

- **Board of Directors**
Engineering and Capital Programs Committee

January 8, 2008 Board Meeting

7-4

Subject

Authorize reopening of Appropriation No. 15414 for completion of the Fluoridation Program

Description

Background

In February 2003, Metropolitan's Board adopted a policy to add fluoride at each of Metropolitan's five water treatment plants. The budget for the program was established as \$5.5 million, based on a conceptual-level estimate prepared in 1996. In September 2003, the California Dental Association Foundation (CDAF) notified Metropolitan that up to \$5.5 million of grant funding had been approved to assist Metropolitan with implementing community water fluoridation. In October 2003, the Board appropriated \$1.2 million for studies and design of fluoridation facilities (Approp. 15414).

In June 2007, the Chief Financial Officer's report to the Board on 2006 Inactive Appropriations listed Approp. 15414 as inactive and recommended that it be closed, since the program was being funded by the CDAF grant. In late June 2007, Approp. 15414 was closed by staff in anticipation of the program's completion. At that time, no expenses had been charged to the appropriation, so it retained its original balance of \$1.2 million. The fluoridation facilities have now been completed and are operating, and the final construction costs have been compiled.

The cost to complete the Fluoridation Program has exceeded the original \$5.5 million budget and grant funding. Staff seeks board authorization to reopen Approp. 15414 to fund this cost increase. The final total capital cost to implement fluoridation is approximately \$6,695,300, which is \$1,195,300 above the CDAF grant amount. Some of the issues that led to this increase include: rearrangements of piping and equipment to improve maintenance and safety; unanticipated underground interferences; work performed by Metropolitan forces which was not grant reimbursable; and selected design deficiencies by the consulting firm. These issues are discussed in detail below.

Because the Fluoridation Program did not meet Metropolitan's standards for success of a capital project, staff conducted a post-construction assessment of the program and identified several "lessons learned." These lessons are also discussed below.

CDAF Agreement

Under the funding agreement executed with CDAF in December 2003, Metropolitan is reimbursed quarterly up to a maximum of \$5.5 million for capital costs incurred to implement fluoridation. Eligible costs include engineering, legal, and administrative costs, and construction contract costs. The agreement requires use of competitive bidding procedures to assure that contracts are awarded to the lowest responsive bidders. Construction-related activities performed by Metropolitan forces are ineligible for reimbursement. The agreement also requires review and approval of the fluoridation designs by the California Department of Public Health (CDPH) before construction of facilities may commence. Final inspection and CDPH permitting were required before placing the fluoridation facilities into operation. The funding agreement initially required that construction be completed by December 2006, which could only be extended upon written approval of CDAF. In February 2006, Metropolitan requested a six-month extension to the completion date, due to the unfavorable bidding environment at that time. In May 2007, Metropolitan requested another four-month extension to allow contractors to complete construction (including punchlist items) at all five of the treatment plants, and to allow

sufficient time for CDPH to inspect the completed facilities and to subsequently issue its certification and approval. CDPH issued the fluoridation operating permits to Metropolitan on October 26, 2007.

Once in operation, the CDAF agreement requires the facilities to be operated and maintained for a period of 12 months.

To date, Metropolitan has received \$2,536,693 from CDAF, and staff is currently preparing a final reimbursement claim for the remainder of the grant amount.

Construction Contracts

To increase overall project efficiency and provide for coordinated construction activities, staff combined the fluoridation facilities with construction of other projects planned at each plant. At the time the Board awarded each of the five construction contracts, the fluoridation construction budgets were allocated among the various capital programs based on the anticipated work breakdown from the engineer's estimates. Within each construction contract, milestones were used to establish dates for contractor completion of the fluoridation facilities. Fluoridation costs were then transferred from the five separate projects into the Fluoridation Program.

