

**WEST BASIN MUNICIPAL WATER DISTRICT**

**JULY 13, 2006 - Water Resources**

Little, Baker

**JULY 24, 2006 - Board Meeting**

Prepared by: Phil Lauri

Submitted by: Paul E. Shoenberger

Approved by: Rich Nagel

**ACTION CALENDAR**

OCEAN-WATER DESALINATION  
DEMONSTRATION PROJECT LAND LEASE AGREEMENT

SUMMARY:

West Basin Municipal Water District (District) has made great strides in the advancement of its ocean-water desalination program development through its rigorous piloting and research program. The next critical step necessary to advance the ocean-water desalination program will be the construction of a 500,000 gallon per day demonstration facility. This facility will implement and assess full scale process equipment at a demonstration level to ensure that future development of the full scale facility meets all operational, water quality, and regulatory objectives prior to expending a large capital investment.

In an effort to implement this demonstration program, the District has evaluated two potential sites to host the demonstration facility. The two host sites include the El Segundo Power Generating Station (ESPGS) and the AES Redondo Beach Generating Station (AES). The main selection criteria the District used in evaluating potential sites included the following:

- Access to open ocean inlet/outfall substructure system;
- Industrial area to accommodate a 15,000 to 30,000 square foot demonstration facility;
- Access to supporting utilities;
- Access to available power supplies;
- Separate site access;
- Regulatory Collaboration;
- Fair market land value/Lease rate; and
- Operational flexibility.

Both sites appear to have the minimum necessary on-site space and supporting infrastructure to host the demonstration facility. However, the ESPGS site offers restrictive site access for visitors and is more constrained in land availability, thus, requiring the demonstration facility to be two stories to accommodate an acceptable desalination process orientation and community outreach center. Construction of the demonstration project at the AES site allows for the facility to be accommodated on one floor and a separate site access pending the approval from the City of Redondo Beach. ESPGS site does provide easy access to on-site power and other utilities, whereas, AES has requested the District to acquire power through a separate meter via Southern California Edison due to restrictions from the Federal Energy Regulatory Commission.

In summary, the District has operated an ocean-water desalination pilot facility at the ESPGS site for the past four years and has had good success working at the site and collaborating with their on-site operations staff. While the District has not directly partnered with AES staff in the past, early discussion with their operations manager and staff has been helpful and very positive. While there are many practical benefits of both sites, AES is willing to move forward with hosting the demonstration site and advancing the District's mission of ocean-water desalination. Conversely, while ESPGS site has been a good partner, they have been unwilling at this time to commit to moving forward with a Demonstration Project. Therefore, staff is recommending that the ocean-water desalination demonstration facility be constructed at the AES site and an arrangement be developed with AES to leave necessary land for project implementation.

Attached is a draft agreement (Exhibit A) that has been conceptually approved by both the District's legal counsel and AES's corporate management. The main points of the agreement are as follows:

- West Basin will pay for all on-site improvements and removal of demo project at conclusion of project;
- West Basin will pay a fair market lease rate for the land;
- Power will be purchased from Southern California Edison through separate metering;
- AES will allow access to and use of their open water intake;
- AES will allow the construction of a separate site access (pending City approval); and
- Contract term is for five years with two year renewable options at consent of both parties.

FISCAL IMPACTS:

Funds for this project are included in the construction fund.

ENVIRONMENTAL COMPLIANCE:

None.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on July 13, 2006 and was recommended for approval at the July 21, 2006 Special Board meeting.

RECOMMENDED MOTIONS:

That the Board authorizes the General Manager to execute a land lease agreement with AES for the development of the District's ocean-water desalination project within the terms and conditions set forth in the draft agreement attached as Exhibit A.

EXHIBITS:

Exhibit A – Draft Land Lease Agreement

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**WEST BASIN MUNICIPAL WATER DISTRICT  
AES REDONDO BEACH, L.L.C.  
MEMORANDUM OF UNDERSTANDING - AGREEMENT NO. WXXXX  
FOR AN  
OCEAN WATER DESALINATION DEMONSTRATION PLANT**

**SECTION 1 – PARTIES**

This Memorandum of Understanding (MOU) is between AES Redondo Beach, LLC, herein “AES”, and West Basin Municipal Water District, herein “DISTRICT”.

**SECTION 2 – BACKGROUND**

Ocean water desalination will play a significant role in the future water supply of Southern California. The cost of ocean water desalination has dramatically dropped in the last ten years, mainly due to advances in membrane technologies. Ocean water desalination has been proven to be a viable source of water. The benefits of Southern California obtaining future water supplies from ocean water include:

- Reduced dependence upon imported water supplies from Northern California and the Colorado River,
- Help California live within the 4.4 Plan for diversions from the Colorado River,
- Reaffirms the need for a clean Santa Monica Bay,
- Ocean water is a drought-proof source of supply,
- Increase the reliability of water supply to Southern California businesses and residences.

