



- Board of Directors
Engineering and Operations Committee

2/10/2015 Board Meeting

8-2

Subject

Appropriate \$13.5 million; and award \$9.31 million contract to C. W. Roen Construction Co. for upgrades to the east filters at the Robert B. Diemer Water Treatment Plant (Approp. 15436)

Executive Summary

This action awards a construction contract for upgrades to the Diemer plant's east filters, including replacement of 127 deteriorated valves and seismic strengthening of the filter buildings. These upgrades will reduce the risk of damage to the Diemer plant in the event of a major earthquake, and will enhance the reliability and performance of its filters.

Timing and Urgency

Under Metropolitan's ongoing program to evaluate the seismic stability of its facilities, staff conducted structural evaluations of the two filter buildings at the Diemer plant. This study concluded that the filter buildings are seismically vulnerable and should be upgraded to reduce the risk of damage from a major seismic event. In addition, based on inspections conducted by staff during recent plant shutdowns, the valves that control the filtration process were found to be in need of replacement. These valves have deteriorated following 45-50 years of continuous service. Procurement of the 127 replacement valves was previously authorized by Metropolitan's Board, and the valves have been manufactured and delivered to a storage location near the plant. Due to the importance of the filters in maintaining treated water deliveries from the Diemer plant, staff recommends proceeding with upgrades to the east filters at this time.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and is categorized as an Infrastructure Reliability project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2014/15.

Details

Background

The Diemer plant was placed into service in 1963 with an initial capacity of 200 million gallons per day (mgd). In 1969, the plant was expanded to its present capacity of 520 mgd. It delivers a blend of waters from the Colorado River and the State Water Project to Metropolitan's Central Pool and to an exclusive service area in Orange County. The Diemer plant is located within the city of Yorba Linda, approximately one-half mile south of the Whittier Fault, which is capable of generating a 6.8-magnitude earthquake.

The Diemer plant has two filter buildings. The east filter building was completed in 1963 during the original plant construction, while the west filter building was added in 1969. Each building has three levels, with the lowest level consisting of a sump which collects used filter backwash water. The middle level is comprised of 24 filter basins and a gallery that houses piping, filter valves, and equipment that operates and monitors the filters. The filter control building, which contains process control equipment, is on the top level.

Each filter is operated by opening and closing a series of valves that allow water to flow in and out of the filter basins during filtration and backwashing. Filter valves are designed to close tightly to prevent mixing of filtered and unfiltered water, and to prevent leakage into the washwater reclamation system.

Over the life of the Diemer plant, staff has performed regular maintenance on the filter valves to support reliable plant operation. However, gradual deterioration of the valves has occurred through continuous use, including corrosion of the steel valve bodies and degradation of the embedded seals. Detailed inspections conducted during recent shutdowns identified that these valves no longer provide a water-tight seal and do not operate effectively. All filter valves at the Diemer plant need to be replaced.

In May 2013, Metropolitan's Board awarded two procurement contracts for replacement filter valves and authorized final design for their installation. Manufacture of the valves has now been completed, and they have been delivered to a storage warehouse near the plant.

When the Diemer plant was constructed in the early 1960s, it was designed to meet building codes of that time. Over the last several decades, industry knowledge of earthquakes and seismic design has greatly improved, which has led to development of today's more stringent building codes. Under Metropolitan's seismic assessment program, staff recently conducted detailed structural evaluations of the Diemer plant's two filter buildings. These evaluations were based on current building codes and updated site-specific geotechnical information. The evaluations concluded that both buildings require structural upgrades to withstand a major earthquake. In October 2012, Metropolitan's Board authorized final design of seismic upgrades for the filter buildings.

In order to minimize impacts to plant operations and enhance construction efficiency, staff has combined the filter valve replacement work with the filter building seismic upgrades. Two staged construction contracts are planned so that half of the Diemer plant's filters will remain in service at all times. Final design of the east filter upgrades has been completed, and staff recommends proceeding with construction. Final design of the west filter upgrades is currently underway. Staff will return to the Board to award a construction contract for the west filter upgrades at a later date.

