



WEST BASIN MUNICIPAL WATER DISTRICT
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AGENDA NO. 26

MAY 14, 2009 – Water Resources
Little (Chair), Gray
MAY 26, 2009 – Board Meeting
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Approved by: Rich Nagel

INFORMATION CALENDAR

OCEAN-WATER DESALINATION UPDATE

SUMMARY:

Water Reuse Research Conference Presentation

West Basin Municipal Water District (West Basin) will present a paper regarding its current ocean-water desalination piloting program at the upcoming WaterReuse Research Conference in Huntington Beach on May 19. The presentation will focus on the research work to control reverse osmosis membrane biofouling through use of a preformed chloramine addition. Biofouling control is essential to ensure a long performance life of the membrane system, reduce capital replacement costs, and minimize operational cost that results in additional membrane cleanings.

Free chlorine is an aggressive oxidant that is traditionally used for disinfection purposes in the water treatment industry. However, reverse osmosis polyamide membranes are not tolerant to oxidants such as free chlorine. However, use of chloramines (i.e., Chlorine and ammonia mixture), a less aggressive oxidant form, on reverse osmosis membranes has shown to be an acceptable chemical composition to control biofouling while maintaining the integrity of the reverse osmosis elements.

West Basin has used this approach at the Edward C. Little Water Recycling Facility as one of its primary biofouling control mechanisms since the beginning of operations. Because this approach has worked well on recycled water system operations, West Basin initially investigated the use of preformed chloramines for use on ocean-water desalination to control the potential biofouling on the reverse osmosis membranes. Due to the complex chemistry of seawater and chlorine reactions, a stronger and more potent bromamine oxidant was formed that ultimately resulted in damage to the reverse osmosis membranes. Subsequent research of this complex chemical phenomenon resulted in the discovery that the free chlorine reacted with the naturally occurring bromide that exists in ocean water prior to the formation of the desired chloramine residual. As a result, West Basin's ocean-water desalination experts have come up with an alternate approach of pre-forming the chloramines prior to injecting them into the treatment process. The initial laboratory work and ongoing piloting research has proven to be successful in implementing this approach.

West Basin's effort into this arena is ground-breaking and will be a critical component to West Basin's ocean-water desalination program development as it provides a relatively cost-effective operational mechanism to control biofouling without damaging the membrane. This is the topic of the research that will be presented at the annual WaterReuse Research Conference in May. Attached as Exhibit "A" is a draft of the presentation detailing the initial bench scale work and piloting operations. The research work being performed at West Basin's pilot has been implemented into the design of the demonstration facility.

Carlsbad Project

Poseidon Resources, the private water entity developing the Carlsbad Ocean-Water Desalination Project, is being requested to evaluate the feasibility of moving the location of their proposed 50 million gallons per day ocean-water desalination facility to another location within the Carlsbad NRG Power Plant Facility to accommodate NRG's proposed dry-cooling repowering project. It is uncertain how this request will impact Poseidon's approved EIR and Coastal Development Permit approvals. Poseidon is working closely with the City of Carlsbad and NRG to assess the impacts.

STRATEGIC BUSINESS PLAN IMPLEMENTATION:

Goal 1, Reliability – Maintain a level of local water reliability that supports the regional economy, our community and customer agency needs.

Goal 7, Infrastructure – Manage infrastructure to ensure reliability, manage risk, and maximize the useful life of facilities.

COMMITMENT STATEMENT:

Water Reliability – West Basin is committed to innovative planning and investments to provide water supply reliability and drought protection.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on May 14, 2009 and agendized to the May 26, 2009 Board meeting as information for discussion.

RECOMMENDED MOTION:

This item is for information only.

LIST OF EXHIBITS:

Exhibit "A" – Draft of Presentation