

# Orange County WATER REUSE CALIFORNIA Chapter Newsletter

Spring/Summer 2013

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## NEXT MEETING

Thursday, June 20  
11:30 - 1:30 P.M.

## LOCATION:

Irvine Ranch Water District  
15600 Sand Canyon Ave  
Irvine, CA 92618

## MISSION STATEMENT:

To advance the beneficial and efficient uses of high-quality, locally produced, sustainable water sources for the betterment of society and the environment through advocacy, education, and outreach, research, and membership.

## Anaheim Water Sustainability Campus Water Recycling Demonstration Facility

by Debbie Burris | DDB Engineering, Inc.



The Water Sustainability Campus includes the Water Recycling Demonstration Facility and Waterwise Garden with a goal to educate the public on water conservation.

On May 7, 2013, the City of Anaheim dedicated the Anaheim Water Sustainability Campus, which is the first decentralized small-scale water recycling plant built in an urban environment in Southern California. Located next to City Hall, the Anaheim Water Sustainability Campus is comprised of the Water Recycling Demonstration Facility and Water-wise Garden along with rainwater harvesting and porous pavement.

The water recycling plant will treat up to 50,000 gallons per day (gpd) of wastewater diverted from a nearby sewer using fine screening, membrane

bioreactor treatment with ultrafiltration membranes, followed by ozone and ultraviolet light disinfection. Biosolids are returned to the sewer for downstream treatment. The plant features a granular activated carbon (GAC) odor control system with full redundancy to ensure odors are properly captured and treated.

Recycled water produced by the plant is used for landscape irrigation and toilet flushing at City Hall. The Anaheim West Tower of the City Hall complex was originally built with dual plumbing. On an annual

basis, approximately 35 million gallons of recycled water will be produced, offsetting potable water demands. This new water supply will allow the City to reduce its purchases of imported water, saving approximately \$100,000 per year.

The Anaheim Water Sustainability Campus features many Leadership in Energy and Environmental Design (LEED) elements, such as a rainwater harvesting system and

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## Recycled Water Agriculture Customer of the Year



Orange County Produce was named Recycled Water Agriculture Customer of the Year Award at the 2013 WaterReuse California Conference. Orange County Produce is a family business proudly practicing both conventional and certified organic farming. Recently, Orange County Produce became one of the latest recycled water customers in the Irvine

Ranch Water District (IRWD) service area.

The drought over the past several years prompted Metropolitan Water District to implement use restrictions for agricultural water. IRWD has historically served both treated and untreated imported water to growers. The restrictions had the potential to limit production continued on page 2

## Regulatory & Legislative Corner

by Christine Compton | Irvine Ranch Water District

### AB 803 (Gomez) – Water Recycling Act of 2013:

AB 803 is sponsored by WateReuse and addresses issues related to recycled water. On April 16, 2013 the Assembly Water, Parks and Wildlife Committee (WPW) heard AB 803. Due to opposition raised by the International Association of Plumbing and Mechanical Officers about changing regulations through the legislative process, Assemblymember Gomez agreed to remove the changes to Title 17 and 22 of the California Code of Regulations from the bill. With these amendments, WPW approved the bill on a 15-to-0 vote. The bill was then heard on April 30 in Assembly Environmental Safety and Toxic Materials (ESTM). ESTM approved the bill, and referred it to the Assembly Appropriations Committee.

SB 322 (Hueso) – Water Recycling:

In 2010, SB 918 (Pavley, D-Calabasas) placed certain obligations on the California Department of Public Health (DPH) regarding the evaluation of direct potable reuse (DPR). DPH is required to evaluate the feasibility of developing uniform water recycling criteria DPR, and to provide a final report on that evaluation to the Legislature

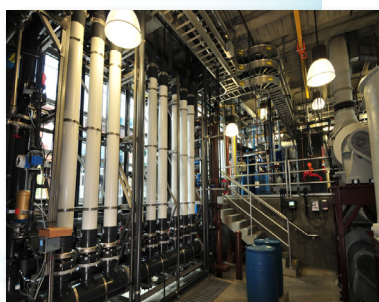


not later than December 31, 2016. Despite having funding, DPH has not moved forward with the expert panel. As a result, WateReuse and the San Diego County Water Authority have sponsored SB 322 (Hueso, D-San Diego). SB 322 was recently amended and would require DPH to convene and administer the expert panel no later than January 30, 2014. The bill will be heard by the Senate Appropriations Committee on May 20, 2013.

### AB 145 (Perea/Rendon) – Relocation of Responsibility for the State's Drinking Water Programs:

AB 145 (Perea, D-Fresno/Rendon, D-Lakewood) would move responsibility for the State's drinking water programs from the Department of Public Health (DPH) to the State Water Resources Control Board (SWRCB). Discussions surrounding this bill continue to take place. The Brown Administration has been engaged in these discussions, and is expected to make a decision on where it would like the drinking water programs to reside within the next several weeks. Many in the water community have advocated that the program not be relocated and have proposed a variety of alternatives to a full relocation. AB 145 is currently on the Assembly Appropriations Suspense file.

