



CalDesal

Newsletter | Volume 4 | August 2017

A Unified Voice for Water Desalination and Salinity Management in the Golden State

From the Desk of Executive Director Paul Kelley



We are introducing something new in this newsletter – an article from one of our new members and an article from WERF to describe their research services. Check these articles out – new technology and research in desalination is positive. And we look to provide space in newsletter for our members new and on going.

Since the last newsletter, there have been many activities – some mentioned below in the Federal and State advocacy arena. In late spring and through the summer, the Department of Water Resources released their call for proposals/grant solicitation for \$90 million available from the desalination funds in the Proposition 1 bond measure. They are having more workshops and proposals will be due in September – so make sure you look at these funds and apply for them.

CalDesal had a very good board meeting in May at the ACWA conference – and at the same time a statewide poll on desalination released their results. The poll showed that

90% of Californians support desalination. Even after some of the potential negative messages on desalination, support was 70%.

Washington DC report:

The CalDesal efforts in DC have had some positive results. Recently Senator Diane Feinstein’s office called CalDesal for updates on desalination projects in California, and is working with the department of Interior on desalination grants. The WIIN act re-authorized the “Desalination Act of 1995”, and in the last omnibus bill there was some money for a future desalination grant program.

Sacramento report:

CalDesal continuously monitors legislation and regulatory agencies – advocating for desalination and salt management. Since the last newsletter

- AB 554 setting a Desalination Goal for the State of California – had gotten out of committee and was sitting in the appropriations committee. We worked hard to get this bill to the floor, but the appropriations committee did not move the bill to the floor. Still positive news for desalination to have had a positive bill pass a committee.

CalDesal continues to monitor “conservation as a way of life bills”. Our primary work is to preserve desalination as a local and regional water supply that is reliable and should not be incentivized and not constrained in drought cutback declarations.

A bill to help CalDesal member the Salton Sea authority did pass the legislature and will be a bond measure on the November ballot.

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Enviro Water Minerals' Innovative Water Technology—Full Recovery Desalination

Water supply technology innovator, Enviro Water Minerals (EWM), recently completed its first water desalination plant in El Paso, Texas. This is the first Full Recovery DesalinationSM plant in the world. The project was done in collaboration with El Paso Water (EPW), the municipal water provider for El Paso. The new facility is unique in addressing multiple challenges faced by water providers with expanding needs or challenging circumstances such as high salinity waters, financial constraints, or limited disposal options.

EWM has a revolutionary technology process that treats waters containing high levels of total dissolved solids (“TDS”), resulting in potable water and chemical constituents to be sold in the marketplace. EWM’s Full Recovery DesalinationSM recovers approximately 99% of the water processed as drinking water and can capture all contaminants as beneficial-use products – a true zero-discharge solution. Furthermore, the process is often much more economical than alternatives as there are no disposal costs and the chemicals that are generated and sold offset some of the process costs.

EWM owns and operates the treatment plant in a manner beneficial to EPW. Specified volumes and quality of water meeting the municipality’s needs and all local and state regulatory requirements are provided to EPW. The project is permitted, constructed, and operations monitored by the State of Texas for municipal water supply.

EWM can treat high TDS water from a variety of sources. At the El Paso facility, the company treats waste brine water generated from the Kay Bailey Hutchison Desalination Plant (about 50% of the water processed) as well as direct desalination of brackish groundwater (about 50% of the water processed). Uses of the technology include, but are not limited to: desalination of brackish groundwater or seawater, treatment of industrial produced water, treatment of agricultural runoff and treatment of brine.

Regarding desalination of seawater, EWM’s technology will have higher yield than historically seen in such plants and greatly reduced environmental challenges. The yield is around 98% versus yields typically seen for seawater desalination plants of approximately 50%. Costs will also be much lower --approximately 50% less expensive than typical seawater desalination. Reduced intake requirements and innovative designs and no discharge will also great environmental benefits (no waste – therefore no discharge – and half the intake volume, and a design that eliminates unacceptable intake system issues).

The project and technology that supports it has been described as “game-changing” by water supply and concentrate management experts who have assessed EWM’s technology.

Pictures from the Spring Mixer 2017



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Water Environment & Reuse Foundation Desalination Research Portfolio

By Kristan VandenHeuvel, WE&RF



The Water Environment & Reuse Foundation (WE&RF), a subscriber-based nonprofit (501c3) organization, manages a desalination research program to further the knowledge and understanding of desalination in regards to treatment strategies, regulatory concerns, cost implications, concentrate management, and environmental effects. WE&RF, which was formed in July 2016 as the result of the merger of Water Environment Research Foundation and the Water Reuse Research Foundation, conducts research to treat and recover beneficial materials from wastewater, stormwater, and seawater.

WE&RF's desalination program provides effective tools and information regarding the benefits of desalination as part of a diverse water portfolio. The program includes 29 projects covering topics in desalination and salinity management. Three ongoing desalination research efforts studying membrane pretreatment, subsurface intakes, and seawater integration are highlighted. The status of these projects are as follows:

- **Membrane Pretreatment.** The successful operation of seawater reverse osmosis (SWRO) plants depends on the ability of the pretreatment system to consistently produce high quality water for the reverse osmosis process. As part of the study "Pretreatment for Seawater Reverse Osmosis: Existing Plant Performance and Selection Guidance"

(Desal-14-07), the project team led by Dr. Joe Jacangelo of Stantec developed a knowledgebase to provide water utilities with a set of key criteria for the evaluation of conventional versus membrane-based pretreatment technologies. Operational data from ten SWRO plants were collected through the use of a questionnaire and interviews. An Excel™ based tool was developed to assist water utilities in selection of seawater pretreatment systems based on the water quality of the seawater and intake type. This report and tool are expected to be available in Fall 2017.

