJECT

PHASE 1 COSTS

New Water: 1,120 to 1,980 AFY

Cost of Water: $1,230 to $1,560 AF

Capital: $34 million
$430 to $760 AF

Operating: $800 AF Pump + Treat

Finance: $120-210 AF

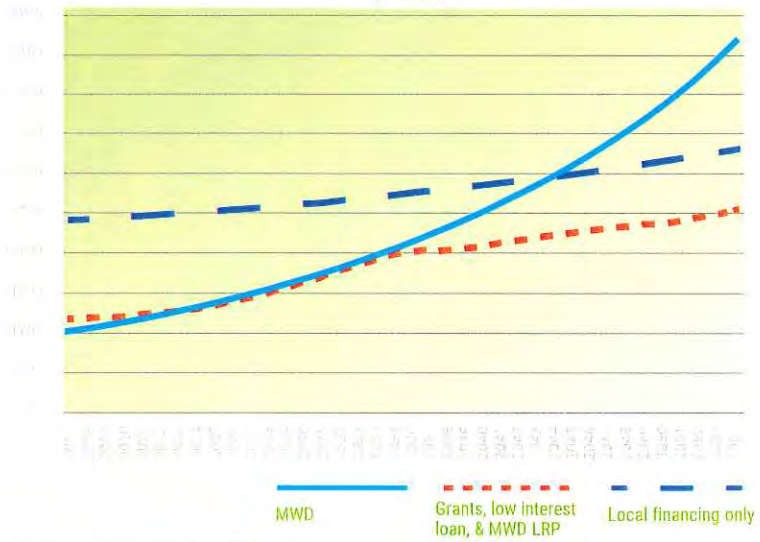
Santa Margarita Water District

San Juan Watershed Project Local • Reliable

(1) 1120 - 1980
(2) 2000 - 4000
(3)

10 year life

Preliminary Water Cost Comparison Between Phase 1 and MWD ($/AF)



San Juan Watershed Project Local • Reliable

SAN JUAN WATERSHED PROJECT

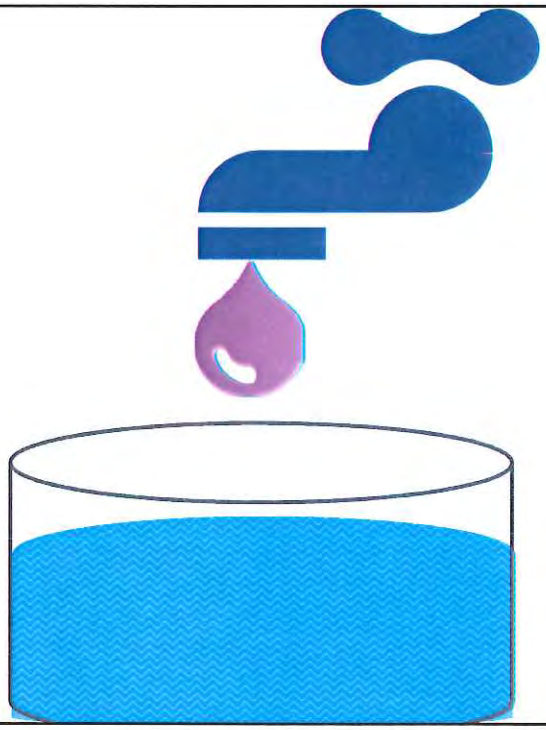
PHASE 1
NEXT STEPS

- Select CEQA Consultant
- Submit Participation Intent by September 15, 2016
- Develop Water Rights Agreement
- Evaluate Existing Facilities
- Determine Financing

% or max water

SAN JUAN WATERSHED PROJECT

PHASE 3



SAN JUAN WATERSHED PROJECT

GOALS and BENEFITS

LOCAL SUPPLY

WATER QUALITY

ECOLOGICAL ENHANCEMENTS

WATER STORAGE

San Juan Watershed Project Local • Reliable

Status of Ongoing MWDOC Reliability and Engineering and Planning Projects

July 26, 2016

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
Baker Treatment Plant or Expansion of Baker Water Treatment Plant	IRWD, MNWD, SMWD, ETWD Trabuco CWD		On line date is Oct 2016	Karl Seckel, Keith Lyon and Kevin Hostert worked with MET and IRWD to resolve the metering and billing issues due to the OC-33A meter malfunction last month and this month. A NEW meter will be installed within the next week or so and the problem should be resolved permanently.
Doheny Desalination Project	South Coast Water District, Laguna Beach CWD			South Coast Water District will be holding a third Project Delivery and Cost Update Workshop on the Doheny Project on July 27. Staff will update the P&O Committee. South Coast is continuing to move the project forward and to look for potential partners and grant funding as they initiate the CEQA process. MWDOC is working on the decommissioning and removal of the test facilities at Doheny State Park. An evaluation of the Pilot Plant Mobile Test facility is being completed. This evaluation will serve as the basis for establishing a cost basis and a lease rate to lease the facility to SDCWA for one year before the facility is returned to South Coast Water District. MWDOC is awaiting NWRI to schedule the Science Advisory Panel to review both the SJBA and the South Coast Water

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
				District Foundational Action Program Studies.
Poseidon Resources Ocean Desalination Project in Huntington Beach				The OCWD Board and staff will continue their discussions regarding integration of the Poseidon Project into the local water supplies from the OCWD Groundwater basin. Most recently direction was provided to staff to evaluate providing substantial amounts of Poseidon water to Newport Beach, Mesa Water and Huntington Beach via direct deliveries while injecting the remaining water in the groundwater basin. Staff will update their Board upon completion of the evaluation. MET postponed their presentation to the OCWD Board regarding the Carson Project but will provide that update at the September 7 Board meeting at 5:30.
Orange County Reliability Study				The first DRAFT of Technical Memorandum #4 was issued to circulate to get input and comments on prior to completing the final report. MWDOC has requested comments by the end of July. Comments have been received from two agencies so far.
Other Meetings/Work				
				Karl Seckel, Keith Lyon and Kevin Hostert participated in a meeting with Newport Beach and Laguna Beach CWD to discuss operational issues with conveying groundwater from NB to LB through the Coast Supply Line to help LBCWD perfect their water rights recently re-established in the OCWD basin. Additional meetings are being held. It is likely that the transfer of

Description	Lead Agency	Status % Complete	Scheduled Completion Date	Comments
				groundwater will be approached as a paper transaction initially until such time as the water quality issues can be addressed. MET and the agencies met to discuss the issues. Several options exist and will be evaluated. MWDOC is working with NB and LBCWD to assist in the transfer program.
				Karl Seckel, Kevin Hostert and Intern Colin Eckerle met with our consultant Black & Veatch to open discussions regarding introduction and conveyance of either groundwater or Poseidon water in the EOCF#2. This was a second meeting to discuss with B&V issues from their perspective.
				Karl Seckel and MWDOC Director Sat Tamaribuchi held several meetings on the California Water Fix Eco Restore issues with MET staff and with staff from OC Coastkeeper. Additional meetings will be held to help bring in environmental support for the WaterFix Project.
				Karl Seckel and Director Sat Tamaribuchi attended the Summer Issues Session for the California Council for Economic and Environmental Balance (CCEEB). The meeting provides a forum for discussion of California Water Issues and other pressing State policy issues with key persons from throughout the State in a setting where dialogue and solutions are desired.
				Karl Seckel and MWDOC Director Susan Hinman attended the regular and special meetings of the San Juan Basin Authority. A detailed report on the special meeting is included in the packet.

