

**WEST BASIN MUNICIPAL WATER DISTRICT****JANUARY 11, 2007 - Water Resources**

Little, Smith

**JANUARY 22, 2007 - Board Meeting**

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## INFORMATION CALENDAR

OCEAN-WATER DESALINATION DEMONSTRATION PROJECT  
PROJECT DEVELOPMENT SUMMARYSUMMARY:

In May 2002, West Basin Municipal Water District (District) commissioned one of the first Ocean-Water Desalination Pilot Plants on the West Coast. This Pilot Plant was established to assist in assessing the feasibility of whether ocean-water desalination could play a role in the District's regional water supply portfolio. Extensive piloting and research over the past few years has allowed the District to unequivocally determine that ocean-water desalination is a practical and vital contribution to its long-term planning goal in establishing a local and reliable water supply that will complement the extensive water recycling and conservation programs the District currently employs.

The District's Pilot Plant has provided tremendous value towards the advancement of ocean-water desalination technology. Not only has the District been a solid leader within the ocean-water desalination industry, but the District has also been a conduit of information to other industry partners in the sharing of the various piloting and research findings. This information is being used today by numerous agencies to plan and understand the breadth of developing their own ocean-water desalination facilities.

While the District has determined that ocean-water desalination is feasible and obtained extensive operational and water quality experience at the piloting level, there has been a need to comprehensively evaluate several critical ocean-water desalination program processes and development components at a full scale level. This demonstration level evaluation using full-scale equipment is critical to the District's future success in developing a full-scale project as it provides the due diligence in selecting the most appropriate technologies to be implemented at the full scale project level and ultimately will be a tool in answering the stringent permitting and regulatory questions posed by the regulatory community. The District has been evaluating two potential Demonstration Project sites that could ultimately accommodate a full scale facility. The Demonstration Project is scoped to be up to 500,000 gallons per day of permeate production and will be utilized in such a fashion to demonstrate the ultimate operational, water quality, and process protocols that will be implemented in the full scale design. Additionally, the Demonstration Project will be critical in addressing regulatory and permitting concerns raised by the regulators and the environmental community. It is envisioned that the Demonstration Project will provide the District with the foundation for implementing the most cost-effective and environmentally acceptable Ocean-Water Desalination Project possible.

In an effort to advance the development of the temporary Ocean-Water Desalination Demonstration Project, the District solicited professional consulting services in the summer of 2006 to assist in the various phases of development of the 500,000 gallon per day project. These professional "Scopes of Service" were separated into multiple phases of work to address each stage of the Project's development. These phases of work consist of Preliminary Design Development (Phase A), Demonstration Project Design & Permitting (Phase B), Construction Management (Phase C), and Operations and Maintenance services (Phase D). The District solicited bids from numerous firms with expertise in the field of ocean-water desalination. Five proposals were received. The District went through a rigorous and competitive evaluation and selection process to select the most qualified consultant as it was the District's expectation that the chosen consultant would ultimately assist the District with each stage of development and implementation to provide consistency from the planning

stage through the operation of the facility. Subsequently, staff recommended and the Board authorized the General Manager to execute a contract with MWH Consultants to provide professional consulting services for each phase of the temporary Ocean-Water Desalination Demonstration Project. As part of this contract, staff recommended that each phase of work performed by MWH would be evaluated as to their effectiveness and performance and subsequent phases of work would be negotiated on an individual basis.

### **Proposed “Scope of Work”, Budget & Status**

Development of the temporary Demonstration Project required a proactive approach that would allow the District to perform its due diligence while progressively advancing the critical components of work that would ultimately allow the District to start operations of a Demonstration Project by the end of 2008. While it was intended to have each subsequent phase of work start at the conclusion of the previous phase, the District has structured the delivery of the critical components for each phase to occur as rapidly as possible in order to initiate components within subsequent phases of work, where possible, in order to meet the proposed operational online date. The following discussion and table describes the proposed scope, budget, schedule, and status for each element of the project:

#### “Scope of Work” & Project Status

**Phase A:** The “Scope of Work” for this phase includes the development of seven technical memos. These technical memos will provide the foundation for the design, permitting, and operational protocols for the Demonstration Project. The technical memos include: 1) A detailed water quality assessment, 2) A process evaluation, 3) Assessment of the physical siting requirements, 4) Scope of permitting requirements, 5) An operations and maintenance protocol, 6) Distribution options, 7) Project cost estimate, and 8) Continued research and development concepts. This phase of work is approximately 40% complete and three of the most critical technical memos have been completed providing the foundation to move forward with the Phase B permitting and design efforts.