Program Costs

In 2003, when Metropolitan initiated the Fluoridation Program and executed the reimbursement agreement with CDAF, the total program estimate for the work was \$5.5 million, equal to the maximum reimbursement amount. While the final design effort was completed within its budgeted amount, the construction costs have exceeded their budget. By the time the final construction contract was awarded in July 2006, major industry-wide price increases had occurred in key construction materials, and booming construction in California had reduced levels of competition among bidders. In addition, equipment (such as on-line fluoride analyzers, anti-siphon valves, flow meters, and miscellaneous instrumentation with software controls) was added at CDPH's request to eliminate the potential for overfeeding fluoride. No additional grant monies were available to fund these new required features. Staff aggressively incorporated Value Engineering changes into the fluoridation system designs in order to ameliorate these cost pressures. Cost containment efforts included:

- Staff obtained an air quality permit waiver and thereby deleted off-gas scrubbers, after performing calculations demonstrating that fluorosilicic acid off-gassing is minimal. Off-gas scrubbers had formerly been considered a "standard" component of fluoride systems.
- Installation of fluorosilicic acid injectors inside each plant's filter outlet conduit required a plant shutdown. Since the Diemer, Mills, and Weymouth contractors did not have sufficient time to complete the work during scheduled plant shutdowns in 2006, the injector work was undertaken by Metropolitan forces, who fabricated and installed fluorosilicic acid injectors during those shutdowns. This approach resulted in a substantial cost savings for Metropolitan by eliminating additional plant shutdowns.

The final total cost of the fluoridation facilities is approximately \$6,695,300, which exceeds the reimbursable amount by \$1,195,300. Some of the issues that arose during the course of the five construction projects, along with their approximate cost impact, are as follows:

- In July 2007, Metropolitan's Environmental Health and Safety Section (EHS) staff inspected the fluoridation facilities in preparation for start-up. The goal of this inspection was to ensure that all reasonable precautions had been taken for Metropolitan's safe operation and maintenance of the new installations. Handling of bulk fluorosilicic acid stored within each tank farm requires that certain precautions be taken because of fluorosilicic acid's corrosive properties. EHS staff recommended that several safety enhancements be made, including adding more emergency eyewash/shower stations; installing telephones at each tank farm; installing additional piping supports; installing additional pipe expansion joints to lessen potential for piping leaks due to storage tank expansion or movement; and relocation of installed piping to remove potential tripping hazards. These enhancements were performed by Metropolitan forces after the construction contractors had completed their work (\$356,000).
- Installation of injectors was performed by Metropolitan forces at the Diemer, Mills and Weymouth plants. Work by Metropolitan forces is ineligible for reimbursement under the CDAF agreement (\$243,000).

- At the Jensen, Mills, and Weymouth plants, several contract change orders were required to relocate unanticipated underground obstructions that were not shown on plant as-built drawings (\$150,000).
- Based on feedback from other agencies with fluoride systems, Metropolitan researched alternate materials for bulk storage of fluorosilicic acid. Four of the plants pioneered the use of large high density polyethylene (HDPE) tanks. These tanks initially experienced unforeseen expansion. When the tank at the Mills plant was hydrotested with water, its plastic support-base buckled and the tank bulged noticeably. When emptied, the tank returned to its original shape. The contractor repaired the support base with grout and wrapped the HDPE tank wall with fiberglass-reinforced plastic (FRP) to prevent future bulging. Similar change orders were issued to FRP-wrap the tanks at three other plants (\$78,000).
- Electrical-related contract changes were required in fluorosilicic acid valve control panels to comply with updated fire code requirements (\$53,000).
- Several contract change orders were required to eliminate use of non-compatible materials that had been shown in the design consultant's "standard details" on the contract drawings (\$93,000).
- A contract change order was required due to lack of the design consultant's mechanical-electrical layout coordination, in order to provide sufficient space for operation and maintenance of equipment at the Jensen fluorosilicic acid tank farm (\$187,000).
- Minor miscellaneous change orders related to containment and flushing lines (\$35,000).

Lessons Learned

More Critical Review of Consultants on Key Systems. The fluoridation systems represent Metropolitan's first use of a consultant for design of a primary chemical feed system in several decades. Metropolitan has optimized its chemical feed systems over time, and has developed highly reliable and safe installations. Transfer of the design philosophy proved to be a challenge on the fluoridation systems, along with the coordination of site-specific constraints at each plant. In the future, when a key system is designed by consultants, staff will provide more checks and balances in the delivery process, including more rigorous reviews. In addition, there will be more up-front involvement of Water System Operations and EHS staff.

Stage New Processes or Systems Over Time. Projects involving new processes or systems should be staged across Metropolitan's five treatment plants so that experience from the initial project may be incorporated into subsequent projects. This approach was followed on the Oxidation Retrofit Program, where improvements have been incorporated into each successive design based on experience from the initial installations. On the Fluoridation Program, due to the simultaneous construction of all five systems, several installation problems repeated themselves across all of the contracts.