Status of Ongoing WEROC Projects
June 2016

Description	Comments
Coordination with Member Agencies	Orange County Water Procurement and Distribution Planning Update – Efforts to date: - County-wide Planning Meetings: February 25, April 20th - Tools Developed: Water Utility Water Distribution Template, City Water Distribution Template, Point of Distribution (POD) Site Evaluation Checklist, draft outreach materials, and a POD Supplies Checklist. - Presentations: MWDOC's A&F Committee, the MWDOC Member Agency Manager's meeting and the Orange County Emergency Management Organization (OCEMO) - Working Group Meetings (8 groups) – 5 UPDATE: This month Kelly Hubbard facilitated the kick off meetings for 3 working groups. Agencies in attendance is notated below. July 13 (Hosted by ETWD) – Orange County Sheriff's Department Emergency Management Division (OCSD EMD), Moulton Niguel Water District, El Toro Water District, City of Laguna Woods, City of Laguna Hills, Santa Margarita Water District (SMWD), City of Aliso Viejo, and City of Mission Viejo July 13 (Hosted by City of Newport Beach) – Irvine Ranch Water District, Mesa Water District, City of Newport Beach (Water and Emergency Management), City of Irvine, OCSD EMD July 18 (Hosted by SMWD) – City of San Clemente, SMWD, OCSD EMD, Trabuco Canyon Water District Additionally, Kelly provided a special presentation on the POD planning to the OCEMO Disabilities, Access and Functional Needs (DAFN) Working group and facilitated a discussion about planning considerations for OC residents with disabilities, access and functional needs. Great suggestions were discussed and will be included in the planning efforts. Kelly attended the July 11th IRWD Board Meeting. IRWD staff presented on the Fuel Trailer Grant project that WEROC is leading. Kelly was available for questions. Kelly met with OCWD staff to discuss updating their Emergency Operations Center (EOC)

Description	Comments
	organizational structure and staffing. Kelly provided guidance on how to structure their response staff to comply with NIMS and SEMS, but still be a concept that works well for them as an agency.
Coordination with the County of Orange	Kelly attended the OCEMO Communications Committee meeting which discussed radio operations, WebEOC and AlertOC. Attendees discussed challenges with the transition process to the new AlertOC computer operations system and troubleshot issues as a group. Additionally the County announced new training dates for AlertOC users and the updates in WebEOC. Kelly attended the Orange County Emergency Management Organization (OCEMO) monthly meeting which included speakers on mutual aid during the Waterman incident (San Bernardino Mass Shooting), Edison summer outlook and exercise planning. Kelly worked with MNWD to host an OCEMO training that include “How to do Exercises?” and an EOC Training the Trainer course. An attendee list is not available at this time.
Coordination with Outside Agencies	Kelly has now participated in two state-wide Emergency Management Mutual Aid (EMMA) Plan Review conference calls. This is the plan which Kelly had deployed to Lake County under and it had many challenges and lessons learned. The clean-up of this document will help all government agencies, including water utilities, in future large scale events. Kelly met with Orange County Fire Authority (OCFA) Fire Chief Jeff Bowman, Assistant Chief of Operations Dave Thomas, and Assistant Chief of Organizational Planning Brian Young. Kelly requested the meeting to discuss concerns with the fire season and ensuring coordination with water utilities. Kelly provided the Chief an overview of the WEROC program, recent planning efforts and coordination gaps from past events. The group agreed upon a communications protocol for the water utilities to communicate critical infrastructure information to fire agencies during an urban-wildland fire. Additionally, Kelly has been invited to present at an upcoming OCFA Operations Meeting and an Orange County Fire Agencies Operations Meeting to share similar information with the operations staff of all the fire agencies in Orange County.

Description	Comments
WEROC Emergency Operations Center (EOC) Readiness	Shenandoah has been with contractors at both EOC's to facilitate ATT phone line repair, EOC cleanings and fire extinguisher service. Kelly conducted the bi-monthly WEROC Radio Test from the Fountain Valley offices. The radio communications had a lot of static this month. This will be evaluated and addressed. Staff participated in the OC Operational Area Radio Test. The MARS radio test conflicted with another meeting this month. Karl Seckel and Kelly met with Claris Strategies, Inc. to kick-off the WEROC EOC Assessment. William Liam and Brent Woodworth provided staff with an overview of their professional background and how that relates to the WEROC EOC assessment. They also facilitated a detailed discussion about the objectives of the project, information needed to start their assessment and processes moving forward to complete the assessment. Kelly will be providing them with an extensive amount of background documentation regarding the facilities, the WEROC program, historical response activity, and program budget information. Facility site visits have been scheduled and partner agencies, such as the building owners will be asked to participate in these visits.

Status of Water Use Efficiency Projects

July 2016

Description	Lead Agency	Status % Complete	Scheduled Completion or Renewal Date	Comments
Smart Timer Rebate Program	MWDSC	Ongoing	Ongoing	For May 2016, 208 residential and 2,645 commercial smart timers were installed in Orange County. For program water savings and implementation information, see MWDOC Water Use Efficiency Program Savings and Implementation Report.
Rotating Nozzles Rebate Program	MWDSC	Ongoing	Ongoing	For May 2016, 4,906 rotating nozzles were installed in Orange County. For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.
Water Smart Landscape Program	MWDOC	On-going	On hold pending evaluation and RFP process	This Program is currently on hold while a Process and Impact Evaluation is conducted. Once the Evaluation is complete, the results will be used to make refinements to the Program. For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.
SoCal Water$mart Residential Indoor Rebate Program	MWDSC	On-going	On-going	In June 2016, 512 high efficiency clothes washers, 24 high efficiency toilets, and 43 premium high efficiency toilets were installed through this program. For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.

SoCal Water$mart Commercial Rebate Program	MWDSC	On-going	On-going	In June 2016, 132 high efficiency toilets, 90 multi-family high efficiency toilets, and 406 premium high efficiency toilets, were installed through this program. For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.
Industrial Process Water Use Reduction Program	MWDOC	95%	September 2016	A total of 41 Focused Surveys and 19 Comprehensive Surveys have been completed or are in progress. To date, 15 companies have signed Incentive Agreements. Updated discharger lists have been obtained, and outreach is continuing to sites with feasible water savings potential. As a result of this program, 359 AFY of water savings is being achieved.
MWDOC Conservation Meeting	MWDOC	On-going	Monthly	This month's meeting was held on July 7, 2016 at the City of San Clemente. The next meeting will be on August 4, 2016 at the Santa Margarita Water District.
Metropolitan Conservation Meeting	MWDSC	On-going	Monthly	This month's meeting was held on July 21, 2016. The next meeting will be August 4, 2016 at Metropolitan.
Turf Removal Program	MWDOC	On-going	On-going	In June 2016, 678 rebates were paid, representing $3,128,525.96 in rebates paid this month in Orange County. To date, the Turf Removal Program has removed approximately 20 million square feet of turf. For program savings and implementation information, please see MWDOC Water Use Efficiency Program Savings and Implementation Report.
California Sprinkler Adjustment Notification System – Base Irrigation Schedule Calculator	MWDOC	On-going	On-going	The California Sprinkler Adjustment Notification System (CSANS) will e-mail or "push" an irrigation index to assist property owners with making global irrigation scheduling adjustments. Participants voluntarily register to receive this e-mail at www.csans.net and can unsubscribe at any time. Through a grant from the Department of Water Resources (DWR) to the California Urban Water Conservation Council, the East Bay Municipal Utility District and Bay Area Water