The DISTRICT is presently operating 20 million gallons per day of desalination facilities. The source water for these facilities is saline groundwater or recycled water, however, the technology used is the same as for ocean water desalination. In addition, since May of 2002, the DISTRICT has operated a 40 gallon per minute ocean water desalination pilot plant to test the feasibility of turning ocean water into drinking water. This piloting and research has provided valuable operational and water quality data that has enabled the DISTRICT to understand the challenges in developing a full scale ocean water desalination plant in addition to the challenges of working within a coastal power station.

AES, operates the AES Redondo Beach Power Generating Station. (“Generating Station”) This station currently operates as a peaker plant to service the needs of the California energy market. The Generating Station currently operates four active combined cycle units (Units 5, 6 – XXX peak MW production and Units 7, & 8 – XXX peak MW production) utilizing clean burning gas turbines and has four decommissioned units in the old Building 1 site. Units 5 and 6 operate on cooling water from the northerly intake and outfall substructure system and units 7 & 8 operate on a separate intake and outfall substructure system located to the south of the Generating Station.

DISTRICT and AES desire to cooperatively advance the science of ocean water desalination through the operation of a 500,000 gallons per day ocean water demonstration facility. This demonstration facility will allow the DISTRICT to test full scale pretreatment and advanced treatment membrane equipment that will provide the DISTRICT with specific in-depth operational and water quality data necessary to design,

permit, construct, and operate a full scale facility. This demonstration facility will allow AES, to better understand the operational challenges associated with the daily operations and development of an ocean desalination treatment facility within a power plant environment. Generally, the DISTRICT will be responsible for all costs associated with providing the design, construction, permitting, maintenance, and operations of the demonstration plant. AES will provide the site for the demonstration facility, ingress and egress, a feedwater source, and coordination in establishing a separate power supply source to be provided by Southern California Edison to the demonstration facility and supporting equipment.

### **SECTION 3 – PROJECT MANAGEMENT TEAM**

DISTRICT and AES will each designate one or more individuals as a Project Management Team to coordinate the design, construction and operation of the demonstration project under the following guidelines:

- Project schedule will be established.
- The Project will be completed in a manner not to disrupt ongoing Generating Station operations.
- All Generating Station procedures and policies on health, safety and environmental protection will be complied with.

### **SECTION 4 – DEMONSTRATION PLANT DESCRIPTION**

Figures M-01 and M-02 show a schematic layout of the proposed demonstration plant. The demonstration plant will consists of prefiltering equipment, microfiltration and ultrafiltration pretreatment membranes systems, a reverse osmosis membrane system, energy recovery system, and post stabilization and disinfection systems. Additionally, the demonstration project will host a public education and outreach facility along with a piloting and research area. The feedwater supply for the demonstration facility will be pumped from the power plant's post condenser southerly cooling system. Approximately 1,000,000 gallons per day of feedwater will be needed from the power plant's substructure system. The product water, brine and pretreatment process backwash water will be recombined and discharged through the AES ocean outfall. All components of the demonstration facility will be housed in a newly constructed building. The DISTRICT, with concurrence and approval from AES, may evaluate alternative intake methodologies through the installation of a test ground water well and/or slant well.

### **SECTION 5 – SITE DESCRIPTION**

The Generating Station is located at 1100 North Harbor Drive in Redondo Beach, California. Figures M-01 and M-02 indicate the site that has been designated by the Project Management Team to host the Demonstration Project. The site currently contains an abandoned steel tank and containment berm. AES is in the process of removing the abandoned tank and mitigating any hazardous materials associated with the demolition of this structure. DISTRICT will remove all applicable portions of the earth berm to accommodate the construction of the Demonstration Project. AES reserves the right to disapprove the proposed site that AES determines is in conflict with either current or projected operational needs. AES shall reimburse DISTRICT for all costs associated with hazardous soil mitigation.

## **SECTION 6 – SITE ACCESS AND SECURITY**

AES shall provide unhindered access to the Demonstration Project site, conveyance pumping system, transmission piping, and outfall connection locations to allow the DISTRICT to plan, design, construct, operate, and maintain the DISTRICT's facilities during the term of this MOU. The DISTRICT will coordinate all access and security requirements of the site with AES personnel. The Project Management Team shall collectively work towards establishing a site layout, ingress and egress plan, and security protocol. The DISTRICT shall construct a separate ingress/egress location to the plant off of Harbor Drive should this result in the most efficient operational protocol for both AES and the District. All costs associated with establishing a separate ingress/egress and/or providing security services, site fencing, and coordination will be the responsibility of the DISTRICT.