Updating of Program Cost Estimates. The total program estimate for the Fluoride Program remained fixed over four years, despite industry-wide construction price increases. While staff aggressively pursued cost-savings measures in an attempt to remain within the grant-funded amount, these measures were not sufficient to avoid a budget overrun. Budget challenges should be addressed on a more timely basis, and updated cost estimates should be incorporated into each year's capital budget.

Requested Action

This action reopens Approp. 15414 for completion of Metropolitan's Fluoridation Program. The amount of previously appropriated funds, \$1.2 million, will be used to address the final construction issues noted above. No additional funds are required. Funds for this work were not included in the fiscal year 2007/08 capital budget because the need for the modification noted above was not identified at the time the budget was adopted. Upon approval of this action, the fiscal year 2007/08 capital expenditure plan will be adjusted to reflect the final Fluoridation Program activities. No further expenditures are planned.

Staff will continue to pursue external sources of funding to reimburse Metropolitan for the increased costs to complete the Fluoridation Program, including the CDAF and other health-related organizations.

See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determinations for Staff Recommendation:

Fluoridation Program for Skinner, Mills, Weymouth, and Jensen

The Fluoridation Program for Skinner, Mills, Weymouth, and Jensen was previously determined to be statutorily exempt under the provisions of CEQA and State CEQA Guidelines. The Board determined that the Fluoridation Program was exempt under Section 15282(n) of the State CEQA Guidelines on February 11, 2003. With the current board action, there is no substantial change proposed to the Program. Hence, the previous environmental documentation in conjunction with the current board action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act with regards to the proposed action. In addition, the appropriation of funds for construction change orders and Metropolitan force construction activities is not subject to CEQA because this action involves other government fiscal activities, which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Section 15378(b)(4) of the State CEQA Guidelines).

The CEQA determination is: Determine that the Program has been previously addressed in the 2003 NOE (Section 15282(n) of the State CEQA Guidelines) and that no further environmental analysis or documentation is required. In addition, determine that the appropriation of funds is not subject to CEQA per Section 15378(b)(4) of the State CEQA Guidelines.

Fluoridation Program for Diemer

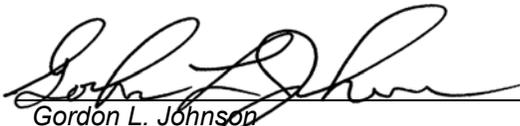
The environmental effects from the design, construction, and operation of the Diemer fluoridation facility were evaluated in the Robert B. Diemer Filtration Plant Improvements Project Final EIR, which was certified by the Board on February 13, 2001. The Board also approved the Findings of Fact (findings), the Statement of Overriding Considerations (SOC), the Mitigation Monitoring and Reporting Program (MMRP), and the overall improvements project itself. The current board action to appropriate funds for construction change orders and Metropolitan forces construction activities, would not result in any changes to the original project. Hence, the previous environmental documentation taken by the Board in conjunction with the proposed action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act on the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the certified 2001 Final EIR, along with the related documentation (i.e., findings, SOC, and MMRP), and that no further environmental analysis or documentation is required.

Staff Recommendation

Adopt the CEQA determination and reopen Approp. 15414 to fund completion of the Fluoridation Program.

Fiscal Impact: \$1,200,000 of previously appropriated but currently unbudgeted funds under Approp. 15414


Gordon L. Johnson
for Roy L. Wolfe
Manager, Corporate Resources
12/26/2007
Date


Brian G. Thomas
for Jeffrey Kightlinger
General Manager
12/26/2007
Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

BLA #5774

Financial Statement for Fluoridation Program

A breakdown of Board Action No. 1 for Appropriation No. 15414 for completion of the Fluoridation Program is as follows:

	Board Action No. 1 (Jan. 2008)
Labor	
Metropolitan force construction	\$ 350,050
Materials and Supplies	\$ 236,303
Incidental Expenses	\$ 12,604
Contract change orders	\$ 596,343
Remaining Budget	\$ 4,700
Total	\$ 1,200,000

Funding Request

Program Name:	Fluoridation Program		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15414	Board Action No.:	1
Requested Amount:	\$ 1,200,000	Capital Program No.:	15414-T
Total Appropriated Amount:	\$ 1,200,000	Capital Program Page No.:	N/A
Total Program Estimate:	\$ 6,700,000	Program Goal:	T - Stewardship