**Phase B:** This “Scope of Work” integrates the work performed in Phase A into a design package. This work will include process recommendations, facility layout, mechanical, electrical, and instrumentation control design, structural analyses, surveying, bid package preparation, bid package review, and coordination with SEA Lab, AES personnel and the City of Redondo Beach. This phase of work also includes all necessary permitting and supporting environmental studies be performed. Permitting activities are scheduled to begin in January 2007 with the design activities scheduled to start in March 2007.

**Phase C:** This “Scope of Work” for this phase requires the Consultant to coordinate and manage the construction activities during the implementation of this Project. Duties will include review of shop drawings, coordination and oversight of Contractor activities, review of the contractors schedule and construction cost, lead weekly project meetings, respond to change orders, address unforeseen field conditions, and coordinate with SEA Lab personnel. This work will be initiated upon the start of construction activities.

**Phase D:** During this phase, the Consultant will be responsible for operating and maintaining the temporary Demonstration Project. In addition, the Consultant will be responsible for performing routine regulatory sampling/monitoring and compliance reporting to the various agencies. This work will be facilitated by the Consulting team in the same manner that the District operates its water recycling plant. This “Scope of Work” will start upon completion of construction and startup of the temporary Demonstration Project.

As with many of the District’s other large and successful projects, the District has solicited the services of the District’s membrane consultants, SPI, to perform the actual reverse osmosis system design and preparation of the pretreatment specification requirements. This engineering design model has worked

well for all of the District's previous membrane projects and will be applied to each of the next phases for the Temporary Ocean-Water Desalination Demonstration Project.

**Budget**

|   | <b>MWH<br/>(Actual)/Proposed<br/>Budget</b> | <b>SPI<br/>(Actual)/Proposed<br/>Budget</b> | <b>Schedule<br/>(Months)</b> | <b>Status</b> |
|---|---|---|------------------------------|---------------|
| Phase A – Preliminary Design Development    | (\$1,143,357)                               | (\$74K)                                     | 9                            | 40% Complete  |
| Phase B – Design & Permitting               | \$1.2 – \$1.5 Mil                           | \$200 - \$250K                              | 15                           | Pending       |
| Phase C – Construction Management           | \$1.0 Mil                                   | \$75 - \$125K                               | 12                           | On-hold       |
| Phase D – Operations & Maintenance Services | \$1.1 – 1.3 Mil                             | \$200-\$300K                                | 24                           | On-hold       |
| <b>Total</b>                                | <b>\$4.4 – \$4.9 Mil</b>                    | <b>\$549-\$744K</b>                         | <b>60</b>                    |               |
| <b>Grand Total</b>                          | <b>\$4.9 – \$5.6 Mil</b>                    |   |                              |               |

Initial cost estimates for the construction of the temporary Demonstration Project ranges between \$4 and \$6 million dollars. Staff will have a more detailed cost estimate of expected construction at the completion of the Phase A "Scope of Work". The proposed total Project cost (Design, construction, & operations) for development of the temporary Demonstration Project ranges between \$9 and \$12 million dollars.

**Design Services**

District staff has solicited a detailed cost proposal from MWH to assist with the Phase B "Scope of Work". As indicated above, these services will provide the detailed professional consulting design services to prepare a bid package for the construction of the temporary Demonstration Project. Staff is reviewing the proposal and negotiating several cost components of the proposed work and will bring a recommendation to the Board for consideration at a future Board meeting.

**FISCAL IMPACTS:**

Funds for this Project are included in the Fiscal Year 2006-07 in the Construction Fund.

**ENVIRONMENTAL COMPLIANCE:**

Environmental requirements for this Project will be evaluated as part of the study scope.

**COMMITTEE STATUS:**

This item was reviewed by the Water Resources Committee on January 11, 2007 and agendized to the January 22, 2007 Board meeting as information for discussion.

**RECOMMENDED MOTION:**

This item is for information only.

**EXHIBITS:**

None.