



- Board of Directors  
*Engineering and Operations Committee*

2/12/2013 Board Meeting

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**7-8**

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## **Subject**

Appropriate \$225,000; and authorize final design of upgrades to the sodium hypochlorite feed system at Palos Verdes Reservoir (Approp. 15441)

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## **Executive Summary**

This action authorizes final design to upgrade the sodium hypochlorite feed system at Palos Verdes Reservoir, which is currently out of service. This project will improve water quality reliability by maintaining a minimum chlorine residual level for customers downstream of the reservoir after it is returned to operation.

### **Timing and Urgency**

Upgrades to the Palos Verdes Reservoir's sodium hypochlorite feed system are needed to improve water quality reliability for member agency service connections downstream of the reservoir. The existing system has deteriorated over time and needs frequent repairs. Failure of the chemical feed system would negatively affect water quality within Metropolitan's distribution system by not providing minimum chlorine residual. The Palos Verdes Reservoir is currently out of service to replace the reservoir cover and liner, and to complete a reservoir seismic stability assessment. The cover replacement project is scheduled to be completed in 2014. In order to minimize delays in returning the reservoir to full service, staff recommends proceeding with upgrade of the sodium hypochlorite feed system at this time.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria, and is categorized as an Infrastructure Upgrade project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2012/13.

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## **Details**

### **Background**

The Palos Verdes Reservoir was constructed in 1939 and is located at the southern end of the Second Lower and Palos Verdes Feeders, in the city of Rolling Hills. The reservoir provides operational flexibility by maintaining deliveries to nearby service connections when major feeders are shut down for maintenance. In addition, the reservoir is a critical hydraulic component of the Sepulveda Feeder system, and must remain in service for the Venice Hydroelectric Plant to generate power. The Palos Verdes Reservoir has a maximum storage volume of 1,100 acre-feet of treated water.

In 1993, a sodium hypochlorite system was installed at the outlet of the reservoir to maintain minimum chlorine residual levels to prevent taste and odor issues at service connections downstream of the reservoir. The feed system includes pumps, motors, valves, and flow meters to add the proper dosage of sodium hypochlorite to the treated water.

The reliability of the existing sodium hypochlorite feed system has deteriorated over the last several years. For example, the existing diaphragm chemical feed pumps require frequent repairs, which are often difficult because replacement parts are no longer available. The polyvinyl chloride (PVC) chemical delivery piping and the outer pipe of the double-walled containment piping have become brittle due to weathering, and are now susceptible to

leaks. A sodium hypochlorite leak must be treated as hazardous waste and requires special handling and disposal. When the Palos Verdes Reservoir is placed back into service in 2014, a reliable sodium hypochlorite feed system is needed. Failure of the system would interrupt the delivery of sodium hypochlorite to the Palos Verdes Reservoir inlet and outlet lines, and would impact water quality within Metropolitan's distribution system.

In December 2010, Metropolitan's Board authorized preliminary design phase activities to upgrade the Palos Verdes Reservoir's sodium hypochlorite feed system. Preliminary design has been completed, and staff recommends proceeding with final design at this time.

### **Palos Verdes Reservoir Sodium Hypochlorite Feed System Upgrades – Final Design Phase (\$225,000)**

Planned upgrades to the sodium hypochlorite feed system include the installation of heavy duty pumps, improving the automation capability of the system, adding chemical containment sensors and alarms to meet current fire code requirements, installing noncorrosive materials for the equipment's support structure, and modifying the piping and equipment layout to improve access for maintenance and repairs.

Final design phase activities will include detailed design; preparation of drawings and specifications; acquisition of permits; advertisement and receipt of bids; development of an engineer's estimate; and all other activities in advance of award of a construction contract. Metropolitan staff will perform all final design activities.

This action appropriates \$225,000 and authorizes final design to upgrade the Palos Verdes Reservoir's sodium hypochlorite feed system. The requested funds include \$153,000 for final design; \$46,000 for permitting, bidding, and project management; and \$26,000 for remaining budget.

The final design cost as a percentage of the estimated construction cost is approximately 14.6 percent. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. The construction cost for this project is anticipated to range from \$1 million to \$1.2 million.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2011/12 capital expenditure plan. See [Attachment 1](#) for the Financial Statement, and [Attachment 2](#) for the Location Map.

