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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

*Harold E. Jeff*  
EXECUTIVE SECRETARY

August 5, 1994

(Finance and Insurance Committee--Action)  
(Engineering and Operations Committee--Action)  
(Organization and Personnel Committee--Action)

To: Board of Directors (Special Committee on Water Quality &  
Environmental Compliance--Action)

From: General Manager

Subject: Revision No. 2 to Appropriation No. 610 to Increase Funding from \$10,000,000 to \$34,000,000 to Finance all Estimated Costs in Advance of Award of Contracts for Oxidation Retrofit at the Joseph Jensen and Henry J. Mills Filtration Plants; to Certify the Final Mitigated Negative Declaration for the Jensen Oxidation Retrofit; and to Authorize the General Manager to Amend an Agreement With the Los Angeles Department of Water and Power

Report

Background

In a letter from the General Manager dated July 28, 1993, the Board was presented with an overview of the negotiated Disinfectants/Disinfection By-Product (D/DBP) Rule, a comparison of treatment technologies, and an implementation schedule to enable Metropolitan and its member agencies to comply with all federal and state drinking water regulations. The proposed D/DBP Rule was signed by the U. S. Environmental Protection Agency Administrator Carol Browner on June 9, 1994, and was submitted to the Federal Register on June 13, 1994, for publication. The two-staged D/DBP Rule (see Attachment A) establishes maximum contaminant levels (MCLs) for several DBPs, as well as a requirement for total organic carbon removal by enhanced coagulation (the addition of significantly higher dosages of a coagulant such as alum to reduce DBP formation). Stage 1 of the D/DBP Rule has a compliance date of June 1998.

In November 1993, your Board approved Revision No. 1 to Appropriation No. 610 to increase funding to \$10.0 million to finance all estimated costs of preliminary design and environmental documentation for ozone/PEROXONE facilities at the Jensen Filtration Plant. In an effort to ensure that Metropolitan implements a treatment strategy capable of complying with all drinking water regulations at the lowest possible cost, staff also committed to thoroughly evaluate the potential for a water exchange between the Los Angeles Department of Water and Power (LADWP) and Metropolitan, as well

as reevaluate enhanced coagulation as an alternative to ozone/PEROXONE.

At your Board's June 1994 meeting, staff presented the results of the joint LADWP and Metropolitan evaluation of the water exchange feasibility, along with a detailed comparison of ozone/PEROXONE and enhanced coagulation. This study confirmed that ozone/PEROXONE has the lowest overall cost for compliance with Stage 1 or Stage 2 of the D/DBP Rule and will provide a significant improvement in controlling taste-and-odor problems in its source waters. In addition, the implementation of ozone/PEROXONE for Stage 1 of the D/DBP Rule will allow Metropolitan to comply with the more stringent disinfection requirements of the proposed Enhanced Surface Water Treatment Rule.

In order to ensure that both Metropolitan and its member agencies comply with Stage 1 of the proposed D/DBP Rule by June 1998, a decision to continue the Oxidation Retrofit Program (ORP) including the final design of ozone/PEROXONE facilities for the two plants treating 100 percent State Project water (Jensen and Mills) is required at this time. Decisions on the need for ozone/PEROXONE facilities at the plants treating primarily Colorado River water (Skinner, Weymouth and Diemer), can be deferred for at least one year.

#### Proposed Facilities

The Jensen and Mills ORP will include modifications to each plant's inlet works, addition of ozone contactors, an ozone generation building, an oxygen separation plant, additional chemical storage and feed capacity, appurtenant facilities, and upgraded utilities. At the Jensen plant, the construction would require major site preparation and possible relocation of the maintenance/service center. Additionally, the grading may require removal of the overburden on the Balboa Inlet Tunnel, necessitating a steel liner in a portion of the tunnel to compensate for loss of support from the surrounding soil. At Mills, the necessary site preparation and modifications of the inlet works are being constructed under the Mills Expansion No. 2 project, reducing the extent of construction for the ORP retrofit at that plant.

#### Cost Estimates

The total estimated cost of the preliminary design of the Jensen ORP and previously authorized work for the ORP at all five plants is \$10,000,000. Environmental studies are complete and preliminary design of the Jensen ORP is well underway. An increase in Appropriation No. 610 is required to

finance all estimated costs in advance of construction contracts for the ORP at the Jensen and Mills plants. A breakdown of this estimated cost is shown on the attached Financial Statement (see Attachment B).