California Sprinkler Adjustment Notification System – Base Irrigation Schedule Calculator (cont.)				Supply and Conservation Agency are now enrolled in CSANS. Once this has been completed, staff will be pursuing DWR for administration of CSANS state-wide. The following member agencies have recently requested access to the CSANS to administer their own messages to their customers: City of Brea, Mesa Water District, City of San Juan Capistrano, and Laguna Beach County WD. MWDOC will work with these agencies over the next month to transition administration of CSANS to these agencies. All other agencies are currently receiving educational messages administered by MWDOC.
Spray to Drip Conversion Program	MWDOC	75%	October 2017	This is a pilot program designed to test the efficacy of replacing conventional spray heads in shrub beds with low-volume, low-precipitation drip technology. Through a rebate program format, residential and commercial sites will be encouraged to convert their existing spray nozzles to drip. To date, 193 residential sites and 52 commercial sites have completed spray to drip conversion projects.

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	Annual Water Savings[4]	Cumulative Water Savings[4]
High Efficiency Clothes Washer Program	2001	June-16	512	1.47	5,392	101.97	108,759	3,752	20,810
Smart Timer Program - Irrigation Timers	2004	May-16	2,853	142.82	4,269	328.36	17,336	6,734	31,012
Rotating Nozzles Rebate Program	2007	May-16	4,906	19.62	60,323	1,336.44	521,193	2,591	9,889
SoCal Water$mart Commercial Plumbing Fixture Rebate Program	2002	June-16	628	1.71	20,689	275.80	68,855	3,518	34,677
Water Smart Landscape Program [1]	1997	November-15	12,677	904.62	12,677	3,615.21	12,677	10,621	72,668
Industrial Process Water Use Reduction Program	2006	June-16	0	11.41	1	11.41	15	359	1,720
Turf Removal Program[3]	2010	June-16	1,966,248	22.93	12,508,996	780	20,026,669	2,804	4,332
High Efficiency Toilet (HET) Program	2005	June-16	67	0.24	12,240	520.64	58,514	2,163	11,615
Home Water Certification Program	2013	November-15	0	0.000	53	0.251	312	7.339	15.266
Synthetic Turf Rebate Program	2007						685,438	96	469
Ultra-Low-Flush-Toilet Programs [2]	1992						363,926	13,452	162,561
Home Water Surveys [2]	1995						11,867	160	1,708
Showerhead Replacements [2]	1991						270,604	1,667	19,083
Total Water Savings All Programs				**1,105**	**12,624,640**	**6,970**	**22,146,165**	**47,925**	**370,559**

[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.

HIGH EFFICIENCY CLOTHES WASHERS INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 06/07	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY13/14	FY14/15	FY15/16	Total	Current FY Water Savings Ac/Ft (Cumulative)	Cumulative Water Savings across all Fiscal Years	15 yr. Lifecycle Savings Ac/Ft
Brea	132	175	156	42	186	144	93	115	114	76	1,810	1.65	348.04	937
Buena Park	85	114	146	59	230	145	105	106	91	76	1,464	1.20	264.92	758
East Orange CWD RZ	18	22	17	3	23	10	10	8	8	8	189	0.17	38.34	98
El Toro WD	91	113	130	32	162	112	134	121	111	65	1,474	1.31	268.71	763
Fountain Valley	205	219	243	72	289	158	115	102	110	76	2,335	1.56	468.89	1,208
Garden Grove	238	304	332	101	481	236	190	162	165	251	3,436	3.01	649.14	1,778
Golden State WC	339	401	447	168	583	485	265	283	359	260	4,877	5.01	914.64	2,523
Huntington Beach	761	750	751	211	963	582	334	295	319	225	8,066	4.34	1,653.99	4,174
Irvine Ranch WD	1,972	2,052	1,844	1,394	2,621	2,170	1,763	1,664	1,882	1,505	23,277	29.64	4,189.68	12,044
La Habra	96	136	83	22	179	128	82	114	87	66	1,274	1.18	231.69	659
La Palma	33	35	51	25	76	46	34	25	34	29	448	0.51	79.57	232
Laguna Beach CWD	57	77	77	27	96	57	38	37	39	32	913	0.81	181.34	472
Mesa Water	239	249	246	73	232	176	114	86	89	113	2,438	1.66	501.64	1,261
Moulton Niguel WD	652	716	742	250	1,127	679	442	421	790	686	9,344	14.45	1,703.78	4,835
Newport Beach	245	270	259	57	197	142	116	92	95	66	2,563	1.55	541.95	1,326
Orange	366	365	403	111	349	262	218	163	160	124	3,818	2.47	784.14	1,976
Orange Park Acres	4	8	-	-	-	-	-	-	-	-	12	0.00	3.09	6
San Juan Capistrano	109	103	127	43	190	110	76	73	92	63	1,426	1.42	272.08	738
San Clemente	204	261	278	63	333	206	140	94	141	75	2,550	1.65	495.82	1,319
Santa Margarita WD	654	683	740	257	1,105	679	553	662	792	460	9,143	9.66	1,668.95	4,731
Seal Beach	47	46	57	7	81	51	31	29	38	23	593	0.52	113.53	307
Serrano WD	30	31	23	7	21	20	13	10	26	8	346	0.17	72.01	179
South Coast WD	107	130	148	43	183	112	89	79	68	43	1,540	0.99	298.01	797
Trabuco Canyon WD	69	60	62	28	82	62	30	45	47	34	770	0.77	147.05	398
Tustin	152	146	144	45	174	97	78	59	80	66	1,568	1.31	315.56	811
Westminster	213	171	233	74	329	208	121	82	109	149	2,502	1.88	484.84	1,295
Yorba Linda	288	350	367	117	394	273	181	167	156	123	3,696	2.66	752.13	1,912
MWDOC Totals	7,406	7,987	8,106	3,331	10,686	7,350	5,365	5,094	6,002	4,702	91,872	91.56	17,443.55	17,749
Anaheim	854	847	781	860	910	477	331	285	295	266	10,469	4.63	2,142.57	5,417
Fullerton	269	334	330	69	397	270	200	186	211	165	3,588	2.99	647.37	1,857
Santa Ana	236	235	257	87	355	190	163	131	132	259	2,830	2.79	576.70	1,464
Non-MWDOC Totals	1,359	1,416	1,368	1,016	1,662	937	694	602	638	690	16,887	10.41	3,366.64	3,262
Orange County Totals	8,765	9,403	9,474	4,347	12,348	8,287	6,059	5,696	6,640	5,392	108,759	101.97	20,810.19	21,012

