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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

October 13, 1993

(Special Committee on Water Quality and
Environmental Compliance--Action)

To: Board of Directors (Engineering and Operations Committee--Action)
(Finance and Insurance Committee--Action)

From: General Manager

Subject: Revision No. 1 to Appropriation No. 610 to Increase Funding
from \$5.0 million to \$10.0 million to Finance all Estimated
Costs of Preliminary Design and Environmental Documentation
for Metropolitan's Oxidation Retrofit Program at the Joseph
Jensen Filtration Plant

Report

At your Board's August 1993 meeting, staff presented an overview of Metropolitan's Trihalomethane (THM) Action Plan and recommended that Metropolitan proceed immediately with the Oxidation Retrofit Program (ORP). Implementation of the ORP will involve the addition of ozone/PEROXONE facilities to each of Metropolitan's existing filtration plants (PEROXONE is the combination of ozone and hydrogen peroxide). This program was developed in response to new drinking water regulations for disinfectants and disinfection by-products (D/DBP Rule) that will be proposed by the U.S. Environmental Protection Agency (USEPA) in March 1994.

In order to meet the requirements of the D/DBP Rule scheduled for compliance in June 1998, a number of water purveyors will be required to make major modifications to their existing water treatment facilities. The current schedule for the proposed D/DBP Rule is such that a decision to commence with preliminary engineering and environmental documentation for the installation of the ozone/PEROXONE retrofit at the Joseph Jensen Filtration Plant is needed now.

In 1986, Metropolitan initiated its THM Action Plan to identify cost-effective treatment technologies that would allow Metropolitan to meet new and more stringent standards for THMs and other disinfection by-products (DBPs), while keeping an eye to viable disinfection technologies which may be required for future regulations on certain pathogenic microorganisms, such as *Cryptosporidium*. The ozone/PEROXONE process is most favorable to balancing future, more stringent disinfection regulations while controlling regulated DBPs. Furthermore, the ozone/PEROXONE process has the unique benefit as a means

of effective taste and odor (T&O) removal to improve customer satisfaction.

Negotiations concerning the development of Stage 1 of the D/DBP Rule are complete. Stage 1 is now anticipated in March 1994 with compliance required by June 1998. Stage 1 will reduce the maximum contaminant level (MCL) for THMs from its current level of 100 micrograms per liter ($\mu\text{g/L}$) to 80 $\mu\text{g/L}$, as well as set MCLs for haloacetic acids and bromate.

Metropolitan can deliver water to its member agencies that will meet the Stage 1 MCL (see Table 1). However, (1) some of Metropolitan's member agencies will not be able to meet the Stage 1 THM MCL of 80 $\mu\text{g/L}$, and (2) Metropolitan's filtration plants treating state project water (Jensen and Mills) would have to install enhanced coagulation facilities by 1998 if ozone/PEROXONE is not installed. In addition, neither Metropolitan nor its member agencies can meet the proposed Stage 2 THM MCL of 40 $\mu\text{g/L}$ without new treatment facilities by the year 2002. With ozone/PEROXONE followed by chloramines, Metropolitan expects to reliably achieve average THM levels of 30 $\mu\text{g/L}$ or less.

The Jensen plant is recommended to be the first plant retrofitted with ozone/PEROXONE facilities, followed by the Henry J. Mills Filtration Plant, because member agencies which receive treated water exclusively from either Jensen or Mills plants will not meet the Stage 1 THM MCL. Due to the time required for design, procurement of equipment, and construction, as shown in Figure 1, preliminary design and environmental documentation for the ORP, beginning with the Jensen plant, must commence now. It is anticipated that preliminary design and environmental documentation can be completed by June 1994 for the Jensen plant retrofit. In addition to this work on ozone/PEROXONE, enhanced coagulation will continue to be studied at the Jensen plant until the D/DBP Rule is proposed in Spring 1994.

Following completion of preliminary design and environmental documentation of ozone/PEROXONE facilities for the Jensen plant, it is anticipated that staff will return to the Board in Spring 1994 for environmental certification and funding for final design for the retrofit of oxidation facilities at the Jensen plant. This timing coincides with EPA's regulatory schedule for the D/DBP Rule, with the draft rule proposed in March 1994, as shown in Figure 1. Should EPA's schedule be delayed for any reason, Metropolitan would have only proceeded through preliminary design of the first plant, requiring only a modest outlay of capital expenditures for the ORP. This will allow staff to review options if

compliance dates are delayed, and possibly enable a phased commitment to the ORP program.

In September 1990, your Board approved Appropriation No. 610 in the amount of \$5.0 million to finance ORP preliminary investigations relating to the retrofit of all filtration plants with ozone/PEROXONE facilities. These investigations have progressed to the point where it is appropriate to proceed with preliminary design and environmental documentation for ozone/PEROXONE facilities at the Jensen plant.

The estimated cost of preliminary design and environmental documentation for the first filtration plant is \$5.0 million. Including funds appropriated to date, this would bring the total expenditures to \$10.0 million. A breakdown of this estimated cost is shown on the attached Financial Statement (see Attachment A).

Your Board was informed orally in August 1993 that the ORP program would cost over \$700 million. This estimate includes provisions to handle T&O problems more completely. The ORP program has been reconsidered as a scaled-back approach to initially only comply with the proposed D/DBP Rule. This cost reduction was accomplished by:

- (1) Reducing the design ozone dose from 3.0 to 2.0 mg/L,
- (2) Forgoing improvements which are likely to be necessary to comply with other anticipated but less well-defined new regulations such as the Arsenic Rule and the Enhanced Surface Water Treatment Rule (the Enhanced Surface Water Treatment Rule is also scheduled for proposal in March 1994).