The proposed D/DBP Rule requires that the ozone/PEROXONE process be followed by biofiltration, which has been used very successfully for decades at ozone plants in Europe and Canada. Testing at the Oxidation Demonstration Plant is currently evaluating biofiltration to determine if any design and/or operational modifications are necessary, as well as the costs associated with these potential modifications.

The preliminary estimate of the total capital costs including escalation is \$127,000,000 for the Jensen ORP and \$73,000,000 for the Mills ORP.

#### Schedule

In order for the Jensen and Mills ORP to be on-line by mid-1998, final design in some areas, such as site grading at Jensen and the ozone equipment procurement for both the Jensen and Mills ORP, needs to begin now. Final design of the general construction of the Jensen and Mills ORP is expected to commence by January 1995.

#### Staffing

At the present time, the Engineering Division does not have sufficient personnel to complete the preliminary and final design phases for the Jensen and Mills ORPs concurrently. Therefore, it is proposed that a melded team approach of supplementing the in-house engineering staff with that from outside resources be utilized.

Metropolitan's Engineering Division has used a melded team approach previously for the design of the Mills Expansion No. 2 Project and currently with the Domenigoni Valley Reservoir Project, where Metropolitan and a consultant staff work side-by-side within a matrix team organization. This approach has proven to be successful, and it is proposed to incorporate the LADWP staff into the project team through the remaining preliminary design and final design phases, and then further supplement the project team with an additional consultant contract at a later date.

One available resource to Metropolitan is the engineering design staff of LADWP's Power Design and Construction Division. Selection of qualified staff from LADWP has been conducted and an initial agreement for preliminary

design services for the ORP at the Jensen plant has been established with a maximum compensation for all participating LADWP employees of \$200,000. In order to complete preliminary and final design for the ORP at the Jensen and Mills plants, the maximum compensation for LADWP needs to be increased to \$4,012,000. This is equivalent to obtaining 15-20 Full Time Equivalents (FTE) to staff the Jensen and Mills ORP projects for the full term of the project design. The LADWP hourly rate schedule, including overhead and additives, is shown in Attachment C. LADWP is an affirmative action employer, and a copy of its affirmative action plan is on file with Metropolitan.

#### Environmental Documentation

To comply with the California Environmental Quality Act (CEQA), an Initial Environmental Study and Mitigated Negative Declaration (MND) for the Joseph Jensen Filtration Plant ORP was transmitted to the public for a 30-day review period on May 30, 1994. The MND presented two alternative grading options for the site preparation and several optional layouts of the oxidation facilities.

Comments received on the MND and responses thereto have been compiled into a Response to Comments Document which, together with the MND, constitute the final MND for the Jensen ORP. Your Board is required by CEQA to certify that they have reviewed and considered the information contained in the final MND, and that it has been completed in compliance with CEQA. A copy of the final MND and Mitigation Monitoring Program are being transmitted to all members of your Board.

In a letter from the General Manager dated January 29, 1991, the Final Environmental Impact Report (FEIR) for the Henry J. Mills Filtration Plant Expansion No. 2 was certified by your Board, along with the Mitigation Monitoring Program, both of which are in effect with the ongoing expansion work. The facility plan and disclosure statements in the FEIR included the future ozone/PEROXONE facilities at the Mills plant. No further CEQA documentation is required to proceed with the Mills ORP.

#### Board Committee Assignments

This letter is referred for action to:

The Finance and Insurance Committee because of its jurisdiction over appropriations pursuant to Administrative Code Section 2441(d).

The Engineering and Operations Committee because of its jurisdiction over the initiation, scheduling, contracting, and performance of construction programs pursuant to Administrative Code Section 2431(b);

The Organization and Personnel Committee because of its jurisdiction over the terms and conditions of employment of all consultant, advisor, and special counsel, pursuant to Administrative Code Section 2471(g); and

The Special Committee on Water Quality and Environmental Compliance because of its authority with regard to federal and state water quality regulations pursuant to Administrative Code Section 2551 (a) and (b);

#### Recommendations

#### **ENGINEERING AND OPERATIONS, FINANCE AND INSURANCE, SPECIAL COMMITTEE ON WATER QUALITY AND ENVIRONMENTAL COMPLIANCE, AND ORGANIZATION AND PERSONNEL COMMITTEES FOR ACTION.**

It is recommended that your Board certify that the Mitigated Negative Declaration (MND) for the Joseph Jensen Filtration Plant Oxidation Retrofit has been completed in compliance with CEQA, and that your Board has reviewed and considered the information contained in the MND prior to approving the project, and that your Board adopt the Mitigation Monitoring Program which accompanies the MND.

