



● **Board of Directors**
Engineering and Operations Committee

4/11/2017 Board Meeting

7-4

Subject

Adopt CEQA determination and appropriate \$1.35 million; and authorize design and procurement to replace chemical storage tanks at the Joseph Jensen and Henry J. Mills Water Treatment Plants (Appropriations Nos. 15486 and 15479)

Executive Summary

This action authorizes design and procurement to replace four chemical storage tanks at the Joseph Jensen and Henry J. Mills Water Treatment Plants. These tanks are critical components of the plants' water treatment infrastructure and need to be replaced.

Timing and Urgency

Metropolitan performs regular maintenance on the chemical feed systems at each of its water treatment plants. While the mechanical and electrical components of the feed systems at the Jensen and Mills plants continue to perform reliably, some of the chemical storage tanks have deteriorated from continuous use over time. Four of the eight existing sodium hypochlorite and fluorosilicic acid tanks need to be replaced to meet delivery levels expected at the two plants. Staff recommends moving forward with the work at this time to maintain plant reliability and enhance safety.

These projects have been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and are included in the Treatment Plant Reliability Program. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2016/17.

Details

Background

The Jensen plant was placed into service in 1972 and has a treatment capacity of 750 million gallons per day (mgd). The Mills plant was placed into service in 1978 and is currently rated to treat 220 mgd. The Jensen plant treats water from the West Branch of the State Water Project (SWP) and delivers it to Metropolitan's Central Pool and to exclusive service areas on the west side of the distribution system. The Mills plant normally treats water from the East Branch of the SWP and delivers it to two member agencies in Riverside County. The Jensen plant is located in Granada Hills, while the Mills plant is located in the city of Riverside.

Both treatment plants rely on multiple unit processes including oxidation and pre-disinfection with ozone, coagulation, flocculation, sedimentation, granular media filtration, and chlorine-ammonia disinfection. Sodium hypochlorite is added to the filter backwash water to control biomass growth and prevent excessive pressure drop through the filters. Fluorosilicic acid is added to the filtered water to efficiently provide fluoridation on a regional scale throughout Metropolitan's service area. The quantity of acid added is based on the target dosage established by the California Division of Drinking Water.

The chemical storage and feed facilities at the two plants include storage tanks, feed equipment, instrumentation, and containment systems. The tanks are needed for safe storage of chemicals and to enable continuous flow-paced addition to meet treated water quality goals. Due to the corrosive or scaling tendencies of chemicals used

in the water treatment process, chemical feed equipment typically has a shorter service life than equipment used for water service. As a result, periodic replacement of chemical feed system components is required.

The Jensen and Mills plants each have two fluorosilicic acid storage tanks constructed of cross-linked high-density polyethylene, which has a recommended service life of ten years. The two sodium hypochlorite storage tanks at the Jensen plant are constructed of fiberglass reinforced plastic (FRP) that has a recommended service life of up to 15 years. All of the fluorosilicic acid tanks at Metropolitan's plants have been in service since 2007. The sodium hypochlorite tanks at the Jensen plant were installed in 2007 in conjunction with the plant's ozone facilities.

Metropolitan has an ongoing program to assess the condition of chemical storage tanks at its facilities. Recent inspections identified that one Jensen fluorosilicic acid tank has unrepairable stress cracks, and that the interior surface of one Jensen sodium hypochlorite tank has deteriorated beyond repair. At the Mills plant, both of the fluorosilicic acid tanks show signs of leakage at bolted connections, while the hypochlorite tanks do not show signs of deterioration. As a result of these inspections, one of the two fluorosilicic acid tanks and one of the two hypochlorite tanks at the Jensen plant have been removed from service, while the Mills tanks are being monitored closely.

Given the condition assessment and expected water deliveries from the plants, staff recommends replacing one sodium hypochlorite tank and one fluorosilicic acid tank at the Jensen plant, along with the two fluorosilicic acid tanks at the Mills plant. The new tanks will be the same capacity as at present, and will be constructed of FRP that is manufactured with an improved resin that will provide an extended service life of 20 to 25 years. This action authorizes design and procurement activities to replace the four tanks. The work will be staged, and multiple procurement contracts are planned to be awarded under the General Manager's Administrative Code authority. Staff will return to the Board at a later date to award construction contracts for installation of the new tanks.

