



- Board of Directors  
*Engineering and Operations Committee*

4/9/2013 Board Meeting

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**7-3**

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## **Subject**

Appropriate \$135,000; and authorize preliminary design of inlet flash mix chemical containment for the Henry J. Mills Water Treatment Plant (Approp. 15452)

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## **Executive Summary**

This action authorizes preliminary design of secondary chemical containment for the inlet flash mix systems at Modules Nos. 3 and 4 of the Henry J. Mills Water Treatment Plant. The addition of secondary containment will mitigate the risk of chemical releases outside of the flash mix areas and will enhance employee safety.

### **Timing and Urgency**

The Mills Modules Nos. 3 and 4 flash mix units are used to inject polymer and coagulant into the inlets of the treatment modules to improve performance of the flocculation and sedimentation processes. The existing flash mix area has minor curbing which will capture incidental leaks but will not capture a full chemical spill. Upgraded chemical containment protection will minimize the risk of a reportable chemical spill event and better comply with environmental regulations.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and is categorized as a Regulatory and Safety 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 Mills plant was placed into service in 1978 with an initial capacity of 75 million gallons per day (mgd). The plant was expanded twice to provide a total treatment capacity of 326 mgd using four conventional treatment modules. Due to low treated water demands within the Mills service area, Modules Nos. 1 and 2 were removed from service in 1997. The plant is currently rated to treat 220 mgd, which is the design capacity of the two treatment modules (Modules Nos. 3 and 4) that remain in operation. The Mills plant exclusively treats water from the East Branch of the State Water Project and is located within the city of Riverside. Its treatment processes presently consist of pre-ozonation, flocculation, sedimentation, biological filtration, and final disinfection using chlorine and chloramines.

Flocculation and sedimentation are two important processes within a conventional water treatment plant. Flocculation follows immediately after the initial chemical addition at the flash mix unit, and is designed to gently mix small particles and colloids in the water so that they agglomerate to form settleable or filterable particles that can be subsequently removed by sedimentation and filtration. Each module has a flash mix system located at the inlet of the flocculation basins. The flash mix system injects polymer and coagulant (i.e., aluminum sulfate or ferric chloride) into the inlet chamber. In addition, sodium hypochlorite can be injected through the flash mix systems of each module for emergency disinfection. The use of pump-injection flash-mix systems provides the necessary mixing energy to achieve proper dispersal of chemicals within the inlet chambers.

Currently, the flash mix areas at Modules Nos. 3 and 4 have a low concrete curb around the flash mix pump, flash mix valves, instrumentation, and chemical pipes. The curb was designed to catch spillage when the flash mix system is shut down and depressurized for maintenance, but not from a full accidental release. The inlet flash mix systems at Modules Nos. 3 and 4 are the only areas at the plant with hazardous chemicals under pressure which do not have secondary containment to prevent an accidental release.

**Modules Nos. 3 and 4 Inlet Flash Mix Chemical Containment Upgrades – Preliminary Design Phase (\$135,000)**

Several upgrades are needed to enhance chemical containment at the two flash mix areas in compliance with current applicable environmental regulatory requirements: (1) modification of each flash mix unit's chemical piping; (2) construction of secondary containment walls; and (3) relocation of the control panels to allow safe operation and system shutdown from outside of the containment areas in the event of a spill. These improvements will mitigate the risk of chemical releases outside of the flash mix areas and will enhance employee safety.

This action appropriates \$135,000 and authorizes preliminary design of inlet flash mix chemical containment at the Mills plant. Planned preliminary design phase activities include field surveys, preparation of conceptual layout drawings, preparation of environmental documentation, permitting, and development of a construction cost estimate. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2012/13 capital expenditure plan.

This project is included within capital Appropriation No. 15452, the Mills Improvements Program Phase 2 – FY 2012/13 Through FY 2017/18, which was initiated in fiscal year 2008. Other projects authorized under Appropriation No. 15452 include replacement of a sodium hydroxide tank and the Modules Nos. 3 and 4 turbidity meters and gas detectors. With the present action, the total funding for Appropriation No. 15452 will increase from \$8,834,000 to \$8,969,000. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

**Project Milestone**

September 2013 – Completion of preliminary design of the containment 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 overall activities involve the funding, studying, carrying out preliminary design, and preparing and processing environmental documentation for the proposed action. These activities consist of basic data collection and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource.

This may be strictly for information gathering purposes, or as part of a study leading to an action, which a public agency has not yet approved, adopted, or funded. Accordingly, the proposed action qualifies for a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required



**Financial Statement for Mills Improvements Program - Phase 2**

A breakdown of Board Action No. 13 for Appropriation No. 15452 for the Mills Flash Mix Chemical Containment project<sup>1</sup> is as follows:

	<b>Previous Total Appropriated Amount (May 2012)</b>	<b>Current Board Action No. 13 (Apr. 2013)</b>	<b>New Total Appropriated Amount</b>
Labor			
Studies & Investigations	\$ 1,335,600	\$ 84,000	1,419,600
Final Design	1,111,200	-	1,111,200
Owner Costs (Program mgmt., permitting)	1,202,000	32,000	1,234,000
Submittals Review & Record Drwgs.	125,400	-	125,400
Construction Inspection & Support	286,000	-	286,000
Metropolitan Force Construction	1,591,400	-	1,591,400
Materials & Supplies	1,280,592	-	1,280,592
Incidental Expenses	127,700	1,000	128,700
Professional/Technical Services	97,000	-	97,000
Equipment Use	62,000	-	62,000
Contracts	1,172,758	-	1,172,758
Remaining Budget	442,350 <sup>2</sup>	18,000	460,350
<b>Total</b>	<b>\$ 8,834,000</b>	<b>\$ 135,000</b>	<b>\$ 8,969,000</b>

**Funding Request**

<b>Program Name:</b>	Mills Improvements Program - Phase 2		
<b>Source of Funds:</b>	Revenue Bonds, Replacement and Refurbishment or General Funds		
<b>Appropriation No.:</b>	15452	<b>Board Action No.:</b>	13
<b>Requested Amount:</b>	\$ 135,000	<b>Budget Page No.:</b>	313
<b>Total Appropriated Amount:</b>	\$ 8,969,000	<b>Total Program Estimate:</b>	\$ 27,533,000

<sup>1</sup> This action is the initial appropriation for the Mills Module Nos. 3 and 4 Flash Mix Chemical Containment project.

<sup>2</sup> Includes previous reallocation of \$53,000 from Remaining Budget to replace additional turbidity meters on the Mills Module Nos. 3 and 4 Turbidity Meters and Gas Detectors project, due to the deteriorated condition of the existing meters.

