

WEST BASIN MUNICIPAL WATER DISTRICT**AUGUST 4, 2004 - Water Resources**
McDonald, Little**AUGUST 23, 2004 - Board Meeting**

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ACTION CALENDAR

OCEAN-WATER DESALINATION UPDATESUMMARY:**Affordable Desalination Collaboration**

Staff is exploring and evaluating the merits of improved technology that will reduce the operations cost to ocean-water desalination treatment. Continuing development in the field of energy recovery systems, high-pressure pumps, and low-energy reverse osmosis membranes has reduced the overall energy consumption of ocean-water desalination. Preliminary findings indicate that energy savings can be achieved by utilizing these commercially available systems. The low-energy membrane does require a decrease in the reverse osmosis flux rate and recovery rate of the permeate water; thus, requiring more process equipment and capital to achieve the same flow capacity. However, even with the lower flux rate and recovery rate factors, there appears to be an overall net energy savings in the operation of a desalination plant.

Staff met with representatives from the Affordable Desalination Collaborative Group to review and evaluate the potential cost savings, capital investment, and maintenance components necessary to consider for implementation into the future demonstration and full scale ocean-water desalination plant. Staff is proposing to apply for funding available from Metropolitan Water District of Southern California (MWD) to financially assist in the testing of this improved technology to prove the viability of the potential cost savings of implementing this technology into a full scale ocean-water desalination installation.

MWD has made available a \$50,000 grant to member agencies pursuing desalination testing. Staff believes that this funding would be best utilized to provide further research in the areas of reduced energy desalination systems.

To participate in the collaborative testing of reduced energy systems staff recommends that the Board authorizes the Co-Acting General Managers to apply for the MWD \$50,000 grant to participate in the Affordable Desalination Demonstration Project.

Pilot Plant Performance

West Basin's Ocean-Water Desalination Pilot Plant has had great success in treating ocean-water to a drinking water quality that meets all Federal and State Drinking Water Standards. The Pilot Plant's success can be compared to the Diablo Canyon Nuclear Power Plant desalination facility and the Marina Coast Water District Desalination Facility that currently delivers ocean desalinated water for potable water use. The following is a summary of the successful performance of these facilities.

Diablo Canyon:

- Delivers 0.65 million gallons per day of potable and reactor water with total dissolved solids concentration of 250 milligrams per liter;
- Use dual and multimedia pretreatment filtration with an effluent silt density index of 1.5; and
- Operated their reverse osmosis membranes for ten years with no fouling, chemical cleaning, or replacements.

Marina Coast Water District:

- Delivers 0.30 million gallons per day of potable water with a total dissolved solids concentration of 141 milligrams per liter;
- Use beach wells as pretreatment filtration with an effluent turbidity of 0.286 nephelometric turbidity units; and
- Operated their reverse osmosis membranes for four years with no fouling, chemical cleaning, or replacements.

West Basin Municipal Water District:

- Delivers 13,000 gallons per day of potable quality water with a total dissolved solids concentration of 161 milligrams per liter;
- Use microfiltration as pretreatment filtration with an effluent turbidity of 0.17 nephelometric turbidity units and a silt density index of 3.5; and
- Operated the reverse osmosis membranes for six months (and running) with no fouling, chemical cleaning, or replacements.

Given the successful run time and performance of the District's Pilot Plant system relative to other existing functional potable drinking water systems, the District's treatment technology is well positioned to meet the next stages of development and ultimately meet the regulatory standards and technical challenges in providing potable ocean desalinated drinking water to our customers.

U.S. Bureau of Reclamation (USBR) Report

West Basin has completed the final research efforts that were co-funded by the National Water Research Institute (NWRI) to evaluate the treatment and operational characteristics of ocean-water desalination using pre-condenser feed water at the El Segundo Power Plant. The Phase 1 findings of these studies will be sent to USBR for their review and approval to satisfy West Basin's program participation requirements. The District will be focusing continued efforts on the Phase 2 research evaluating the same Phase 1 characteristics using post condenser water (warm water). Intermittent reporting and a final report will be submitted to USBR for their review and approval showing the progress of the warm water testing.

Stakeholders Meeting for the Environmental Protection Agency (EPA) Clean Water Act-Section 316(b) Phase II Implementation

El Segundo Power hosted a 316b stakeholder meeting on July 13, 2004 at the El Segundo Power Plant. The Clean Water Act Section 316b rule was developed by the EPA to require once-through cooling power plants to reduce impingement and entrainment by 80–95% of invertebrate species within their ocean intake substructure.