## **SECTION 7 – SUBSTRUCTURE ACCESS**

*Feed Water Supply:* DISTRICT will access the southerly post condenser outfall at a location determined by the Project Management Team that best meets the needs of both AES and DISTRICT. Access to the outfall substructure will be needed to provide an adequate raw feed water supply of approximately 1.0 mgd to the demonstration facility (0.5 permeate water produced). Outfall suction piping configuration will be designed to ensure mechanical and vibration stability. The DISTRICT will also install a self priming pump and/or booster pumps to accommodate the raw water demand and a power metering device to measure the energy consumed by the feed water supply pumps.

*Brine & Permeate Disposal:* The DISTRICT will discharge the process concentrate, pretreatment backwash water, and reverse osmosis permeate from the demonstration facility to the AES outfall at a location to be determined by the Project Management Team. This discharge will be approximately 1.0 mgd. The DISTRICT will coordinate and be responsible for all regulatory compliance with the Regional Water Quality Control Board in obtaining a National Pollutant Discharge Elimination System permit and will closely coordinate this effort with AES's environmental staff to ensure complete collaboration and unity in the permitting and reporting requirements.

The DISTRICT will work with AES staff to relocate the feed water source connections and/or brine/permeate disposal locations as necessary to accommodate AES operations and/or regulatory mitigation requirements.

## **SECTION 8 - TRANSPORTATION FACILITY DESCRIPTION**

DISTRICT will construct two eight inch pipelines; one for feed water supply from the AES post condenser outfall to the demonstration facility site and one eight inch line for the return brine concentrate, pretreatment backwash water, and reverse osmosis permeate from the demonstration site to the AES outfall. These lines will be routed from the post condenser connection through the site and terminated at the demonstration facility site. Routing and placement, coordination of existing utilities, and all construction of these pipelines will be coordinated with AES staff to ensure full compliance with AES policies, safety requirements, and future on-site work and operations. The DISTRICT will coordinate the approval and insurance requirements of all contractors with AES prior to advertising this project for construction and the start of work.

## **SECTION 9 - TERM OF THE MOU**

This MOU shall remain in effect until: (i) such time that this agreement is superseded by one or more agreements between the parties, or (ii) 60 months, whichever comes first; however, DISTRICT may terminate this MOU and/or amendment(s) at any time after execution by giving AES written notice of its election to terminate this MOU and agrees to pay AES an early termination fee of actual costs incurred to date, but not to exceed \$50,000. DISTRICT also agrees to pay for all costs associated with returning the Demonstration Project site to its previous condition prior to the start of the Demonstration Project construction.

AES may terminate this MOU and/or amendment(s) should both parties jointly conclude, on the basis of good faith business judgment, that the Demonstration Project is adversely hindering future operations or expansion to the AES business. Notice of termination of this agreement shall be given in writing no less than 180 days from the specified termination date.

The term of this MOU may be extended an additional two years with mutual agreement of both parties.

## **SECTION 10 - CONSIDERATION PAID BY DISTRICT**

*Power.* The DISTRICT shall purchase power from Southern California Edison through a separate metering connection to be established by the DISTRICT. All power costs associated with operating the demonstration facility shall be the sole responsibility of the DISTRICT.

*Land Lease:* The DISTRICT shall pay AES a fixed monthly land lease based upon fair market value as determined by a certified appraiser and accepted by both the District and AES for the duration of this MOU for the use of the Demonstration Project site, connection locations, distribution piping routing, and support pumping systems. The Fair market value will be specified in a subsequent addendum to this MOU.

DISTRICT will work with AES to evaluate potential uses for the permeate water produced from the ocean desalination demonstration facility. This water could potentially be used as boiler makeup process water and substantially reduce the cost currently incurred utilizing imported water for this process.

## **SECTION 11 - RESPONSIBILITIES OF THE PARTIES**

DISTRICT shall:

- Design, construct, operate, and maintain an ocean water desalination Demonstration Project at the Generating Station. The Demonstration Plant will desalinate ocean water for research purposes, then recombine the water for discharge to the AES outfall.
- In coordination with AES, design, construct, operate and maintain two eight inch pipelines that convey ocean water, brine, pretreatment backwash and permeate to and from the post-condenser connection points to the Demonstration Project.