SMART TIMERS INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 08/09		FY 09/10		FY 10/11		FY 11/12		FY 12/13		FY 13/14		FY 14/15		FY 15/16		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	Res	Comm.	
Brea	3	9	0	0	2	0	8	0	9	8	4	0	43	6	20	4	100	76	401.61
Buena Park	3	1	0	0	0	0	4	19	3	0	0	0	4	10	6	4	20	34	88.71
East Orange CWD RZ	0	0	0	0	1	0	5	0	2	0	0	0	2	0	1	0	14	0	3.60
El Toro WD	0	25	2	18	5	5	26	2	7	2	11	0	8	9	8	17	81	347	1,987.66
Fountain Valley	1	0	0	6	2	2	8	2	3	2	4	0	7	10	12	1	57	28	116.13
Garden Grove	2	1	6	0	5	4	7	0	5	2	9	0	10	14	11	11	71	38	112.21
Golden State WC	1	2	9	22	7	4	13	3	9	49	9	25	39	12	33	15	167	154	531.64
Huntington Beach	13	1	6	27	6	36	15	4	18	33	20	35	19	2	41	11	183	173	674.17
Irvine Ranch WD	29	56	14	145	28	153	267	71	414	135	71	59	67	310	227	207	1,413	1,866	8,073.13
La Habra	0	0	0	21	0	0	3	0	4	7	2	0	4	7	3	1	24	37	140.48
La Palma	0	0	0	0	0	0	1	0	1	0	2	0	2	0	2	2	8	2	2.32
Laguna Beach CWD	2	0	2	14	4	1	109	2	76	2	71	0	86	0	84	1	468	20	162.07
Mesa Water	6	7	13	7	7	22	21	0	10	2	15	2	17	28	35	12	168	113	496.13
Moulton Niguel WD	21	23	17	162	36	60	179	31	51	74	40	45	46	95	158	92	673	664	2,406.23
Newport Beach	10	27	7	58	6	0	275	12	242	26	168	75	11	9	28	43	1,008	397	1,968.78
Orange	5	2	2	13	5	8	25	0	20	24	13	9	18	31	49	13	214	155	678.80
San Juan Capistrano	10	0	7	49	13	1	103	2	14	18	6	11	6	19	18	8	198	117	453.41
San Clemente	81	20	13	209	46	11	212	17	26	7	28	2	28	24	23	3	1,011	361	2,054.69
Santa Margarita WD	25	44	10	152	61	53	262	7	53	171	64	93	53	321	173	68	812	1,083	3,617.35
Santiago CWD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Seal Beach	0	0	0	1	0	0	0	3	1	0	1	36	1	12	2	2,446	5	2,498	1,750.58
Serrano WD	0	0	11	0	4	0	3	0	1	0	0	0	4	0	11	2	34	2	7.76
South Coast WD	11	6	3	10	13	3	78	10	13	16	8	4	104	73	9	11	271	212	836.52
Trabuco Canyon WD	1	0	2	0	2	10	12	0	6	0	2	0	6	1	15	50	89	154	729.34
Tustin	7	9	10	14	10	0	11	0	8	4	9	1	18	14	30	8	107	57	218.02
Westminster	3	0	3	0	1	1	2	0	1	1	2	0	13	17	7	1	48	32	131.74
Yorba Linda	8	5	5	21	25	0	22	0	20	0	12	5	32	2	58	23	263	108	545.98
MWDOC Totals	242	238	142	949	289	374	1,671	185	1,017	583	571	402	648	1,026	1,064	3,054	7,507	8,728	28,189.04
Anaheim	9	59	5	46	12	11	23	60	19	10	9	26	7	52	29	34	156	447	1,968.29
Fullerton	2	2	2	39	9	33	22	51	9	29	8	0	40	26	28	12	142	192	647.09
Santa Ana	2	4	1	8	8	0	6	5	8	19	7	8	9	27	22	26	67	97	207.88
Non-MWDOC Totals	13	65	8	93	29	44	51	116	36	58	24	34	56	105	79	72	365	736	2,823.25
Orange County Totals	255	303	150	1,042	318	418	1,722	301	1,053	641	595	436	704	1,131	1,143	3,126	7,872	9,464	31,012

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

Agency	FY 10/11			FY 11/12			FY 12/13			FY 13/14			FY 14/15			FY 15/16			Total Program			Cumulative Water Savings across all Fiscal Years
	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	Small		Large	
	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	Res	Comm.	Comm.	
Brea	32	0	0	130	0	0	65	120	0	84	0	0	157	45	0	74	2,484	0	572	2,749	0	20.57
Buena Park	29	0	0	32	0	0	65	0	0	53	0	0	248	0	0	45	98	0	509	173	2,535	451.38
East Orange	0	0	0	340	0	0	55	0	0	30	0	0	221	0	0	0	0	0	751	0	0	9.60
El Toro	174	0	0	357	76	0	23	6,281	0	56	3,288	0	1,741	28,714	0	730	4,457	0	3,314	45,980	890	638.35
Fountain Valley	83	0	0	108	0	0	35	0	0	0	0	0	107	0	0	222	0	0	710	0	0	8.76
Garden Grove	38	0	0	119	0	0	95	0	0	80	0	0	88	50	0	110	0	0	878	201	0	17.42
Golden State	303	943	0	294	0	0	257	2,595	0	192	0	0	583	1,741	0	1,088	0	0	3,241	5,308	0	106.98
Huntington Beach	203	625	0	458	0	0	270	0	0	120	0	0	798	1,419	0	1,345	2,836	0	3,648	9,164	2,681	756.92
Irvine Ranch	2,411	2,861	0	1,715	4,255	0	25,018	1,014	0	11,010	4,257	0	1,421	632	0	1,917	5,047	0	46,730	85,050	2,004	2,679.09
La Habra	0	0	0	33	90	0	0	0	0	15	0	0	109	338	0	300	0	0	481	1,236	900	218.61
La Palma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	505	0	56	505	0	2.44
Laguna Beach	156	0	0	763	0	0	3,596	0	0	2,948	878	0	2,879	1,971	0	1,390	0	0	12,139	2,896	0	169.98
Mesa Water	118	0	0	297	277	0	270	0	0	361	0	0	229	0	0	166	0	0	1,917	385	343	117.61
Moulton Niguel	1,578	0	0	1,225	0	0	512	1,385	0	361	227	0	1,596	4,587	0	5,492	1,441	0	11,721	14,643	2,945	931.05
Newport Beach	337	1,208	0	640	3,273	0	25,365	50	0	19,349	6,835	0	460	3,857	0	348	670	0	46,678	21,413	0	950.38
Orange	135	30	0	343	0	0	264	0	0	245	120	0	304	668	0	631	91	0	3,170	1,072	0	59.98
San Clemente	2,612	851	0	4,266	117	1,343	631	172	0	415	5,074	0	326	0	0	426	0	0	9,989	7,538	1,343	387.59
San Juan Capistrano	1,452	0	0	949	0	0	684	30	0	370	0	0	495	737	0	310	593	0	5,420	8,729	0	243.37
Santa Margarita	3,959	3,566	0	4,817	0	0	983	0	0	389	0	0	1,207	1,513	0	1,727	837	0	16,057	6,921	611	422.91
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	0	40	5,261	0	0	2,300	0	155	7,852	0	60.16
Serrano	364	0	0	58	0	0	190	0	0	105	0	0	377	0	0	695	0	0	3,405	0	0	49.76
South Coast	318	1,772	0	688	359	0	435	0	0	70	0	0	4,993	13,717	0	1,421	2,889	0	8,114	18,870	0	229.18
Trabuco Canyon	0	0	0	379	0	0	34	0	0	0	0	0	56	0	0	130	0	0	2,086	791	0	52.64
Tustin	512	0	0	476	1,013	0	378	0	0	329	0	0	408	0	0	317	386	0	3,306	1,399	0	62.21
Westminster	0	0	0	26	0	0	15	0	0	0	0	0	54	0	0	73	0	0	359	0	0	5.54
Yorba Linda	529	0	0	559	0	0	730	0	0	40	990	0	921	0	0	1,715	0	0	5,868	4,359	500	259.95
MWDOC Totals	15,343	11,856	0	19,072	9,460	1,343	59,970	11,647	0	36,622	21,669	0	19,818	65,250	0	20,718	24,634	0	191,274	247,234	14,752	8,912.43
Anaheim	372	382	0	742	38,554	0	459	813	0	338	0	0	498	712	0	794	5,221	0	3,873	45,846	105	578.44
Fullerton	416	0	0	409	0	0	119	0	0	107	0	0	684	1,196	0	521	7,015	0	2,845	8,275	1,484	335.46
Santa Ana	53	0	0	22	65	0	99	0	0	86	2,533	0	310	0	0	0	1,420	0	859	4,646	0	63.15
Non-MWDOC Totals	841	382	0	1,173	38,619	0	677	813	0	531	2,533	0	1,492	1,908	0	1,315	13,656	0	7,577	58,767	1,589	977.05
Orange County Totals	16,184	12,238	0	20,245	48,079	1,343	60,647	12,460	0	37,153	24,202	0	21,310	67,158	0	22,033	38,290	0	198,851	306,001	16,341	9,889.48