This meeting was established to have an open dialogue with key players of the regulatory, power, and environmental communities regarding the research, mitigation, and implementation measures of the 316b rule. Meeting participants included the Regional Water Quality Control Board, California Coastal Commission, EPA, California Energy Commission, power generators, Heal the Bay, Baykeepers, and West Basin. Tim Hemig of El Segundo Power facilitated the meeting. Key elements of discussion included:

- Baseline calculation methods of impingement and entrainment;
- Regional Board review and approval of mitigation and/or restoration measures;
- Comprehensive Demonstration Study requirements;
- Regional Board responsibilities;
- Mitigation options;
- Schedule for implementation; and
- CEQA requirements and coordination.

The required mitigation and implementation measures placed upon the generators by the 316(b) rule will ultimately affect the District's Ocean-Water Desalination Program from a regulatory compliance and potentially shared cost perspective. Staff will keep the Board apprised of further developments as they become available.

The next meeting is scheduled September 29, 2004, and will be held at the Regional Board office and facilitated by Heal the Bay.

Los Angeles Department of Water and Power (DWP) Brine Dilution Study Presentation

Staff attended the presentation made by the Scripps Institute of Oceanography that outlined the research and findings of their modeling study that evaluated the brine discharge of a future desalination treatment facility relative to the three outfalls of DWP's Scattergood Generating Plant and the City of Los Angeles' Hyperion Treatment Plant. The major factors in their findings were as follows:

- If reverse osmosis production is limited to 12-25 million gallons per day, the Scattergood circulation loop and outfall provide adequate brine dilution under all circumstances;
- If reverse osmosis production is increased to 50 million gallons per day, brine discharges from the Scattergood outfall exceed marine biology tolerances 18% of the time;
- Brine discharges from the Hyperion 1-mile outfall exceed marine biology tolerances 97% of the time with a reverse osmosis production of 12 million gallons per day, and 100% of the time with a reverse osmosis production of 50 million gallons per day; and

- Brine discharges from the Hyperion 5-mile outfall cause no hyper-salinity impacts and reduce the footprint of the waste field by 20-40%.

U.S. Desalination Coalition

The U.S. Desalination Coalition called an Executive Committee meeting to order on July 6, 2004 via conference call. This meeting included the Executive Director's Report (see Exhibit "A"), which highlighted the following items:

- HR 3834 now has twenty-nine cosponsors with the addition of Representative Ken Calvert (R-CA), Chairman of the Water and Power Subcommittee;
- Representative Richard Pombo's (R-CA) office is attempting to schedule the bill for a hearing to move the bill through the Resources Committee by the end of September so it would have the opportunity to be included with a potential omnibus bill; and
- Hal Furman will be meeting with staff from Senator Pete Domenici's (R-NM) office this week to discuss the potential conflict and integration of a bill that would create a National Desalination Research Institute located at the Sandia National Laboratories in New Mexico. The institute would allocate grants for further desalination research. The U.S. Desalination Coalition will more than likely support the bill; however, the Coalition will not take a position until they have had an opportunity to review the bill for potential conflicts with HR 3834.

Also discussed at the executive meeting was the admittance of the Honolulu Board of Water Supply to the U.S. Desalination Coalition.

Select Assembly Desalination Hearing

This hearing will provide a forum for Assemblymember Calderon to learn the political issues surrounding ocean-water desalination and the need for potential legislation necessary to assist the water community in delivering full scale ocean-water desalination facilities. The hearing is scheduled to occur on September 23, 2004 at the West Basin Water Recycling Plant. The District will host and facilitate this hearing.

El Segundo Power Permit

El Segundo Power has not been rescheduled for the California Energy Commission hearing. The issuance of their repowering permit continues to be delayed. Staff is continuing to monitor their progress and will report any changes to the Board.

FISCAL IMPACTS:

Funds are available in the Ocean-Water Desalination Research and Development Budget Fiscal Year 2004-05.

ENVIRONMENTAL COMPLIANCE:

None.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on August 4, 2004 and recommended for approval at the August 23, 2004 Board meeting.

RECOMMENDED MOTIONS:

That the Board authorizes the Co-Acting General Managers to apply for the Metropolitan Water District \$50,000 grant to participate in the Affordable Desalination Demonstration Project.

EXHIBITS:

None.

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