#### **FINANCE AND INSURANCE COMMITTEE FOR ACTION.**

It is recommended that your Board authorize an increase of \$24,000,000 in Appropriation No. 610 to a total of \$34,000,000 to finance all costs in advance of award of construction contracts for the Oxidation Retrofit Program at the Joseph Jensen Filtration Plant and the Henry J. Mills Filtration Plant. The increase in funds will come from the 1992 Revenue Bond Construction Fund.

#### **ENGINEERING AND OPERATIONS AND ORGANIZATION AND PERSONNEL COMMITTEES FOR ACTION.**

It is recommended that your Board authorize the General Manager to amend an agreement with Los Angeles Department of Water and Power (LADWP), substantially on the terms outlined in this letter and in form approved by the General Counsel, to provide engineering labor services for the preliminary and final design phases of the Oxidation Retrofit Program at the Joseph Jensen Filtration Plant and the Henry J.

Mills Filtration Plant. The fee for this work shall not exceed \$4,012,000 including expenses.

**SPECIAL COMMITTEE ON WATER QUALITY AND ENVIRONMENTAL COMPLIANCE  
AND ENGINEERING AND OPERATIONS COMMITTEE FOR ACTION.**

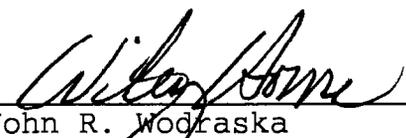
It is recommended that the General Manager be authorized to have all work performed, other than work to be performed under contracts involving expenditures of \$250,000 or more, in advance of award of construction contracts for the Oxidation Retrofit Program at the Joseph Jensen and Henry J. Mills filtration plants.

John R. Wodraska  
General Manager

By  \_\_\_\_\_

Gary M. Snyder  
Chief Engineer

Concur:

  
\_\_\_\_\_  
John R. Wodraska  
General Manager

JIM:aj  
(bdap:apr-610.rv2)  
Attachments

## Attachment A

## PROPOSED D/DBP RULE

## STAGE 1--Compliance Required by June 1998

Total THMs (TTHMs)	80	µg/L
Haloacetic acids--HAAs	60	µg/L
Bromate	10	µg/L

Enhanced Coagulation will be required for many waters\*

## STAGE 2--Compliance Required in 2002 (based on 1998 regulatory negotiations)

TTHMs	40	µg/L
HAAs	30	µg/L
Bromate	5	µg/L

\*The following is an excerpt from the proposed D/DBP Rule (pages 220-222), regarding avoidance of enhanced coagulation, which was submitted to the Federal Register for publication on June 13, 1994.

"d. Basis for avoiding enhanced coagulation or enhanced softening requirements.

40/30/<4/>60 It is harder to remove organic matter by enhanced coagulation in waters with alkalinities greater than 60 mg/L as CaCO<sub>3</sub> and TOC levels less than 4.0 mg/L (State Project water has an alkalinity of approximately 80 mg/L and TOC of 3.0-3.5 mg/L). To compensate for this phenomenon, systems with these water quality characteristics are permitted to apply alternate disinfectants before any precursor removal step and, if the TTHM and HAA levels produced are less than 40 and 30 µg/L, respectively, the utility would not have to implement enhanced coagulation.

In addition to allowing systems that already meet these criteria to avoid enhanced coagulation, the Committee also agreed to allow systems that were installing alternative disinfection technology that would allow the system to meet these criteria to avoid enhanced coagulation. The technology must be installed prior to the compliance date for Stage 2 D/DBP Rule. For example, a system that already had a TOC of less than 4.0 mg/L and an alkalinity greater than 60 mg/L would be allowed to avoid enhanced coagulation if the system committed to the installation of ozonation. This commitment must include a clear and irrevocable financial commitment not later than

the effective date for compliance with State 1 D/DBP Rule to technologies that will limit the levels of TTHMs and HAAs to no more than 40 and 30  $\mu\text{g/L}$ , respectively. Systems must submit evidence of the financial commitment, in addition to a schedule containing milestones for installation and operation of appropriate technologies, to the State for approval. Violation of the approved schedule will constitute a violation of the National Primary Drinking Water Regulation.