SOCAL WATER$MART COMMERCIAL PLUMBING FIXTURES REBATE PROGRAM[1]
INSTALLED BY AGENCY
through MWDOC and Local Agency Conservation Programs

Agency	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Totals	Cumulative Water Savings across all Fiscal Years
Brea	27	113	24	4	1	234	0	10	91	**631**	**348**
Buena Park	153	432	122	379	290	5	23	56	591	**2,356**	**934**
East Orange CWD RZ	0	0	0	0	0	0	0	0	0	**0**	**0**
El Toro WD	0	92	143	1	137	0	212	6	268	**1,027**	**519**
Fountain Valley	17	35	0	2	314	0	0	1	249	**872**	**523**
Garden Grove	5	298	130	22	0	4	1	167	676	**2,041**	**1,323**
Golden State WC	46	414	55	68	135	0	1	0	1,008	**2,812**	**1,708**
Huntington Beach	48	104	126	96	156	104	144	7	783	**2,313**	**1,377**
Irvine Ranch WD	121	789	2,708	1,002	646	1,090	451	725	9,673	**20,481**	**6,125**
La Habra	191	75	53	4	0	0	0	0	340	**883**	**487**
La Palma	0	140	21	0	0	0	0	0	0	**166**	**74**
Laguna Beach CWD	20	137	189	0	0	0	27	0	0	**446**	**281**
Mesa Water	141	543	219	669	41	6	0	79	661	**3,472**	**1,831**
Moulton Niguel WD	9	69	151	6	0	0	0	3	413	**996**	**735**
Newport Beach	98	27	245	425	35	0	0	566	0	**1,834**	**1,144**
Orange	18	374	67	1	73	1	271	81	275	**2,179**	**1,568**
San Juan Capistrano	2	1	1	0	0	0	14	0	0	**260**	**367**
San Clemente	2	18	43	0	19	0	0	1	0	**432**	**350**
Santa Margarita WD	6	23	11	0	0	0	0	2	90	**207**	**186**
Santiago CWD	0	0	0	0	0	0	0	0	0	**0**	**0**
Seal Beach	1	2	124	0	0	0	0	0	0	**354**	**383**
Serrano WD	0	0	0	0	0	0	0	0	0	**0**	**0**
South Coast WD	9	114	56	422	84	148	0	382	0	**1,320**	**441**
Trabuco Canyon WD	0	4	0	0	0	0	0	0	0	**11**	**14**
Tustin	115	145	25	230	0	0	0	75	358	**1,190**	**731**
Westminster	40	161	16	63	35	1	28	0	146	**961**	**903**
Yorba Linda	10	24	8	30	0	1	0	0	226	**511**	**501**
MWDOC Totals	**1,079**	**4,134**	**4,537**	**3,424**	**1,966**	**1,594**	**1,172**	**2,161**	**15,848**	**47,755**	**22,851**
Anaheim	766	3,298	582	64	48	165	342	463	3,072	**13,444**	**6,177**
Fullerton	133	579	29	4	0	94	0	178	476	**2,157**	**1,443**
Santa Ana	493	815	728	39	12	16	17	5	1,293	**5,499**	**4,205**
Non-MWDOC Totals	**1,392**	**4,692**	**1,339**	**107**	**60**	**275**	**359**	**646**	**4,841**	**21,100**	**11,825**
Orange County Totals	**2,471**	**8,826**	**5,876**	**3,531**	**2,026**	**1,869**	**1,531**	**2,807**	**20,689**	**68,855**	**34,677**

[1] Retrofit devices include ULF Toilets and Urinals, High Efficiency Toilets and Urinals, Multi-Family and Multi-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.

Water Smart Landscape Program

Total Number of Meters in Program by Agency

Agency	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	Overall Water Savings To Date (AF)
Brea	0	0	0	0	0	22	22	22	22	22	64.37
Buena Park	0	0	0	17	103	101	101	101	101	101	462.69
East Orange CWD RZ	0	0	0	0	0	0	0	0	0	0	0.00
El Toro WD	227	352	384	371	820	810	812	812	812	812	4,856.93
Fountain Valley	0	0	0	0	0	0	0	0	0	0	0.00
Garden Grove	0	0	0	0	0	0	0	0	0	0	0.00
Golden State WC	0	14	34	32	34	32	32	32	32	32	200.59
Huntington Beach	0	0	0	31	33	31	31	31	31	31	148.43
Irvine Ranch WD	646	708	1,008	6,297	6,347	6,368	6,795	6,797	6,769	6,780	38,304.89
Laguna Beach CWD	0	0	57	141	143	141	124	124	124	124	733.07
La Habra	0	0	23	22	24	22	22	22	22	22	136.72
La Palma	0	0	0	0	0	0	0	0	0	0	0.00
Mesa Water	138	165	286	285	288	450	504	511	514	515	2,943.57
Moulton Niguel WD	113	180	473	571	595	643	640	675	673	661	4,120.71
Newport Beach	23	58	142	171	191	226	262	300	300	300	1,501.19
Orange	0	0	0	0	0	0	0	0	0	0	0.00
San Clemente	204	227	233	247	271	269	269	299	407	459	2,368.77
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0.00
Santa Margarita WD	618	945	1,571	1,666	1,746	1,962	1,956	2,274	2,386	2,386	14,178.10
Seal Beach	0	0	0	0	0	0	0	0	0	0	0.00
Serrano WD	0	0	0	0	0	0	0	0	0	0	0.00
South Coast WD	0	62	117	108	110	118	118	118	164	164	829.91
Trabuco Canyon WD	0	12	49	48	62	60	60	60	60	60	350.52
Tustin	0	0	0	0	0	0	0	0	0	0	0.00
Westminster	0	10	18	18	20	18	18	18	18	18	116.46
Yorba Linda WD	0	0	0	0	0	0	0	0	0	0	0.00
MWDOC Totals	**1,969**	**2,733**	**4,395**	**10,025**	**10,787**	**11,273**	**11,766**	**12,196**	**12,435**	**12,487**	**71,316.9**
Anaheim	0	0	0	142	146	144	190	190	190	190	1,351.53
Fullerton	0	0	0	0	0	0	0	0	0	0	0.00
Santa Ana	0	0	0	0	0	0	0	0	0	0	0.00
Non-MWDOC Totals	**0**	**0**	**0**	**142**	**146**	**144**	**190**	**190**	**190**	**190**	**1,351.53**
Orange Co. Totals	**1,969**	**2,733**	**4,395**	**10,167**	**10,933**	**11,417**	**11,956**	**12,386**	**12,625**	**12,677**	**72,668.45**