Planned upgrades for the east filters include reinforcement of the filter control building; replacement of two drop gates to isolate the east filters; addition of new concrete piers within the sump area below the filters; replacement of the existing filter valves with new valves that conform to the modern American Water Works Association (AWWA) standard for rubber-lined butterfly valves; and modification of programming within the plant's Supervisory Control and Data Acquisition (SCADA) system. To accommodate these upgrades, electrical and mechanical equipment will be relocated and existing piping will be modified.

Diemer East Filter Upgrades – Construction (\$13,500,000)

Specifications No. 1753 for the Diemer East Filter Upgrades was advertised for bids on October 7, 2014. As shown in [Attachment 2](#), ten bids were received and opened on November 19, 2014. The low bid from C. W. Roen Construction Co. in the amount of \$9.31 million complies with the requirements of the specifications. The other bids ranged from approximately \$9.5 million to \$12.7 million, while the engineer's estimate was \$9.4 million. For this contract, Metropolitan has established a Small Business Enterprise participation level of at least 20 percent of the bid amount. C. W. Roen Construction Co. has committed to meet this level of participation. The subcontractors for this contract are listed in [Attachment 3](#).

This action appropriates \$13.5 million and awards a \$9.31 million contract to C. W. Roen Construction Co. to upgrade the east filters at the Diemer plant. In addition to the amount of the contract, the requested funds include \$1,565,000 for construction support by Metropolitan forces, which includes SCADA programming, equipment start-up and testing, and sequential shutdown and start-up of filter units. The requested funds also include \$1.09 million for construction inspection; \$280,000 for submittals review and record drawing preparation by Metropolitan staff; \$390,000 for hazardous materials testing and project management; and \$865,000 for remaining budget.

Metropolitan staff will perform inspection of the construction. For this project, the anticipated cost of inspection is approximately 10.6 percent of the total construction cost. Engineering Services' goal for inspection of projects

with construction cost greater than \$3 million is 9 to 12 percent. The total cost of construction for this project, which includes the contract, Metropolitan force support, and the previously procured valves, is \$12.5 million.

The total estimated cost to complete the upgrades to the Diemer plant's east filters, including the amount authorized to date and current funds requested, is approximately \$17.3 million.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2014/15 capital expenditure plan. See [Attachment 1](#) for the Financial Statement, [Attachment 2](#) for the Abstract of Bids, [Attachment 3](#) for the List of Subcontractors, and [Attachment 4](#) for the Location Map.

The Diemer East Filter Upgrades project is included within the Diemer Improvements Appropriation – FY 2006/07 Through FY 2011/12 (Appropriation No. 15436), which was initiated in fiscal year 2006/07. With the present action, the total funding for Appropriation No. 15436 will increase from \$33,219,000 to \$46,719,000.

Project Milestone

October 2016 – Completion of the east filter upgrades

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The overall activities involve the funding, design, minor alterations and replacement of existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1 and Class 2 Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under two Categorical Exemptions (Class 1, Section 15301 and Class 2, Section 15302 of the State CEQA Guidelines)

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination that the proposed action is categorically exempt, and

- a. Appropriate \$13.5 million; and
- b. Award \$9.31 million contract to C. W. Roen Construction Co. for upgrades to the east filters at the Diemer plant.

Fiscal Impact: \$13.5 million in capital funds under Approp. 15436

Business Analysis: This option will enhance the reliability and operating efficiency of the Diemer plant.

Option #2

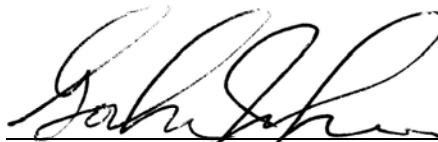
Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option would forgo an opportunity to reduce the risk of damage to the Diemer plant in the event of a major earthquake. In addition, staff would replace existing filter valves individually as they fail. Overall valve replacement costs would increase, along with the risk of unplanned outages. Metropolitan would also continue to incur storage costs for the replacement valves.