Project No. 1 – Jensen Chemical Tank Replacement – Design and Procurement (\$730,000)

The fluorosilicic acid storage tanks at the Jensen plant are 12 feet in diameter and 12 feet tall, with a capacity of 9,800 gallons each. They are located within a concrete containment area and are covered by a metal canopy. The sodium hypochlorite storage tanks are 8 feet in diameter and 9 feet tall, with a storage capacity of 3,000 gallons each. They are located within a concrete masonry building with a removable roof. Minor modifications to the roof structures and relocation of some equipment will be required to replace each of the tanks that was removed from service.

Planned activities include conducting field surveys and materials testing; design of tank farm modifications; preparation of drawings and specifications for tank procurement and construction; development of a construction cost estimate; and receipt of competitive bids. All activities will be performed by Metropolitan staff.

This action appropriates \$730,000 and authorizes design of the tank replacement project and procurement of two chemical storage tanks for the Jensen plant. Requested funds include \$32,000 for field investigations, \$201,000 for the final design activities described above; \$215,000 for procurement of the two tanks; \$39,000 for fabrication inspection; \$23,000 for review of submittals and responding to manufacturer requests for information (RFIs); \$124,000 for receipt of multiple bids and project management; and \$96,000 for remaining budget. The cost of final design is approximately 14.9 percent of the total estimated construction cost. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. The total construction cost to replace the chemical storage tanks at the Jensen plant, including tank procurement and future installation costs, is anticipated to range from \$1.35 million to \$1.6 million.

Project No. 2 – Mills Chemical Tank Replacement – Design and Procurement (\$620,000)

The Mills plant relies on two 6,250-gallon tanks to store fluorosilicic acid. The tanks are 10 feet in diameter and 12 feet tall. An adjacent building and a 3-foot-tall concrete perimeter wall limit the access for tank removal and installation. Planned activities include conducting field surveys and materials testing; design of tank farm modifications; preparation of drawings and specifications for construction; tank procurement; development of a construction cost estimate; and receipt of competitive bids. All activities will be performed by Metropolitan staff.

This action appropriates \$620,000 and authorizes design of the tank replacement project and procurement of two chemical storage tanks for the Mills plant. Requested funds include \$56,500 for field investigations; \$164,000 for the final design activities described above; \$205,000 for procurement of the two tanks; \$26,000 for fabrication inspection; \$16,000 for review of submittals and responding to manufacturer RFIs; \$70,000 for receipt of multiple bids and project management; and \$82,500 for remaining budget. The cost of final design is approximately 14.5 percent of the estimated construction cost. Engineering Services' goal for design of projects with construction cost less than \$3 million is 9 to 15 percent. The total construction cost to replace the tanks, including tank procurement and future installation costs, is anticipated to range from \$1.1 million to \$1.3 million.

Summary

This action appropriates \$1.35 million and authorizes design and procurement to replace four chemical storage tanks at the Jensen and Mills plants. These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2016/17 capital expenditure plan. See [Attachment 1](#) for the Financial Statements and [Attachment 2](#) for the Location Map.

The Jensen tank replacement is included within Appropriation No. 15486, the Jensen Improvements Appropriation – FY 2012/13 Through 2017/18, which was initiated in fiscal year 2012/13. With the present action, the total funding for Appropriation No. 15486 will increase from \$2,985,000 to \$3,715,000.

The Mills tank replacement is included within Appropriation No. 15479, the Mills Improvements Appropriation – FY 2012/13 Through 2017/18, which was initiated in fiscal year 2012/13. With the present action, the total funding for Appropriation No. 15479 will increase from \$2.58 million to \$3.2 million.

Project Milestones

November 2017 – Completion of design and procurement of the Jensen chemical storage tanks

June 2018 – Completion of design and procurement of the Mills chemical storage tanks

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Project No. 1 - Jensen Chemical Tank Replacement - Design and Procurement

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed project involves the funding, design, and replacement or reconstruction of existing public facilities with 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).

