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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

8-6

August 19, 1998

To: Board of Directors (Special Committee on Water Quality, Desalination,
and Environmental Compliance--Action)
(Engineering and Operations Committee--Action)
(Budget and Finance Committee--Information)

From: *for* General Manager

Submitted by: Susan K. Walker
Manager of Business Development

Subject: Negotiate a Cost-Sharing and Reimbursement Agreement with International
Desalination Technologies and Revise Scope of Work for Appropriation
No. 15167.

RECOMMENDATION

It is recommended that your Board:

1. Authorize the General Manager to negotiate a cost-sharing and reimbursement agreement with International Desalination Technologies, a joint venture of Parsons Corporation and Israel Desalination Engineering, Ltd., for the purpose of continuing the commercialization of Metropolitan's seawater desalination technology. The agreement will be brought for Board of Directors' approval; and
2. That authorization be given to alter the work scope of Appropriation No. 15167, without changing the amount of the Appropriation, to include design activities related to a testing, operating, and exhibition unit in Southern California.

EXECUTIVE SUMMARY

At the July 28, 1998, meeting of the Special Committee on Water Quality, Desalination, and Environmental Compliance, executives representing International Desalination Technologies, (IDT), a joint venture of Parsons Corporation and Israel Desalination Engineering, Ltd., presented their commercialization plan. Commercialization is the next phase of advancing Metropolitan's seawater desalination technology. The IDT team concluded the best strategy to maximize revenue opportunities is in either design/build or design/build/operate/transfer proposals. As a precursor to those proposals, which require plant reliability guarantees, it is necessary to proceed with advanced testing, demonstration, and process exhibition. This can be accomplished through the construction of a 1/6th scale (46,000 gallons per day) Testing, Operating, and Exhibition (TOE) Unit located in Southern California.

The plan for funding the TOE is in process. Staff suggests that Metropolitan may desire to participate in the funding, provided that reimbursement provisions are guaranteed. Metropolitan's participation is consistent with the 1995 Board-approved policy regarding seawater desalination.

This action will assist staff in developing criteria for negotiations and determine the funding mechanisms available. A second request for Board action, to be presented in October 1998, will include options for Metropolitan participation and any related cost-sharing or reimbursement agreements.

DETAILED REPORT

Program Background

Appropriation 15167, formerly 604, originated in 1990 to provide development funding for a cost-saving seawater desalination technology. The Appropriation funded several internal and consultant investigative studies, technological development, the conceptual design of a large coastal seawater desalination plant, and a test program in Huntington Beach, California.

In 1996, the program transitioned from the research and development stage to an emerging, economically viable technology with the award of a \$4 million grant from the United States - Israel Science and Technology Foundation. It was determined that Metropolitan's technology was a potential economic breakthrough in seawater desalination processes. In order to obtain the grant funding, and further develop the commercialization aspects, Metropolitan needed the help of the private sector.

The Parsons Corporation, Israel Desalination Engineering, Ltd., (IDE), along with Reynolds Metals, and Metropolitan formed a consortium to complete a detailed design of a 12.6 million-gallon-per-day seawater desalination plant utilizing the grant funding, and to commercialize the technology worldwide. Metropolitan provided matching funds for the grant and crafted three agreements with the Joint Venture of Parsons and IDE. The first agreement was a Secrecy Agreement to help protect Metropolitan's invention or proprietary property. Through another agreement, Metropolitan retains a profit-sharing stake in the sale of every plant using its technology. The third agreement relates to Metropolitan's continuing involvement in the program through fully reimbursable staff services.

Summary of Board of Directors Actions

We have proceeded with the development of the seawater desalination program in a very conservative phased manner. The list below outlines the relevant Board actions pertaining to the Program.

1990 - 1996	Appropriation 604 (Revisions 1-5).....	\$ 5.95 million
1995 (May)	Resolution to Support Seawater Desalination Program	
1995 (August)	Policies and Principles for Seawater Desalination	
1996 (June)	Revision 6 Appropriation 604.....	\$ <u>6.0 million</u>
	Matching funds (\$4.0 M)	
	Huntington Beach Test Unit /Other (\$1.0 M)	
	Site Specific Work (\$1.0 M)	
	Total Authorized.....	\$11.95 million
	Less Reimbursement.....	\$-2.0 million
	Net Appropriation.....	\$ 9.95 million

Appropriation Status

Most of the work tasks required under the 1996 funding are complete, with the exception of the work related to siting a plant in Southern California. Overall, the Appropriation is expected to be under-spent by approximately \$400,000.