The work will be performed under the Conveyance and Distribution System Rehabilitation Program – FY 2006/07 Through FY 2011/12 (Appropriation No. 15441), which was initiated in fiscal year 2006/07. Other projects authorized under Appropriation No. 15441 include the Santa Ana River Bridge Seismic Retrofit, the Eagle Rock and Puddingstone Spillway Gates Rehabilitation, and the Sepulveda Feeder Repairs. With the present action, the total funding for Appropriation No. 15441 will increase from \$43,659,000 to \$43,884,000.

### ***Project Milestone***

August 2013 – Completion of final design of the Palos Verdes Reservoir sodium hypochlorite feed system upgrades

### **Policy**

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Metropolitan Water District Administrative Code Section 5108: Appropriations

### **California Environmental Quality Act (CEQA)**

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CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves the funding, design, and minor alterations, reconstruction or replacement of existing public facilities along with the construction of minor appurtenant structures with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1, Class 2, and Class 3 Categorical Exemptions (Sections 15301, 15302, and 15303 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under three Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; and Class 3, Section 15303 of the State CEQA Guidelines).

CEQA determination for Option # 2:

None required

**Board Options**

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**Option #1**

Adopt the CEQA determination and

- a. Appropriate \$225,000; and
- b. Authorize final design of upgrades to the sodium hypochlorite feed system at Palos Verdes Reservoir.

**Fiscal Impact:** \$225,000 of capital funds under Approp. 15441.

**Business Analysis:** This project will enhance water quality reliability of deliveries to member agencies.

**Option #2**

Do not proceed with the project at this time.


**Fiscal Impact:** None

**Business Analysis:** This option would forego an opportunity to enhance water quality reliability at the Palos Verdes Reservoir.

**Staff Recommendation**


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Option #1


1/29/2013  


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Date  
 Gordon Johnson  
 Manager/Chief Engineer  
 Engineering Services


1/30/2013  


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Date  
 Jeffrey Kightlinger  
 General Manager

**Attachment 1 – Financial Statement**

**Attachment 2 – Location Map**

**Financial Statement for Conveyance and Distribution System Rehabilitation Program –  
FY 2006/07 Through FY 2011/12**

A breakdown of Board Action No. 51 for Appropriation No. 15441 to upgrade the sodium hypochlorite feed system at Palos Verdes Reservoir<sup>1</sup> is as follows:

	<b>Previous Total Appropriated Amount (Jan. 2013)</b>	<b>Current Board Action No. 51 (Feb. 2013)</b>	<b>New Total Appropriated Amount</b>
Labor			
Studies & Investigations	\$ 2,716,000	\$ -	\$ 2,716,000
Final Design	3,800,293	153,000	3,953,293
Owner Costs (Permitting, bidding, & program mgmt.)	5,213,400	45,000	5,258,400
Submittals Review & Record Drwgs	296,670	-	296,670
Construction Inspection & Support	2,012,550	-	2,012,550
Metropolitan Force Construction	8,906,710	-	8,906,710
Materials & Supplies	2,299,400	-	2,299,400
Incidental Expenses	884,900	1,000	885,900
Professional/Technical Services	2,551,000	-	2,551,000
Right-of-Way	550,000	-	550,000
Equipment Use	325,200	-	325,200
Contracts	11,981,524	-	11,981,524
Remaining Budget	2,121,353	26,000	2,147,353
<b>Total</b>	<b>\$ 43,659,000</b>	<b>\$ 225,000</b>	<b>\$ 43,884,000</b>

**Funding Request**

<b>Program Name:</b>	Conveyance and Distribution System Rehabilitation Program – FY 2006/07 Through FY 2011/12		
<b>Source of Funds:</b>	Revenue Bonds, Replacement and Refurbishment or General Funds		
<b>Appropriation No.:</b>	15441	<b>Board Action No.:</b>	51
<b>Requested Amount:</b>	\$ 225,000	<b>Capital Program No.:</b>	15441-I
<b>Total Appropriated Amount:</b>	\$ 43,884,000	<b>Capital Program Page No.:</b>	284
<b>Total Program Estimate:</b>	\$ 114,849,000	<b>Program Goal:</b>	I-Infrastructure Reliability

<sup>1</sup>. The total amount expended to date on the Palos Verdes Reservoir sodium hypochlorite feed system upgrades is approximately \$80,000.

# Distribution System