INDUSTRIAL PROCESS WATER USE REDUCTION PROGRAM

Number of Process Changes by Agency

Agency	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	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	0
Buena Park	0	1	0	0	0	0	0	0	0	1	54	405
East Orange	0	0	0	0	0	0	0	0	0	0	0	0
El Toro	0	0	0	0	0	0	0	0	0	0	0	0
Fountain Valley	0	0	0	0	0	0	0	0	0	0	0	0
Garden Grove	0	0	0	0	0	0	0	0	0	0	0	0
Golden State	1	0	0	0	0	0	0	0	0	1	3	24
Huntington Beach	0	0	0	0	0	2	0	1	0	3	127	329
Irvine Ranch	0	0	2	1	1	1	1	0	0	6	98	439
La Habra	0	0	0	0	0	0	0	0	0	0	0	0
La Palma	0	0	0	0	0	0	0	0	0	0	0	0
Laguna Beach	0	0	0	0	0	0	0	0	0	0	0	0
Mesa Water	0	0	0	0	0	0	0	0	0	0	0	0
Moulton Niguel	0	0	0	0	0	0	0	0	0	0	0	0
Newport Beach	0	0	0	0	0	0	0	1	0	1	21	34
Orange	1	0	0	0	0	0	0	0	1	2	45	364
San Juan Capistrano	0	0	0	0	0	0	0	0	0	0	0	0
San Clemente	0	0	0	0	0	0	0	0	0	0	0	0
Santa Margarita	0	0	0	0	0	0	0	0	0	0	0	0
Seal Beach	0	0	0	0	0	0	0	0	0	0	0	0
Serrano	0	0	0	0	0	0	0	0	0	0	0	0
South Coast	0	0	0	0	0	0	0	0	0	0	0	0
Trabuco Canyon	0	0	0	0	0	0	0	0	0	0	0	0
Tustin	0	0	0	0	0	0	0	0	0	0	0	0
Westminster	0	0	0	0	0	0	0	0	0	0	0	0
Yorba Linda	0	0	0	0	0	0	0	0	0	0	0	0
MWDOC Totals	2	1	2	1	1	3	1	2	0	14	348	1596
Anaheim	0	0	0	0	0	0	0	0	0	0	0	0
Fullerton	0	0	0	0	0	0	0	0	0	0	0	0
Santa Ana	0	0	0	0	0	0	0	0	1	1	11	124
OC Totals	2	1	2	1	1	3	1	2	1	15	359	1720

[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 11/12		FY 12/13		FY 13/14		FY 14/15		FY 15/16		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	3,397	9,466	7,605	0	5,697	0	71,981	30,617	118,930	404,411	207,610	444,494	**117.65**
Buena Park	0	0	0	0	0	0	11,670	1,626	77,127	16,490	88,797	18,116	**16.83**
East Orange	0	0	0	0	1,964	0	18,312	0	27,844	0	48,120	0	**9.85**
El Toro	4,723	0	4,680	72,718	4,582	0	27,046	221,612	63,546	162,548	104,577	456,878	**149.85**
Fountain Valley	1,300	0	682	7,524	4,252	0	45,583	5,279	65,232	0	117,049	12,803	**30.66**
Garden Grove	14,013	0	4,534	0	8,274	0	67,701	22,000	177,408	49,226	271,930	117,403	**111.45**
Golden State	42,593	30,973	31,813	3,200	32,725	8,424	164,507	190,738	310,264	112,937	581,902	346,272	**247.10**
Huntington Beach	27,630	48,838	9,219	12,437	20,642	0	165,600	58,942	305,420	270,303	529,312	394,171	**221.53**
Irvine Ranch	6,450	1,666	32,884	32,384	36,584	76,400	234,905	317,999	782,844	2,675,629	1,099,090	3,116,872	**743.97**
La Habra	0	8,262	0	0	0	0	14,014	1,818	49,691	72,164	63,705	90,019	**33.81**
La Palma	0	0	0	0	0	0	4,884	0	10,257	59,760	15,141	59,760	**11.17**
Laguna Beach	2,533	0	2,664	1,712	4,586	226	13,647	46,850	47,614	0	72,022	48,788	**30.67**
Mesa Water	6,777	0	10,667	0	22,246	0	131,675	33,620	220,815	106,896	392,180	140,516	**112.22**
Moulton Niguel	4,483	26,927	11,538	84,123	14,739	40,741	314,250	1,612,845	889,748	1,059,279	1,235,714	2,840,054	**925.65**
Newport Beach	3,454	0	3,548	2,346	894	0	33,995	65,277	76,675	375,404	118,566	443,027	**97.18**
Orange	12,971	0	15,951	8,723	11,244	0	120,093	281,402	289,990	106,487	450,249	396,612	**195.54**
San Clemente	21,502	0	16,062	13,165	18,471	13,908	90,349	1,137	215,249	438,963	361,633	467,173	**162.22**
San Juan Capistrano	22,656	103,692	29,544	27,156	12,106	0	101,195	32,366	197,290	143,315	362,791	306,529	**210.36**
Santa Margarita	1,964	11,400	10,151	11,600	17,778	48,180	211,198	514,198	534,048	550,420	779,622	1,141,359	**412.60**
Seal Beach	0	0	3,611	0	0	0	15,178	504	17,349	15,911	36,138	16,415	**11.07**
Serrano	0	0	0	0	2,971	0	41,247	0	127,877	4,403	172,095	4,403	**31.32**
South Coast	6,806	0	9,429	4,395	15,162	116,719	84,282	191,853	181,102	128,290	296,781	457,581	**202.24**
Trabuco Canyon	272	0	1,542	22,440	2,651	0	14,771	0	42,510	88,272	61,746	110,712	**37.18**
Tustin	0	0	9,980	0	1,410	0	71,285	14,137	232,697	33,362	315,372	47,499	**67.35**
Westminster	0	0	0	0	0	0	14,040	34,631	71,833	23,902	85,873	58,533	**27.03**
Yorba Linda	0	0	0	0	0	0	112,136	12,702	360,279	116,985	483,764	129,687	**111.30**
MWDOC Totals	**183,524**	**241,224**	**216,104**	**303,923**	**238,978**	**304,598**	**2,195,544**	**3,692,153**	**5,493,639**	**7,015,357**	**8,351,779**	**11,665,676**	**4,327.79**
Anaheim	0	0	0	0	0	0	0	0	0	0	0	0	**-**
Fullerton	0	0	0	0	0	9,214	0	0	0	0	0	9,214	**3.87**
Santa Ana	0	0	0	0	0	0	0	0	0	0	0	0	**-**
Non-MWDOC Totals	**0**	**0**	**0**	**0**	**0**	**9,214**	**0**	**0**	**0**	**0**	**0**	**9,214**	**3.87**
Orange County Totals	**183,524**	**241,224**	**216,104**	**303,923**	**238,978**	**313,812**	**2,195,544**	**3,692,153**	**5,493,639**	**7,015,357**	**8,351,779**	**11,674,890**	**4,332**