Commercialization Progress

The international team of Parsons, IDE, and Metropolitan presented a progress report on their commercialization efforts to the Board of Directors at the Special Committee on Water Quality, Desalination, and Environmental Compliance in July 1998. This presentation reinforced the viability of the process, reviewed the current opportunities, and related their recent experiences in the desalination market. Although the specific details of the IDT business plan are confidential, the general strategy involves design/build, design/build/operate, or design/build/operate/transfer models. These approaches, however, require process reliability and pricing guarantees to the client.

Commercialization Continues: The Testing, Operating, and Exhibition (TOE) Unit

Prior to providing guarantees, the team agreed that a 1/6th scale plant (46,000 gallons per day) needs to be built to further test the materials, demonstrate the process, and exhibit the technology. This plant, called the Testing, Operation, and Exhibition (TOE) Unit should be located in Southern California, at an estimated capital cost of \$1.1 million. Funds for operations are estimated at \$800,000 the first year and reduced to \$100,000 in subsequent years. (The cost details are under development and are part of the negotiation process. All information will be provided, with options, to the Board in October 1998 for a decision.)

As with many commercialization activities, timing is essential. Prospective clients from Singapore, other foreign markets, and those attending the International Desalination Conference in San Diego in August 1999 could view the process firsthand.

Negotiations Required for Developing Options

Metropolitan's staff is assisting in the development of a funding plan for the TOE Unit. The funding plan currently being discussed involves a cost-sharing among Parsons, IDE, and Metropolitan. Metropolitan staff has maintained a conservative position, but need direction as to the parameters for further negotiation. If Metropolitan were to provide any funding, staff strongly believes that a reimbursement provision must be included. Metropolitan's participation would be consistent with the 1995 Board-approved policy (see attached). Funds available from Appropriation 15167 could be utilized if the scope of the Appropriation were revised to include the design of the TOE Unit.

Two-Phased Board Approval

This first request, the alteration of scope for Appropriation 15167, will permit staff to continue to identify funding mechanisms and to negotiate a cost-sharing, reimbursement agreement for the TOE Unit. The second request, to be presented in October 1998, will include options for Metropolitan participation, and any related cost-sharing or reimbursement agreements.

SKW/ms

Attachment(s)



MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

July 18, 1995

To: Board of Directors
(Executive Committee--Action)
(Ad Hoc Committee on Energy and Desalination--Action)
(Committee on Legislation--Action)
(Engineering and Operations Committee--Action)

From: General Manager

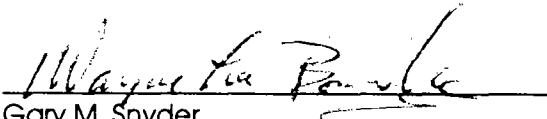
Subject: Adoption of Policy Statement and Principles for Seawater Desalination

RECOMMENDATION:

It is recommended that the Board adopt a seawater desalination policy statement and principles as stated in this letter.

John R. Wodraska
General Manager

Submitted by:


for Gary M. Snyder
Chief Engineer

Concur:


for John R. Wodraska
General Manager

skw:aj/06285
(seawater.doc)

SUMMARY:

A Board policy is needed to guide the staff's work on seawater desalination. Metropolitan is Southern California's lead agency in regional water development and may become a significant consumer of desalinated seawater in the next century. In the past, Metropolitan has supported non-controversial legislation pertaining to funding of desalination research and development. In 1990, the Board of Directors authorized the Seawater Desalination Demonstration Project and funds the project as each phase is evaluated. In May 1995, the Board of Directors passed "A Resolution in Support of Desalination Technology" which was included as part of a research and development grant application to the United States Department of Commerce. Metropolitan wishes to continue to participate with national and international organizations to lead and promote the demonstration of seawater desalination technologies. These activities may be in conjunction with the private or public sectors. Newly proposed projects will be evaluated on a case-by-case basis and presented to the Board of Directors on a continuing basis.

ISSUE

Metropolitan is Southern California's lead agency in regional water development and may become a significant consumer of desalination water in the next century.

Should Metropolitan continue to lead and coordinate seawater desalination activities and programs including the pursuit of legislation to fund research and demonstration?

BACKGROUND

For nearly forty years, Metropolitan and its Member Agencies have explored the viability of desalinating seawater. While more than adequate supplies of seawater are available and reliable, the costs to produce potable water using traditional desalting methods is far more costly than other existing sources.

There is significant world-wide interest for an economically feasible method to produce desalinated seawater. Desalination gained popularity in the 1990's as the public became keenly aware of drought and its environmental impact. In support of this work by both the public and private sectors, members of Congress have introduced legislation to provide research and development funding.