- In coordination with AES, design, construct, operate, and maintain connections on the Generating Station's southerly post condenser outfall that will provide a raw ocean water feed supply and location for discharge water. These connections will be at separate locations to be determined by the Project Management Team.
- Install a self-priming pump and/or booster pump, associated electrical work, and piping installation at locations to be determined by the Project Management Team.
- Install an electrical meter to measure the energy consumption utilized by the on-site conveyance pumps.
- Construct a building to allow the installation and housing of desalination process equipment and facilitate community outreach through a visitor's center.
- Construct alternative intake methodologies
- Obtain and maintain all permits or regulatory authorizations necessary for the installation and operation of the Demonstration Project throughout the term of the MOU.
- Abide by AES safety and working regulations.
- Provide insurance documentation according to standard AES requirements in regard to Workers Compensation, Employers Liability and Commercial Liability.

AES shall:

- Provide to DISTRICT, names of acceptable design consultants for the design of the condenser connection, power connection and names of acceptable contractors to construct the connections.
- Provide the DISTRICT with all available on-site as-built utility information, AES operational protocols, and permitting and compliance requirements.
- Review and approve the design of the Demonstration Project layout, outfall connections, and feed water supply and discharge lines.
- Provide a location for the raw ocean water supply and disposal connection points on the southerly post condenser outfall.
- Provide approximately 1,000,000 gallons per day of post condenser concentrate as feed water for the Demonstration Plant.
- Provide property and necessary rights of way at the Generating Station for DISTRICT to construct, operate, and maintain the Demonstration Plant, associated piping, and connections.
- Allow up to 1.1 million gallons per day of brine and permeate disposal to the AES southerly outfall.

## **SECTION 12 - OWNERSHIP OF IMPROVEMENT AT THE END OF THE AGREEMENT**

At the end of the MOU DISTRICT shall, at its own expense and in cooperation with AES, remove the Demonstration Project as well as the appurtenant piping and connections.

## **SECTION 13 - INDEMNIFICATION**

Each Party shall be solely liable for and each Party shall indemnify, defend and hold the other Party, and its parent company, subsidiaries, affiliates, divisions, and their respective directors, officers, shareholders, employees, agents, representatives, successors and assigns harmless from and against any and all claims, actions, suits, proceedings, losses, liabilities, penalties, damages, costs or expenses (including attorneys' fees and disbursements) of any kind whatsoever resulting from (1) injuries to or death of any and all individuals or damage to, loss, and/or destruction of property,

including, without limitation, property of either Party arising out of or connected in any manner with the performance of work hereunder, (2) third party claims of any kind, whether based upon negligence, strict liability or otherwise, arising out of or connected in any manner to each Party's acts or omissions in breach of this Agreement, or (3) each Party's failure to comply with any term of this Agreement.

#### **SECTION 14 - RESPONSIBILITY FOR TAXES AND ASSESSMENTS**

DISTRICT shall pay when due, all license fees and privilege, occupational, sales, use or excise taxes, now or hereafter levied, assessed or otherwise imposed by Federal, state, or local governmental authorities, upon or as a result of the use or occupation of the Generating Station by DISTRICT or the construction, operation or maintenance of the Demonstration Project.

#### **SECTION 15 - NOTICES**

All notices to be given under this memorandum of understanding shall be in writing and shall be posted by certified mail or personally delivered to the other party at the address set forth below.

AES Redondo Beach, L.L.C.  
Attn: Plant Manager  
1100 N. Harbor Drive  
Redondo Beach, CA 90277

West Basin Municipal Water District  
Attn: General Manager  
17140 S. Avalon Blvd., Suite 210  
Carson, CA 90746

#### **SECTION 16 - ATTORNEY'S FEES**

If any action is instituted to enforce this Agreement, the prevailing party shall be reimbursed all reasonable attorneys' fees, costs of collection, as well as any other costs and expenses incurred in connection with the enforcement effort.

#### **SECTION 17 – ASSIGNMENT**

AES shall not assign, sell, or otherwise transfer any obligation or interest in this Agreement without the specific written consent of the DISTRICT.

#### **SECTION 18 - APPLICABLE LAW**

This Agreement shall be construed in accordance with and governed by the laws of the State of California.

#### **SECTION 19 – INTEGRATION**

This Agreement represents the entire understanding of the parties. No prior oral or written understanding shall be of any force or effect with respect to those matters covered by this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Memorandum of Understanding to be executed as of the date of the latest signature below.

APPROVED:

AES Redondo Beach, LLC

By: \_\_\_\_\_

Date: \_\_\_\_\_

APPROVED:

West Basin Municipal Water District

By: \_\_\_\_\_

Richard Nagel, General Manager

Date: \_\_\_\_\_

APPROVED AS TO FORM:

By: \_\_\_\_\_

Lemieux and O'Neill  
District Counsel

Date: \_\_\_\_\_

DRAFT