The drawback of this approach is that staff may have to return to your Board in the future if new regulations or T&O concerns require the construction of additional facilities. The estimated capital cost of the scaled-back ORP at all five plants is \$575 million. This includes facilities for pH adjustment and site-specific construction which are also scaled back as much as possible.

The preliminary design and environmental documentation are exempt from the provisions of the California Environmental Quality Act.

Board Committee Assignments

This letter is referred to:

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

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

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

Recommendations

SPECIAL COMMITTEE ON WATER QUALITY AND ENVIRONMENTAL COMPLIANCE FOR ACTION.

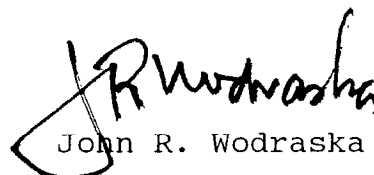
It is recommended that your Board approve that Metropolitan proceed with the preliminary design and environmental documentation for ozone/PEROXONE facilities at the Joseph Jensen Filtration Plant as the first plant in the Oxidation Retrofit Program.

ENGINEERING AND OPERATIONS COMMITTEE FOR ACTION.

It is recommended that your Board authorize the General Manager to have all work performed, other than work to be performed under competitively bid contracts and consulting contracts involving an expenditure over \$250,000 or more, for preliminary design and environmental documentation for ozone/PEROXONE facilities at the Joseph Jensen Filtration Plant.

FINANCE AND INSURANCE COMMITTEE FOR ACTION.

It is recommended that your Board authorize an increase of \$5.0 million in Appropriation No. 610 from the 1992 Revenue Bond Construction Fund to a total of \$10.0 million for preliminary design and environmental documentation for ozone/PEROXONE facilities at the Joseph Jensen Filtration Plant.



John R. Wodraska

JIM:daa/rs
(bdapr:apr-610/8203)
Attachments

TABLE 1

Comparison of Ozone/PEROXONE to Enhanced Coagulation

	<u>Ozone/PEROXONE</u>	<u>Enhanced Coagulation</u>
Can Metropolitan comply with Stage I of D/DBP Rule (1998)	Yes	Yes
Can Metropolitan comply with Stage II of D/DBP Rule (2002)	Yes	No
Can Member Agencies using Metropolitan Water comply with Stage I of D/DBP Rule	Yes	No

Note: The additional cost per acre-foot of water, including capital costs and O&M costs, is higher for enhanced coagulation than for ozone/PEROXONE at Metropolitan's filtration plants.

Financial Statement

(Program No. 5-6100-31)

The breakdown of the total estimated cost for preliminary design and environmental documentation is shown below:

	<u>Initial</u>	<u>Revision No. 1</u>
Labor:		
Study/Investigations	\$ 1,175,000	\$ 1,175,000
Preliminary Design	0	2,150,000
Environmental Documentation	25,000	25,000
Operations Study/Investigations	<u>0</u>	<u>250,000</u>
Subtotal Labor	<u>\$ 1,200,000</u>	<u>\$ 3,600,000</u>
Materials and Supplies	30,000	80,000
Incidental Expenses	50,000	100,000
Professional/Technical Services:		
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	1,000,000
Environmental Consultants	150,000	150,000
Others	<u>284,000</u>	<u>1,300,000</u>
Subtotal P/T	<u>\$ 2,955,000</u>	<u>\$ 3,971,000</u>
Operating Equipment	25,000	50,000
Administrative Overhead	662,000	1,986,000
Contingencies	<u>78,000</u>	<u>213,000</u>
Total	<u>\$ 5,000,000</u>	<u>\$10,000,000</u>

Source of Funds:

1992 Revenue Bond Construction Fund

Class One:

Projects required for health and safety or governmental requirements.

Attachment A (cont.)

Projected Expenditures of Funds:

Through Fiscal Year 1992/93	\$ 2,205,800
Fiscal Year 1993/94	<u>7,794,200</u>
Total	<u>\$ 10,000,000</u>

Project Benefit:

Compliance with proposed regulations regarding the control of disinfection by-products 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 1993/94:

Estimated Program Cost	\$ 491,073,000
Program Estimate Fiscal Year 1993/94	1,834,100

Estimated Additional Annual O&M Funds Required for ORP at All Five Plants (1993 dollars)	\$ 20,000,000 to 25,000,000
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Estimated Additional Annual O&M Costs per Acre-Foot for ORP at All Five Plants (1993 dollars)	\$ 13.00 to 16.00
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Figure 1



ORP IMPLEMENTATION SCHEDULE

PROJECT	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
D/DBP Rule		Draft Rule					REG NEG I	Proposed Rule Stage 1		Promulgated Rule	REG NEG II				
Ozone Retrofits					Preliminary Investigations										
Plant 1						Pre-Design	Final Design	Construction / Start-up							
Plant 2							Pre-Design	Final Design	Construction / Start-up						
Plant 3								Pre-Design	Final Design	Construction / Start-up					
Plant 4									Pre-Design	Final Design	Construction / Start-up				
Plant 5										Pre-Design	Final Design	Construction / Start-up			
New Plant										Pre-Design	Final Design	Construction / Start-up			