In keeping abreast with the technology in this arena, Metropolitan developed a conceptual design of an enhanced seawater distillation process. And in 1990, Metropolitan's Board of Directors authorized the exploration of a new, cost-competitive method of seawater desalination, The Seawater Desalination Demonstration Project. Funding is granted by the Board of Directors only after each phase of the project is evaluated and reviewed. A special Board Ad Hoc Committee on Energy and Desalination advises and monitors project activity.

The Seawater Desalination Demonstration Project is a three-phase program that includes preliminary engineering with a 2,000 gallon-per-day test unit, final design, and development and construction of a 5 million-gallon-per-day (mgd) demonstration plant. Total costs of this

multi-year program are estimated at \$35 million. Thus far, Metropolitan has committed \$5 million to finance the costs of the preliminary design of the 5-mgd plant and for the design and construction of the 2,000 gallon-per-day test plant. This will serve as a prototype for a future, full-size 75 mgd plant.

Last May, Metropolitan pursued opportunities to help defray \$4 million of the remaining design costs of the demonstration plant through the use of research and development grant funds from the United States-Israel Science and Technology Program administered by the Department of Commerce. Metropolitan joined with the Ralph M. Parsons Company and the Israel Desalination Engineering Company in preparing a grant proposal which was submitted May 19.

METROPOLITAN POSITIONS

In the past, Metropolitan has supported non-controversial legislation pertaining to funding of desalination research and development technology.

Metropolitan has also encouraged member agencies to develop alternative sources of water through its Local Projects and Groundwater Recovery Programs and through such programs as the Central Basin Municipal Water District's Long Beach Desalination Project.

In support of Metropolitan's Seawater Desalination Demonstration Project, the Board of Directors adopted a "Resolution in Support of Desalination Technology" at its regularly scheduled meeting May 9, 1995. The adopted resolution states:

Whereas, Metropolitan meets supplemental water demands of 16 million people living in a six-county region of Southern California, is one of the largest water suppliers in the world, and is the lead agency in the region's integrated water resource planning and management efforts that include seawater desalination as a potential local water supply, and

Whereas, Metropolitan may become a significant consumer of desalinated seawater in the next century, it has an incentive to invest in developing cost-competitive technologies, and

Whereas, Metropolitan has analyzed seawater desalination projects throughout the world and has found that the actual costs of currently operating seawater desalination plants and the cost estimates for new seawater desalination plants are not cost-competitive with Southern California's traditional sources of water supplies, and

Whereas, in 1990 Metropolitan authorized the initiation of the Seawater Desalination Demonstration Project and has since committed \$5 million to complete the preliminary design of a large capacity seawater desalination facility that incorporates a new technology and to design, build, and operate a 2,000 gallon-per-day test unit which is currently in operation, and

Whereas, the Preliminary Design Report was completed in 1993, a test unit is now installed and preliminary test results of the new technology are very promising in producing cost-competitive drinking water,

NOW THEREFORE, the Board of Directors of the Metropolitan Water District of Southern California does hereby resolve to:

PROVIDE FUNDS TO CONTINUE PURSUIT OF A NEW COST-COMPETITIVE SEAWATER DESALINATION TECHNOLOGY VERIFIED THROUGH THE DESIGN, CONSTRUCTION, AND OPERATION OF A 5-MILLION-GALLON-PER-DAY DESALINATION PLANT.

RECOMMENDED POLICY AND PRINCIPLES

It is recommended that the Board adopt the following policy and principles:

Policy

Metropolitan, in cooperation with national and international organizations, shall promote and lead in the development and demonstration of improved seawater desalination technologies. These activities and/or programs may be in conjunction with its member agencies and/or private and public sectors in order to provide additional, reliable potable water supplies to meet the projected demands of Southern California's growing population in the 21st century.

Principles

- 1) Metropolitan shall continue to play a leadership role in the research and demonstration of seawater desalination technology.
- 2) Metropolitan shall continue its effort to obtain research and development funding for projects from all external sources.
- 3) Metropolitan shall protect its intellectual property rights and install and maintain internal procedures to help ensure protection.
- 4) Metropolitan shall develop a broad coalition of public and private entities to share non-protected information, discuss opportunities and the transfer of technology, and to encourage the passage of legislation consistent with this policy.
- 5) Metropolitan staff shall evaluate each seawater desalination project proposal on its own merits, and submit an analysis with recommendations to the Ad Hoc Committee on Energy and Desalination.

With the adoption of this policy and principles, Metropolitan will continue to coordinate all related activities within its various divisions, departments and member agencies and ensure appropriate outreach to external participants.