Installed device numbers are listed as square feet

HIGH EFFICIENCY TOILETS (HETs) INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	Total	Cumulative Water Savings across all Fiscal Years
Brea	0	2	7	43	48	8	0	0	38	146	154	446	**58.35**
Buena Park	0	1	2	124	176	7	0	0	96	153	112	671	**127.68**
East Orange CWD RZ	0	0	10	12	1	0	0	0	13	26	24	86	**13.11**
El Toro WD	0	392	18	75	38	18	0	133	218	869	264	2,025	**350.86**
Fountain Valley	0	69	21	262	54	17	0	0	41	132	220	816	**172.87**
Garden Grove	0	14	39	443	181	24	0	0	63	350	363	1,477	**285.06**
Golden State WC	2	16	36	444	716	37	80	2	142	794	512	2,781	**520.33**
Huntington Beach	2	13	59	607	159	76	0	0	163	1,190	628	2,897	**451.34**
Irvine Ranch WD	29	1,055	826	5,088	2,114	325	0	1,449	810	1,777	2,781	16,254	**3,843.76**
Laguna Beach CWD	0	2	17	91	28	11	0	0	45	112	81	387	**68.22**
La Habra	0	3	18	296	34	20	0	0	37	94	83	585	**140.44**
La Palma	0	1	10	36	26	13	0	0	21	59	52	218	**37.49**
Mesa Water	0	247	19	736	131	7	0	0	147	162	162	1,611	**443.25**
Moulton Niguel WD	0	20	104	447	188	46	0	0	400	2,497	1,938	5,640	**614.38**
Newport Beach	0	5	19	163	54	13	0	0	49	168	243	714	**115.21**
Orange	1	20	62	423	79	40	0	1	142	978	416	2,162	**329.75**
San Juan Capistrano	0	10	7	76	39	11	0	0	35	140	202	520	**72.22**
San Clemente	0	7	22	202	66	21	0	0	72	225	246	861	**144.02**
Santa Margarita WD	0	5	14	304	151	44	0	0	528	997	1,099	3,142	**366.26**
Seal Beach	0	678	8	21	12	1	0	2	17	50	69	858	**312.30**
Serrano WD	2	0	1	13	5	0	0	0	2	40	55	118	**13.24**
South Coast WD	2	2	29	102	41	12	23	64	102	398	235	1,010	**135.59**
Trabuco Canyon WD	0	0	4	23	23	0	0	0	10	108	169	337	**33.88**
Tustin	0	186	28	387	479	17	0	0	64	132	201	1,494	**396.65**
Westminster	0	17	25	541	167	23	0	0	35	161	359	1,328	**290.08**
Yorba Linda WD	0	14	89	323	96	18	0	0	40	280	379	1,239	**228.29**
MWDOC Totals	38	2,779	1,494	11,282	5,106	809	103	1,651	3,330	12,038	11,047	49,677	**9,564.64**
Anaheim	0	255	78	2,771	619	114	0	0	156	1,188	614	5,795	**1,442.54**
Fullerton	0	4	28	286	60	23	0	0	61	293	286	1,041	**178.45**
Santa Ana	0	11	25	925	89	23	0	0	33	602	293	2,001	**429.51**
Non-MWDOC Totals	0	270	131	3,982	768	160	0	0	250	2,083	1,193	8,837	**2,050.50**
Orange County Totals	**38**	**3,049**	**1,625**	**15,264**	**5,874**	**969**	**103**	**1,651**	**3,580**	**14,121**	**12,240**	**58,514**	**11,615.14**

HOME WATER SURVEYS PERFORMED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	FY 13/14		FY 14/15		FY 15/16		Total		Cumulative
	Surveys	Cert Homes	Surveys	Cert Homes	Surveys	Cert Homes	Surveys	Cert Homes	Water Savings
Brea	1	0	2	0	0	0	3	0	0.16
Buena Park	0	0	1	0	0	0	1	0	0.05
East Orange	19	0	1	0	0	0	20	0	1.39
El Toro	0	0	3	0	0	0	3	0	0.14
Fountain Valley	3	0	4	0	1	0	8	0	0.42
Garden Grove	0	0	6	0	1	0	7	0	0.31
Golden State	0	0	0	0	0	0	0	0	0.00
Huntington Beach	2	0	5	0	2	0	9	0	0.42
Irvine Ranch	1	0	3	0	6	0	10	0	0.35
La Habra	0	0	1	0	0	0	1	0	0.05
La Palma	0	0	0	0	0	0	0	0	0.00
Laguna Beach	4	0	8	0	1	0	13	0	0.68
Mesa Water	0	0	0	0	0	0	0	0	0.00
Moulton Niguel	4	0	4	0	0	0	8	0	0.47
Newport Beach	2	0	8	0	6	0	16	0	0.66
Orange	2	0	18	0	1	0	21	0	1.01
San Clemente	15	0	13	0	0	0	28	0	1.67
San Juan Capistrano	4	0	13	0	2	0	19	0	0.94
Santa Margarita	15	0	40	1	14	0	69	1	3.27
Seal Beach	0	0	1	0	2	0	3	0	0.09
Serrano	0	0	2	0	0	0	2	0	0.09
South Coast	6	0	4	0	1	0	11	0	0.64
Trabuco Canyon	0	0	4	0	0	0	4	0	0.19
Tustin	0	0	10	0	5	0	15	0	0.59
Westminster	0	0	0	0	0	0	0	0	0.00
Yorba Linda	0	0	13	0	10	0	23	0	0.85
MWDOC Totals	78	0	164	1	52	0	294	1	14.44
Anaheim	0	0	0	0	0	0	0	0	0.00
Fullerton	0	0	17	0	1	0	18	0	0.82
Santa Ana	0	0	0	0	0	0	0	0	0.00
Non-MWDOC Totals	0	0	17	0	1	0	18	0	0.82
Orange County Totals	78	0	181	1	53	0	312	1	15.266

SYNTHETIC TURF INSTALLED BY AGENCY[1]