- **Subsurface Intakes.** Desalination subsurface intakes can provide improved feed water quality while preventing impingement and entrainment of marine organisms. A study Led by Dr. Zia Bukhari of American Water titled "Methodology for Assigning Pathogen Removal Credits to Desalination Subsurface Intake Wells" (Desal-14-06) aims to evaluate methodologies to determine whether desalination intake wells are under the influence of surface water and determine pathogen removal credits that can be verified for a specific intake well. The findings of this study will provide recommendations on preferred methodologies and demonstrate their validity in full-scale desalination subsurface intakes to establish surface water influence and determine

Water Environment & Reuse Foundation Desalination Research Portfolio - Continued From page 4



Figure 1: Sampling locations for monitoring water quality. (Desal-14-06)



Figure 2: Sand City Desalination Plant compressed reverse osmosis skid. (Desal-14-06)

pathogen removal credit for protozoa and viruses. This research effort is expected to be completed in Summer 2018.

- Seawater Integration.** "Case Study of the City of Carlsbad and Surrounding Areas' Experience with Integrating Desalinated Seawater Supply in Municipal Distribution Systems" (Desal-15-06), led by Dr. Brent Alspach of Arcadis, takes advantage of a unique opportunity to investigate the integration of desalinated seawater into the San Diego area distribution network following the completion of the Carlsbad Seawater Desalination plant in the Fall of 2015. The data and analysis generated from this research will be a valuable resource for understanding the challenges associated with introducing desalinated seawater into the San Diego County Water Authority and member agency distribution systems, and can be used to guide the water treatment community in the design and implementation of future SWRO projects. This study is expected to be completed in Fall 2018.

WE&RF's research on desalination is conducted to determine the effectiveness, practicality, and benefits of desalination in today's world. For more information regarding these projects and the WE&RF desalination research portfolio, contact Kristan VandenHeuvel at kvandenheuvel@werf.org.

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Around the World – Desal in the News

Mexico

As mentioned in the last CalDesal - The Consolidated Water Company (CWCO) working with a consortium of companies have gotten permits to build a SWRO project of 100MGD. The project costs are projected at \$463 million and is currently going through the challenging financing phase. The presidential permit has been issued to allow the Otay Water District in San Diego region to purchase water from this facility. With many hurdles still to come – this is just another step in the process.

South Africa

Cape Town has been experiencing a drought that even after recent rains their storage facilities (dams) are now only 23% full. The mayor and utility department are looking for new water supply resiliency strategies including “plants that could use RO, desalination, or similar technology from sea water, and other water sources”

Texas

The Texas Water Development board has approved a grant of funds to Corpus Christi to help finance a seawater desalination project studies.

Bahamas

GE Water & Process Tech announced in June that they will under a 15 year contract provide a seawater desalination (SWRO) plant to provide water to approximately 7,500 residents in Eleuthera. It’s the 4th GE plant on the island.

North Carolina

Brunswick County Commissioners voted to delay construction of a \$30 Million 4 MGD desalination plant. The plant was conceived to reduce reliance on purchased water. The delay is mainly caused by public and political pressure based on cost concerns.

China

China’s State Oceanic Administration released a new report that the country produces 1.18 m³/d (Estimate of 300 mgd) of desalinated water. With the largest plant approximately 50 mgd.

India

The capital of Tamil Nadu (South Eastern India) is Chennai – where two desalination plants were constructed over criticisms of being expensive and not-viable now account for 40% of their water supply. The area is reliant on Monsoons and are now witnessing their worst drought in 142 years. Another example of good water supply portfolio planning.

World Company news

As mentioned here last newsletter; In March of 2017 it was announced that the company Suez buy GE Water. Many of the needed approvals – in Europe and America have been secured as the sale may become final soon.

Israel Chemicals announced it is selling a \$178 Million stake in IDE technologies. Primarily selling to three major purchasers to enhance the strength of IDE. IDE (a valued members of CalDesal) develops, designs, plans, builds and operates desalination plants and advanced water solutions facilities through out the world and operates the Carlsbad Bud Lewis desalination plant and the Santa Barbara desalination facility.

(Most of this information is gleaned from “desalination” google news tickler and the World Desalination Report)

California Project Updates

Ocean Desalination:

Carlsbad “Bud Lewis” Desalination Facility – Poseidon / San Diego Water Authority Operational since December 2015 The most advanced and efficient Ocean Desalination facility in the United States.

Produced over 50,000 AF of water to date.



<http://carlsbaddesal.com/>

Make sure you sign up to visit this facility on the day before the CalDesal Conference.

Doheny Ocean Desalination Project – South Coast Water District

https://www.scwd.org/projects/doheny_ocean_desalination.asp

Huntington Beach – Poseidon

Follow progress: www.hbfreshwater.com

West Basin Desalination proposal

Follow progress: <http://www.westbasindesal.org/>

City of Santa Barbara Desalination Facility

The reactivation project has been under construction and scheduled to be operational Q1 2017

Update:

<http://www.santabarbaraca.gov/gov/depts/pw/resources/system/sources/desalination.asp>