The Water Recycling Demonstration Facility provides information about the recycling process and shows proof of the final product quality.



## Anaheim Water Sustainability Campus Water Recycling Demonstration Facility (continued)

drought-tolerant landscaping. The highly efficient irrigation system is designed to prevent water overspray and minimize evaporation losses. Rainwater is collected and used for irrigation as well. Porous pavement prevents runoff and helps replenish the local groundwater basin. The project demonstrates "green" development, energy efficiency, water conservation, and greenhouse gas emission reductions and encourages

the community to use recycled water.

One of the key goals of the project was public education. The Water Recycling Demonstration Facility is housed in a building that has large windows, allowing visitors to see the treatment equipment. Signs provide information about the water recycling processes and a waterfall shows proof of the final product quality. The Water-Wise Garden showcases California-friendly plants in a park-like setting with benches for tours to

elevate public awareness about the value of water conservation.

The Water Recycling Demonstration Facility was designed to be expanded up to 100,000 gpd as new customers are added to the system in the future. Other potential water reuse sites include nearby parks and schools.

For more information about the Anaheim Water Sustainability Campus and Water Recycling Demonstration Facility, see [www.anaheim.net/utilities/](http://www.anaheim.net/utilities/).

## Recycled Water Agriculture Customer of the Year (continued)

as well as increase cost for food crops.

As a result, IRWD expanded efforts to coordinate with growers, and offer the opportunity to connect to the recycled water system. Orange County Produce eagerly met with IRWD representatives to determine which agricultural fields could feasibly be connected. Once identified, several hundred acres at multiple

fields were progressively evaluated for crop compatibility with recycled water, cross-connection and safety issues, and connected. Water savings from the effort yielded approximately 300 acre feet per year, not only preserving imported sources, but allowing IRWD operators extensive water resource flexibility. Most recently, Orange County Produce collaborated with IRWD to convert

56 acres of strawberries to be served with recycled water; and as soon as an adjacent field has been prepared, will add to that an additional 40 acres.

IRWD appreciates Orange County Produce's enthusiastic and immediate response to California's recent severe drought, as well as the impact on local resource allocations.



## An Opinion Article: Direct Ocean Repurification

*Marrying Ocean Desalination and Direct Potable Reuse Can Tap Abundant, Reliable Supply*

by Bob Ohlund | Dudek

Ocean desalination and direct potable reuse (DPR), or repurification of wastewater, represent two significant and relatively untapped sources of abundant, reliable, and drought-proof water supply to meet Southern California's increasing water demands. These two water supplies are approaching economic feasibility and public acceptance; however, both seem just out of reach for the near future. Ocean desal is challenged by energy costs and environmental regulations while DPR is confronted by health regulatory concerns and public acceptance.

A new concept, coined "Direct Ocean Repurification," envisions mixing these two sources into one common supply for treatment to help mitigate each supply's economic, regulatory,

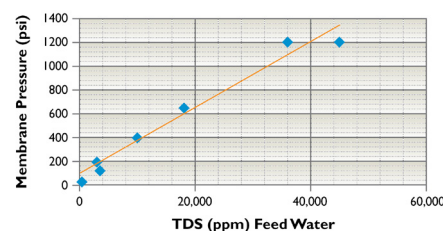
and perception challenges.

This new hybrid supply offers a potential 20%-30% cost reduction compared to ocean desal alone, bringing it approximately to the \$1,000/acre-foot (AF) range and a more competitive price point with the Metropolitan Water District of Southern California's (MWD) rate.

Ocean desal removes salts (on the order of 35,000 ppm TDS) and other constituents, and delivers this supply into the potable water system. Excluding potential environmental issues and its high cost, the consumption of this supply is acceptable to the public. DPR of highly treated wastewater, by comparison, has acceptable costs due to lower energy requirements, but faces both regulatory and "Yuck

Factor" challenges.

Treatment approaches for both ocean desal and DPR are very similar with reverse osmosis (RO) at the heart of the treatment train. RO is required to remove salts for desalination and viruses for repurification. Pretreatment, microfiltration (MF) and ultrafiltration (UF) being favored methods, is typically required to reduce organics in the influent stream to minimize fouling of the RO membranes. Disinfection for final treatment continued on page 4



## WaterReuse California 2013 Annual Conference Recap

by Debbie Burris | DDB Engineering, Inc.

If you weren't able to attend the WaterReuse California Annual Conference that was held in March in Monterey, you missed a good one! If you were one of the 367 lucky attendees, you know why --- so many great topics, tours, opportunities to learn and discuss the latest achievements in water recycling! Covering a wide variety of interests with so many great speakers, it was almost hard to choose which sessions to attend. Even before the opening session, Monterey offered attendees technical tours of the Monterey Bay Aquarium, Carmel Area Wastewater District's and Pebble Beach Community Services District's recycled water facilities, not to mention workshops on public acceptance as well as salt and

nutrient management. Of course, golfers found plenty of challenging courses to test their skills for those who arrived early or stayed longer (or sneaked out!)