through MWDOC and Local Agency Conservation Programs

Agency	FY 07/08		FY 08/09		FY 09/10		FY 10/11		Total Program		Cumulative Water Savings across all Fiscal Years
	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	Res	Comm.	
Brea	0	0	2,153	2,160	500	0	0	0	2,653	2,160	3.30
Buena Park	0	0	1,566	5,850	0	0	0	0	1,566	5,850	5.19
East Orange	0	0	0	0	983	0	0	0	983	0	0.55
El Toro	3,183	0	2,974	0	3,308	0	895	0	10,360	0	6.98
Fountain Valley	11,674	0	1,163	0	2,767	0	684	0	16,288	0	12.46
Garden Grove	1,860	0	0	0	3,197	0	274	0	5,331	0	3.47
Golden State	6,786	0	13,990	0	15,215	0	2,056	0	38,047	0	24.88
Huntington Beach	15,192	591	12,512	0	4,343	1,504	0	0	32,047	2,095	25.29
Irvine Ranch	11,009	876	13,669	0	2,585	0	0	0	27,263	876	21.00
La Habra	0	0	0	0	0	0	0	0	0	0	-
La Palma	429	0	0	0	0	0	0	0	429	0	0.36
Laguna Beach	3,950	0	3,026	0	725	0	0	0	7,701	0	5.84
Mesa Water	4,114	0	3,005	78,118	4,106	0	2,198	0	13,423	78,118	63.46
Moulton Niguel	14,151	0	25,635	2,420	7,432	0	0	0	47,218	2,420	35.69
Newport Beach	2,530	0	6,628	0	270	0	0	0	9,428	0	6.92
Orange	4,169	0	7,191	0	635	0	0	0	11,995	0	8.89
San Clemente	9,328	0	11,250	455	2,514	1,285	500	0	23,592	1,740	18.37
San Juan Capistrano	0	0	7,297	639	2,730	0	4,607	0	14,634	639	9.02
Santa Margarita	12,922	0	26,069	0	21,875	0	7,926	0	68,792	0	44.68
Seal Beach	0	0	817	0	0	0	0	0	817	0	0.57
Serrano	7,347	0	1,145	0	0	0	0	0	8,492	0	6.97
South Coast	2,311	0	6,316	0	17,200	0	1,044	0	26,871	0	16.43
Trabuco Canyon	1,202	0	9,827	0	0	0	0	0	11,029	0	7.89
Tustin	6,123	0	4,717	0	2,190	0	0	0	13,030	0	9.67
Westminster	2,748	16,566	8,215	0	890	0	0	0	11,853	16,566	22.47
Yorba Linda	11,792	0	12,683	0	4,341	5,835	0	0	28,816	5,835	24.48
MWDOC Totals	132,820	18,033	181,848	89,642	97,806	8,624	20,184	0	432,658	116,299	384.83
Anaheim	4,535	0	7,735	20,093	13,555	65,300	4,122	0	29,947	85,393	69.18
Fullerton	4,865	876	5,727	0	6,223	0	105	0	16,920	876	12.36
Santa Ana	0	0	2,820	0	525	0	0	0	3,345	0	2.27
Non-MWDOC Totals	9,400	876	16,282	20,093	20,303	65,300	4,227	0	50,212	86,269	83.81
Orange County Totals	142,220	18,909	198,130	109,735	118,109	73,924	24,411	0	482,870	202,568	468.63

[1]Installed device numbers are calculated in square feet

ULF TOILETS INSTALLED BY AGENCY

through MWDOC and Local Agency Conservation Programs

Agency	Previous Years	FY 95-96	FY 96-97	FY 97-98	FY 98-99	FY 99-00	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	Total	Cumulative Water Savings across all Fiscal Years
Brea	378	189	299	299	122	144	867	585	341	401	26	48	17	4	0	**3,720**	**1,692.64**
Buena Park	361	147	331	802	520	469	524	1,229	2,325	1,522	50	40	18	9	0	**8,347**	**3,498.37**
East Orange CWD RZ	2	0	33	63	15	17	15	50	41	44	19	18	13	2	0	**332**	**138.23**
El Toro WD	1,169	511	678	889	711	171	310	564	472	324	176	205	61	40	0	**6,281**	**3,091.16**
Fountain Valley	638	454	635	858	1,289	2,355	1,697	1,406	1,400	802	176	111	58	32	0	**11,911**	**5,383.10**
Garden Grove	1,563	1,871	1,956	2,620	2,801	3,556	2,423	3,855	3,148	2,117	176	106	67	39	0	**26,298**	**12,155.41**
Golden State WC	3,535	1,396	3,141	1,113	3,024	2,957	1,379	2,143	3,222	1,870	167	116	501	43	0	**24,607**	**11,731.47**
Huntington Beach	3,963	1,779	2,600	2,522	2,319	3,492	3,281	2,698	3,752	1,901	367	308	143	121	0	**29,246**	**13,854.70**
Irvine Ranch WD	4,016	841	1,674	1,726	1,089	3,256	1,534	1,902	2,263	6,741	593	626	310	129	0	**26,700**	**11,849.23**
Laguna Beach CWD	283	93	118	74	149	306	220	85	271	118	32	26	29	6	0	**1,810**	**845.69**
La Habra	594	146	254	775	703	105	582	645	1,697	1,225	12	31	6	7	0	**6,782**	**2,957.73**
La Palma	65	180	222	125	44	132	518	173	343	193	31	27	20	17	0	**2,090**	**927.52**
Mesa Water	1,610	851	1,052	2,046	2,114	1,956	1,393	1,505	2,387	988	192	124	56	14	0	**16,288**	**7,654.27**
Moulton Niguel WD	744	309	761	698	523	475	716	891	728	684	410	381	187	100	0	**7,607**	**3,371.14**
Newport Beach	369	293	390	571	912	1,223	438	463	396	1,883	153	76	36	16	0	**7,219**	**3,166.77**
Orange	683	1,252	1,155	1,355	533	2,263	1,778	2,444	2,682	1,899	193	218	88	53	4	**16,600**	**7,347.93**
San Juan Capistrano	1,234	284	193	168	323	1,319	347	152	201	151	85	125	42	39	0	**4,663**	**2,324.42**
San Clemente	225	113	191	65	158	198	667	483	201	547	91	66	37	34	0	**3,076**	**1,314.64**
Santa Margarita WD	577	324	553	843	345	456	1,258	790	664	260	179	143	101	29	0	**6,522**	**3,001.01**
Seal Beach	74	66	312	609	47	155	132	81	134	729	29	10	6	12	0	**2,396**	**1,073.80**
Serrano WD	81	56	68	41	19	52	95	73	123	98	20	15	14	2	0	**757**	**338.66**
South Coast WD	110	176	177	114	182	181	133	358	191	469	88	72	32	22	0	**2,305**	**990.05**
Trabuco Canyon WD	10	78	42	42	25	21	40	181	102	30	17	20	12	14	0	**634**	**273.02**
Tustin	968	668	557	824	429	1,292	1,508	1,206	1,096	827	69	89	26	12	0	**9,571**	**4,423.88**
Westminster	747	493	969	1,066	2,336	2,291	2,304	1,523	2,492	1,118	145	105	70	24	0	**15,683**	**7,064.28**
Yorba Linda WD	257	309	417	457	404	1,400	759	1,690	1,155	627	158	136	81	41	0	**7,891**	**3,409.49**
MWDOC Totals	24,256	12,879	18,778	20,765	21,136	30,242	24,918	27,175	31,827	27,568	3,654	3,242	2,031	861	4	**249,336**	**113,878.61**
Anaheim	447	1,054	1,788	3,661	1,755	7,551	4,593	6,346	9,707	5,075	473	371	462	341	1	**43,625**	**18,359.52**
Fullerton	1,453	1,143	694	1,193	1,364	2,138	1,926	2,130	2,213	1,749	172	77	44	23	2	**16,321**	**7,435.23**
Santa Ana	1,111	1,964	1,205	2,729	2,088	8,788	5,614	10,822	10,716	9,164	279	134	25	5	0	**54,644**	**22,887.95**
Non-MWDOC Totals	3,011	4,161	3,687	7,583	5,207	18,477	12,133	19,298	22,636	15,988	924	582	531	369	3	**114,590**	**48,682.70**
Orange County Totals	27,267	17,040	22,465	28,348	26,343	48,719	37,051	46,473	54,463	43,556	4,578	3,824	2,562	1,230	7	**363,926**	**162,561.30**