

June 15, 1999

**To:** Board of Directors (Engineering and Operations Committee—Action)

**From:** General Manager \_\_\_\_\_

**Submitted by:** Gary M. Snyder \_\_\_\_\_  
Chief Engineer

**Subject:** Appropriate \$616,100 for the Robert B. Diemer Filtration Plant Alum/Ferric Jet Mix Retrofit

**Reference:** Appropriation No. 15337

**RECOMMENDATION(S)**

For the retrofit of aluminum sulfate (alum)/ferric chloride (ferric) jet mix facilities at the Robert B. Diemer Filtration Plant (Diemer), it is recommended that the Board:

1. Appropriate \$616,100 in budgeted funds to finance all costs;
2. Authorize the General Manager to have all work performed; and
3. Determine that the project qualifies for Categorical Exemption under the California Environmental Quality Act.

**EXECUTIVE SUMMARY**

Metropolitan is in the process of converting its five treatment plants to allow the use of ferric as an alternative coagulant to alum. Ferric enhances filter performance under high pH conditions and may help comply with future water quality requirements. In addition, the existing coagulant injection/mixing system at Diemer is subject to fouling which requires a shutdown of the plant for maintenance. Three of Metropolitan’s five treatment plants have been retrofitted to use ferric and Diemer is the next plant to be converted. The total estimated cost to retrofit Diemer is \$616,100.

**JUSTIFICATION**

Alum is currently used as the primary chemical coagulant at Diemer. Recent experience and testing at Metropolitan’s filtration plants has shown that under some conditions ferric is more effective than alum at treating raw water and improves the performance of the downstream filtration process. Ferric would also be helpful in removing arsenic if future regulations require its removal. In addition, the existing coagulant injection/mixing system at Diemer is vulnerable

to diffuser plugging, exhibits poor chemical dispersion and, based on similar experience at three other treatment plants, must be replaced prior to commencing the use of ferric.

## ALTERNATIVE TO PROPOSED ACTION

### **Defer Retrofit**

One alternative to the proposed action is to defer the project until the existing diffusers plug again. This would reduce near-term capital expenditures, but would increase the risk of not meeting water quality standards. In addition, a complete plant shutdown would be required to remove and clean the existing diffusers should they plug again.

## FUNDING REQUEST

<b>Program Name:</b> Robert B. Diemer Filtration Plant Alum/Ferric Jet Mix Retrofit			
<b>Source of Funds:</b> Pay-As-You-Go Fund			
<b>Appropriation No.:</b> 15337	<b>Board Action No.</b> 1	<b>Total Budget:</b> \$616,100	
<b>Requested Amount:</b> \$616,100	<b>Capital Program No.:</b> 99005-W		
<b>Total Appropriated Amount:</b> \$616,100	<b>Capital Program Page No.:</b> E-22		
<b>Total Program Estimate:</b> \$616,100	<b>Program Category:</b> Water Quality		

## ACTIONS AND MILESTONES

- June 1999: Complete Preliminary Design Report
- October 1999: Complete Final Design
- March 2000: Complete Construction

## CEQA COMPLIANCE / ENVIRONMENTAL DOCUMENTATION

The proposed project qualifies for a Class 1 Categorical Exemption under the California Environmental Quality Act (CEQA) because it consists of the minor alteration of an existing public facility with no expansion of use beyond that which previously existed (State CEQA Guidelines, Section 15301). No other environmental documentation is required for this project.

## DETAILED REPORT

In October 1992, the Board approved Appropriation No. 653 to study a proposal to convert the chemical injection systems at the Diemer, Skinner, and Weymouth filtration plants to use ferric as an alternative to alum. Studies conducted by Metropolitan have shown that ferric is more effective than alum at treating water under diverse and sometimes adverse raw water conditions

which are experienced at these plants. Ferric produces a better water quality than alum under adverse conditions in terms of filter effluent turbidity, arsenic removal, and disinfection by-products precursor removal. As a result of these benefits, the Mills, Skinner and Weymouth plants have been retrofitted to use ferric. The Diemer plant is the next facility requiring this conversion.

The proposed system at Diemer will improve the chemical mixing process by replacing the existing pipe diffusers with a jet mix system to quickly and uniformly disperse the coagulant. This new system will be ferric compatible and will be similar to the system which was successfully installed and operated at the Mills plant. The proposed system will include removable diffusers to facilitate maintenance of the equipment and will significantly reduce downtime and maintenance costs, thereby increasing the reliability of the plant's overall treatment process.

Metropolitan staff will perform all design activities and purchase equipment and materials. Metropolitan forces will be utilized for construction due to the high degree of coordination required to tie into the existing system while minimizing the impact on plant operations.

The total estimated cost of the program is \$616,100. A breakdown of estimated costs is shown on the attached Financial Statement (Attachment A).

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**Attachment 8-3A**

**Attachment 8-3A****FINANCIAL STATEMENT**

(Capital Program No. 99005-W)

The breakdown of the total estimated cost of the Diemer Alum/Ferric Jet Mix Retrofit is as follows:

	<b><u>BOARD ACTION NO. 1</u></b>
Studies	\$ 80,000
Final Design	50,000
District Forces Construction	86,000
Project Management and Construction Support	24,000
Material and Supplies	170,000
Incidental Expenses/Professional Services /Equipment Use	14,000
Administrative Overhead	132,000
Program Contingencies	<u>60,100</u>
<b>Total</b>	<b>\$616,100</b>

Source of Funds: Pay-As-You-Go Fund

## Diemer Alum/Ferric Jet Mix Retrofit

Total Budget: \$616,100