The show started with a bang featuring Jason Burnett, Mayor of Carmel-by-the-Sea, who spoke about recycled water projects in the Monterey Peninsula area, followed by Lester Snow, a well-known man of many hats, the most recent of which is directing the California Water Foundation, who spoke about water for the 21st century economy and environment. That great opening was followed by two days packed with sessions covering topics such as indirect potable reuse, public outreach, reuse planning, salinity and nutrient management plans, desalination, agricultural reuse, energy efficiency, contaminants of emerging concern, small

and industrial systems, innovative ideas, local and statewide policy issues, regulatory affairs, and direct potable reuse (DPR). In fact, the chants of "DPR! DPR!" from the DPR plenary session and subsequent evening gatherings are still ringing in my ears!

### Mark Your Calendars

How can you top a fantastic WaterReuse California Conference in Monterey? Well, that's going to be a challenge. So....put it on your calendars now -- NEXT YEAR'S WaterReuse California Conference will be held right here in OC!

*2014 WaterReuse California Annual Conference  
Newport Beach  
Marriott Hotel & Spa  
Newport Beach, CA  
March 16-18, 2014*

The 2013 Annual Conference was held in Monterey, California.



## OUR MEMBERS

### PUBLIC AGENCIES

California Department of Public Health  
Irvine Ranch Water District  
Mesa Consolidated Water District  
Metropolitan Water District of Southern California  
Moulton Niguel Water District  
Orange County Sanitation District  
Orange County Water District  
San Diego Regional Water Quality Control Board  
South Coast Water District  
South Orange County Wastewater Authority  
El Toro Water District

### ASSOCIATES

Black & Veatch  
Carollo Engineering  
CH2M Hill  
DDB Engineering, Inc.  
Dudek  
GHD  
HDR  
Lee & Ro, Inc.  
Malcom Pernie  
MWH  
Nalco Company  
PACE  
Phoenix Civil Engineering, Inc.  
Psomas  
RBF Consulting

## CHAPTER OFFICERS

### President

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### Chapter Trustee

Scott Goldman  
EL TORO WATER DISTRICT  
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## GOT NEWS?

We're always looking for interesting stories and informational articles to keep our members up to speed on all that's happening in water reuse and reclamation. If you would like to contribute an article or have other ideas about this newsletter, please email Debbie Burris (dburris@ddbe.com) or Lisa Knox (lknox@dudek.com)

WaterReuse Association [www.watereuse.org/sections/california/orange-county](http://www.watereuse.org/sections/california/orange-county)

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## Direct Ocean Repurification (continued)

*Marrying Ocean Desalination and Direct Potable Reuse Can Tap Abundant, Reliable Supply*

is common to both. Combining water repurification with ocean desal will reduce the energy requirements of seawater RO due to significantly lower TDS content of the blend, and may mitigate the "Yuck Factor" and need for a storage buffer due to dilution.

Reliability is very important as we consider the potential disruption of Bay Delta water supply, cutback of Colorado River supply, a major shutdown of MWD's Diemer Filtration Plant due to earthquakes or terrorism, and future localized droughts. Even with an MWD subsidy, a 65%-plus increase in water supply cost for seawater desal, on the order of \$1,500/AF-\$2,200/AF, is still hard to swallow. However, when is the appropriate time to pay for water reliability? When supplies are plentiful, additional water supply has no value. Upon catastrophic reductions of water supply, new water supply is, well, priceless.

### Direct Ocean Repurification

Rather than developing ocean desal and DPR independently, it appears that combining these two sources and treating as Direct Ocean Repurification can help bring the cost of ocean desal down into a feasible range, and mixing and diluting DPR with seawater may make DPR more, well, palatable. The RO treatment process for the Direct Ocean Repurification approach requires less pumping and significantly reduces the energy cost by nearly the same ratio that reuse water is blended with source

seawater. A 50-50 blend could reduce treatment costs down to the \$1,000/AF range for a 15-20 mgd plant. This offers a 20%-30% savings, is drought-proof, reduces the "Yuck Factor", and provides dilution to help mitigate CDPH concerns.

By creatively leveraging the independent benefits of ocean desalination and those of direct potable repurification to offset the other's inherent challenges, the combination may be complimentary and result in a financially feasible approach to expand our water supply today. With regards to regulatory hurdles, Direct Ocean Repurification may provide that baby step toward our inevitable water supply future.

TABLE 1: Direct Ocean Repurification (DOR) Cost Comparison

	SWRO (1) Cost/Acre Foot	DOR Cost/Acre Foot
Capital Recovery	\$570	\$570
Energy	\$585	\$293
Membrane Repl	\$113	\$113
Maintenance	\$98	\$98
Chemicals	\$75	\$75
Labor	\$60	\$60
Subtotal	\$1,500	\$1,208
Less MWD Rebate	(\$250)	(\$250)
Net Supply Rate (\$/AF)	\$1,250	\$958

(1) Source: WaterReuse Now, 2011  
Assumes 50-50 blend of supply, similar pretreatment requirements, and 50% reduction of energy cost

DO follow all rules, regulations, and guidelines regarding the use of recycled water use. (Contact your water agency for more information)

DON'T alter, revise or disable recycled water systems or equipment without first contacting your water agency.

**DOs  
DON'Ts**