Project No. 2 - Mills Chemical Tank Replacement – Design and Procurement

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed project involves the funding, design, and replacement or reconstruction of existing public facilities with 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 actions are categorically exempt, and

- a. Appropriate \$1.35 million;
- b. Authorize design and procurement to replace chemical storage tanks at the Jensen and Mills plants.

Fiscal Impact: \$730,000 in capital funds under Appropriation No. 15486; and \$620,000 in capital funds under Appropriation No. 15479

Business Analysis: These projects will protect Metropolitan’s assets, enhance worker safety, and reduce the risk of costly emergency repairs.

Option #2

Do not proceed with the two projects at this time.

Fiscal Impact: None

Business Analysis: This option would replace the chemical storage tanks at a later date. Metropolitan staff would continue to monitor the tanks in service, and would take actions as necessary to maintain worker safety and prevent leakage. This option would forego an opportunity to enhance reliability of deliveries to member agencies, and to reduce the risk of costly urgent repairs.

Staff Recommendation

Option #1


 _____ 3/20/2017
 Gordon Johnson Date
 Manager/Chief Engineer,
 Engineering Services


 _____ 3/27/2017
 Jeffrey Kightlinger Date
 General Manager

Attachment 1 – Financial Statements

Attachment 2 – Location Map

Ref# es12651235

Financial Statement for Jensen Improvements Appropriation – FY 2012/13 Through FY 2017/18

A breakdown of Board Action No. 4 for Appropriation No. 15486 to replace chemical storage tanks at the Jensen plant¹ is as follows:

	Previous Total Appropriated Amount (Dec. 2016)	Current Board Action No. 4 (Apr. 2017)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 320,000	\$ 32,000	\$ 352,000
Final Design	585,000	201,000	786,000
Owner Costs (Program mgmt, bidding)	401,000	124,000	525,000
Submittals Review & Record Drwgs	30,000	21,000	51,000
Construction Inspection & Support	54,000	39,000	93,000
Metropolitan Force Construction	227,000	-	227,000
Materials & Supplies	13,000	215,000	228,000
Incidental Expenses	37,000	2,000	39,000
Professional/Technical Services	434,500	-	434,500
Equipment Use	-	-	-
Contracts	623,384	-	623,384
Remaining Budget	260,116	96,000	356,116
Total	\$ 2,985,000	\$ 730,000	\$ 3,715,000

Funding Request

Appropriation Name:	Jensen Improvements Appropriation – FY 2012/13 Through FY 2017/18		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15486	Board Action No.:	4
Requested Amount:	\$ 730,000	Budget Page No.:	239
Total Appropriated Amount:	\$ 3,715,000	Total Appropriation Estimate:	\$ 16,300,000

¹ This is the initial action to replace chemical storage tanks at the Jensen plant.

Financial Statement for Mills Improvements Appropriation – FY 2012/13 Through FY 2017/18

A breakdown of Board Action No. 2 for Appropriation No. 15479 to replace chemical storage tanks at the Mills plant¹ is as follows:

	Previous Total Appropriated Amount (Nov. 2012)	Current Board Action No. 2 (Apr. 2017)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 14,000	\$ 55,500	\$ 69,500
Final Design	1,870,000	164,000	2,034,000
Owner Costs (Program mgmt, bidding)	265,000	70,000	335,000
Submittals Review & Record Drwgs	-	15,000	15,000
Construction Inspection & Support	-	26,000	26,000
Metropolitan Force Construction	-	-	-
Materials & Supplies	-	205,000	205,000
Incidental Expenses	5,000	2,000	7,000
Professional/Technical Services	140,000	-	140,000
Equipment Use	-	-	-
Contracts	-	-	-
Remaining Budget	286,000	82,500	368,500
Total	\$ 2,580,000	\$ 620,000	\$ 3,200,000

Funding Request

Appropriation Name:	Mills Improvements Appropriation – FY 2012/13 Through FY 2017/18		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15479	Board Action No.:	2
Requested Amount:	\$ 620,000	Budget Page No.:	243
Total Appropriated Amount:	\$ 3,200,000	Total Appropriation Estimate:	\$ 36,500,000

¹ This is the initial action to replace chemical storage tanks at the Mills plant.