Staff Recommendation

Option #1



1/13/2015
Gordon Johnson
Manager/Chief Engineer,
Engineering Services



1/27/2015
Jeffrey Lightlinger
General Manager

Attachment 1 – Financial Statement**Attachment 2 – Abstract of Bids****Attachment 3 – Subcontractors for Low Bidder****Attachment 4 – Location Map**

Ref# es12633632

Financial Statement for Diemer Improvements Appropriation – FY 2006/07 Through FY 2011/12

A breakdown of Board Action No. 17 for Appropriation No. 15436 for the Diemer East Filter Upgrades¹ is as follows:

	Previous Total Appropriated Amount (May 2013)	Current Board Action No. 17 (Feb. 2015)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 915,600	\$ -	\$ 915,600
Final Design	5,531,600	-	5,531,600
Owner Costs (Program mgmt., haz. material testing)	2,725,438	390,000	3,115,438
Submittals Review and Record Drwgs	768,100	280,000	1,048,100
Construction Inspection & Support	2,006,791	1,077,000	3,083,791
Metropolitan Force Construction	2,549,400	1,390,000	3,939,400
Materials & Supplies	1,908,914	55,000	1,963,914
Incidental Expenses	275,993	133,000	408,993
Professional/Technical Services	1,077,943	-	1,077,943
Equipment Use	43,155	-	43,155
Contracts	13,892,287	-	13,892,287
C. W. Roen Construction Co.	-	9,310,000	9,310,000
Remaining Budget	1,523,779 ²	865,000	2,388,779
Total	\$ 33,219,000	\$ 13,500,000	\$ 46,719,000

Funding Request

Appropriation Name:	Diemer Improvements – FY 2006/07 Through FY 2011/12		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15436	Board Action No.:	17
Requested Amount:	\$ 13,500,000	Budget Page No.:	287
Total Appropriated Amount:	\$ 46,719,000	Total Appropriation Estimate:	\$ 67,900,000

¹ The total amount expended to date on the Diemer East Filter Upgrades project is approximately \$3.8 million. The total estimated cost to complete the upgrades to the plant's east filters, including the amount authorized to date and current funds requested, is approximately \$17.3 million.

² Includes previous reallocation of \$142,000 from Remaining Budget for the Diemer Administration Building Seismic Upgrades project to include modifications to piping and electrical features for compliance with ADA requirements; and \$149,000 from Remaining Budget for preparation of environmental documentation for upcoming projects at the Diemer plant.

The Metropolitan Water District of Southern California

Abstract of Bids Received on November 19, 2014 at 2:00 P.M.

Specifications No. 1753

Diemer East Filter Upgrades

The work consists of reinforcement of the filter control building; addition of new concrete piers within the sump area below the filters; replacement of drop gates to isolate the east filters; modifications to piping; relocation of electrical equipment; fabrication and installation of valve supports and adaptors; and installation of 127 Metropolitan-furnished butterfly valves.

Engineer's Estimate: \$9,400,000

Bidder and Location	Total	SBE \$	SBE %	Met SBE¹
C. W. Roen Construction Co. Danville, CA	\$9,310,000	\$9,310,000	100%	YES
J. F. Shea Construction, Inc. Walnut, CA	\$9,591,770	—	—	—
Kiewit Infrastructure West Co. Santa Fe Springs, CA	\$9,708,000	—	—	—
Steve P. Rados, Inc. Santa Ana, CA	\$10,995,000	—	—	—
USS Cal Builders Inc. Stanton, CA	\$11,372,000	—	—	—
Kana Engineering Group, Inc. Rancho Cucamonga, CA	\$11,594,449	—	—	—
Environmental Construction, Inc. Woodland Hills, CA	\$11,884,297	—	—	—
S. J. Amoroso Construction Co., Inc. Costa Mesa, CA	\$12,278,000	—	—	—
Icon West Inc. Los Angeles, CA	\$12,403,900	—	—	—
Quest Civil Constructors, Inc. Phoenix, AZ	\$12,696,969	—	—	—

¹ SBE (Small Business Enterprise) participation level was established at 20% for this contract

The Metropolitan Water District of Southern California**Subcontractors for Low Bidder****Specifications No. 1753****Diemer East Filter Upgrades****Low Bidder: C. W. Roen Construction Co.**

Subcontractor and Location
Amber Steel, Rialto, CA
G & F Concrete Cutting, Santa Ana, CA
Southwest V Ditch, Riverside, CA
P.A.S., Anaheim, CA
Corradini Corp., Fountain Valley, CA
CL Industrial Coatings, Stanton, CA
CSI, Santa Fe Springs, CA

Distribution System