The schedule must be enforceable, but should only contain significant milestones. Types of schedule items that should be included as enforceable include award contract, begin construction, end construction, pilot operations, and full compliance. The schedule should allow for minor slippage, but must require compliance by the compliance date of Stage 2.

The cost of employing enhanced coagulation to waters of this type is higher than the base case examined as part of the regulatory impact analysis for this rule. It is assumed that systems with this type of water quality will, in general, achieve more cost effective reduction of DBPs by use of alternative treatment strategies than by use of enhanced coagulation. The overall purpose of this rule is to reduce the levels of DBPs that are known and DBPs that are not known."

## Attachment B

## FINANCIAL STATEMENT

The breakdown of the total estimated cost for Revisions Nos. 1 and 2 for all costs in advance of construction contracts for Oxidation Retrofit Program at the Jensen and Mills filtration plants is shown below:

	<u>Revision No. 1</u>	<u>Revision No. 2</u>
Labor:		
Study/Investigations	\$ 1,175,000	\$ 1,175,000
Preliminary Design	2,150,000	2,150,000
Final Design	0	6,070,000
Environmental Documentation	25,000	25,000
Operational Studies	<u>250,000</u>	<u>520,000</u>
Subtotal Labor	<u>\$ 3,600,000</u>	<u>9,940,000</u>
Materials and Supplies	80,000	412,000
Incidental Expenses	100,000	250,000
Professional/Technical Services:		
Preliminary Investigations:		
Camp Dresser & McKee Inc.	600,000	600,000
Black and Veatch	371,000	371,000
Montgomery/Watson	270,000	270,000
CH2M Hill	130,000	130,000
Process Applications, Inc.	150,000	150,000
Geotechnical Consultants	1,000,000	593,000
Environmental Consultants	150,000	150,000
Others	1,300,000	646,000
Preliminary Design Assistance:		
LADWP	0	200,000
Others	0	472,000
Final Design Assistance:		
LADWP	0	4,012,000
Others	<u>0</u>	<u>4,180,000</u>
Subtotal P/T	<u>\$ 3,971,000</u>	<u>11,774,000</u>
Operating Equipment	50,000	50,000
Administrative Overhead	1,986,000	5,484,000
Contingencies	<u>213,000</u>	<u>6,090,000</u>
Total	<u>\$10,000,000</u>	<u>\$ 34,000,000</u>

Source of Funds: 1992 Revenue Bond Construction Fund

Class: One--Projects required for health and safety or governmental requirements.

Projected Expenditures of Funds:

Through Fiscal Year 1993/94	\$ 4,000,000
Fiscal Year 1994/95	15,000,000
Fiscal Year 1995/96	<u>15,000,000</u>
Total	\$ 34,000,000

Project Benefit:

Compliance with proposed regulations regarding the control of disinfection by-products and pathogens in drinking water supplies. Flexibility in controlling taste-and-odor compounds and in meeting future and more stringent drinking water regulations.

Capital Program for Fiscal Year 1994/95:

Estimated Program Cost:

Jensen filtration plant	\$ 127,000,000
Mills " "	73,000,000
Skinner " "	125,000,000
Weymouth " "	110,000,000
Diemer " "	<u>140,000,000</u>

Total Estimated Program Cost (all five plants) \$ 575,000,000

Program Estimate For Fiscal Year 1994/95 5,887,000

Estimated Additional Annual O&M Funds Required for ORP at All Five Plants (1994 Dollars) \$ 21,000,000 to \$ 26,250,000

## Attachment C

**LADWP HOURLY RATES**  
(includes additives and overhead)

POSITION	RATE
Draft Technician (Designer)	\$ 65.51
Assistant Engineer	62.06
Assistant Engineer w/RE	65.64
Associate Engineer	72.29
Associate Engineer w/RE	76.46
Associate Engineer Spec. I	82.89
Associate Engineer Spec. II	89.13
Associate Engineer Asst. Group Leader	82.89
Full Engineer	91.80
Full Engineer Asst. Manager	95.98
Senior Power Engineer	113.95
Geotechnical Assistant Engineer	62.06
Geotechnical Associate Engineer	72.29
Geotechnical Full Engineer	91.80
Associate Geologist	78.74
Geologist	91.80
Survey Engineering Aide	56.27
Land Survey Assistant	62.37
Survey Party Chief	68.13
Architectural Assistant	62.06
Architectural Associate	78.38
Architect	91.80