



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

1/12/2016 Board Meeting

7-5

Subject

Appropriate \$1.1 million; and authorize design of urgent prestressed concrete cylinder pipe repairs at two locations on the Sepulveda Feeder (Approp. 15496)

Executive Summary

This action authorizes design to repair several reaches of distressed prestressed concrete cylinder pipe (PCCP) on the Sepulveda Feeder. The need for these repairs was identified in December 2015 as a result of electromagnetic inspections that were conducted in October.

Timing and Urgency

Recent electromagnetic inspections of the Sepulveda Feeder identified that 12 PCCP segments have deteriorated significantly over the last several years. Repair of these segments should proceed expeditiously to reduce the risk of pipeline failure, minimize repair costs, and prevent unplanned shutdowns. The recommended repairs will line approximately 6,600 feet of existing PCCP segments with a steel liner at two separate locations. These repairs will be consistent with the long-term rehabilitation work planned for the feeder.

This work has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and is included in the PCCP Rehabilitation Program. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2015/16.

Details

Background

The Sepulveda Feeder delivers treated water from the Joseph Jensen Water Treatment Plant in Granada Hills to an interconnection with the Second Lower Feeder in Torrance. The feeder was constructed in the early 1970s and is 42 miles long. Approximately 37 miles of the line is comprised of 96-inch diameter PCCP. The remainder of the line is constructed of 96-inch diameter welded steel pipe. The Sepulveda Feeder operates at pressures up to 250 pounds per square inch and passes through areas with highly corrosive soils. Further, there are numerous underground utility lines, natural gas lines, and oil lines within the vicinity, which expose the feeder to significant stray current interference. Its route follows major public streets as it extends through a highly urbanized area. The feeder crosses several freeways, flood control channels, and a municipal airport. In addition to supplying water to the Central Pool portion of Metropolitan's distribution system, the Sepulveda Feeder has six service connections that deliver treated water to the cities of Los Angeles, Santa Monica, and Torrance, and to the West Basin Municipal Water District.

In September 2011, Metropolitan's Board authorized the development of a comprehensive, long-term plan for repair of Metropolitan's at-risk PCCP feeders. This effort included preparation of a risk analysis to assess the need and priority for rehabilitation of individual PCCP lines. Through this process, five PCCP lines were identified that will be addressed under the long-term PCCP Rehabilitation Program. The five feeders are: (1) the Second Lower Feeder, (2) the Sepulveda Feeder, (3) the Rialto Pipeline, (4) the Calabasas Feeder, and (5) the Allen-McColloch Pipeline. These five feeders have a disproportionate share of all prestressing wire breaks

(80 percent), repairs performed to date (90 percent), and cost of repairs (70 percent). These five lines are also expected to continue to deteriorate, as indicated by a progression of wire breaks over time. While Metropolitan's other PCCP feeders contain prestressing wire breaks in some pipe segments, they do not exhibit the same trend of increasing wire breaks over time. These other feeders may eventually need to be rehabilitated, but appear to be stable at present.

Under Metropolitan's long-term management strategy, all PCCP lines will continue to be monitored and assessed. The prioritization of needed repairs will be reevaluated on a regular basis, and adjustments will be made to the PCCP Rehabilitation Program if additional feeders are determined to be at risk in the future. The long-term PCCP management strategy is comprised of four coordinated elements:

1. **Monitoring and inspection** – Metropolitan currently inspects all PCCP lines within the distribution system every three to seven years. Staff will continue to aggressively monitor and inspect PCCP feeders in order to identify changes to the feeders' baseline condition, to track prestressing wire breakage over time, and to identify distressed PCCP segments. As new inspection technologies become available, staff will continue to inspect PCCP lines using state-of-the-art inspection techniques.
2. **Stray current protection** – Installation of stray current protection represents a proactive and cost-effective measure to safeguard PCCP from stray current interference, which is a major cause of corrosion damage. Where excessive levels of stray current are detected, staff will recommend the installation of current drain stations to limit further corrosion. A number of projects to install stray current drain stations on PCCP lines have recently been completed.
3. **Priority repairs** – During the course of the PCCP Rehabilitation Program, individual PCCP segments may be identified as distressed prior to the scheduled rehabilitation of an entire feeder. When levels of prestressing wire breaks place the pipeline at risk, staff will recommend moving forward with priority repairs to individual PCCP segments or to longer reaches of the pipeline. The subject repairs recommended for the Sepulveda Feeder are consistent with this strategy.
4. **Full rehabilitation** – The PCCP Rehabilitation Program will complete the long-term rehabilitation of the five PCCP feeders listed above. The objectives of this program are to:
 - Reduce the risk of unplanned outages.
 - Rehabilitate the PCCP feeders in the most cost-effective manner possible.
 - Minimize delivery impacts to member agencies, consistent with Metropolitan's Administrative Code.
 - Minimize the loss of hydraulic capacity within the distribution system.
 - Take advantage of opportunities to improve system flexibility and reliability.

PCCP Repairs at Two Locations on the Sepulveda Feeder – Design (\$1,100,000)

In October 2015, an electromagnetic inspection was conducted on approximately 10 miles of PCCP on the Sepulveda Feeder. This inspection identified 12 pipe segments with significant increases in prestressing wire breaks since the feeder was previously inspected in 2008. Staff has evaluated the potential impact of the prestressing wire breaks, and concluded that the distressed PCCP segments should be repaired as expeditiously as possible.

The repairs will be performed at two sites during an April 2016 Sepulveda Feeder shutdown. The proposed work includes lining the existing PCCP segments with a steel liner designed as a stand-alone pipeline that can accommodate full internal and external pressures on the line. The annular space between the steel liner and the existing PCCP segments will be filled with concrete grout. This work will require a 45-day shutdown of the feeder.

At Site 1, a 6,500-foot-long reach of the Sepulveda Feeder will be repaired within the community of Van Nuys. This reach begins at the Van Nuys Airport and extends along Haynes Street to the 405 Freeway. At Site 2, two distressed pipe segments within a 100-foot-long reach will be repaired along the 405 Freeway, south of the Skirball Cultural Center in the city of Los Angeles. Design phase activities for the repairs include identification of pipe access locations, traffic control permitting, shutdown planning with member agencies, preparation of drawings and specifications, development of a construction cost estimate, and receipt of competitive bids. All activities will be performed by Metropolitan staff.

This action appropriates \$1.1 million and authorizes design of urgent PCCP repairs at two sites along the Sepulveda Feeder. Requested funds include \$20,000 for studies and investigations, \$668,000 for final design; \$252,000 for permitting, environmental documentation, bidding, and project management; and \$150,000 for remaining budget. The final design cost as a percentage of the estimated construction cost is approximately 7.3 percent. Engineering Services' goal for design of projects with construction cost greater than \$3 million is 9 to 12 percent. The estimated construction cost for these repairs is anticipated to range from \$9 million to \$11 million.

This project is included within capital Appropriation No. 15496, the Sepulveda Feeder PCCP Rehabilitation Appropriation. The total estimated cost to complete these urgent repairs, including the current funds requested and future construction costs, is anticipated to range from \$13 million to \$15 million.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2015/16 capital expenditure plan. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

Project Milestones

February 2016 – Completion of final design of urgent repairs

June 2016 – Completion of repairs

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action includes the immediate remedial repair of existing pipelines with the same purpose and capacity. Accordingly, the proposed action qualifies under statutory exemptions (Sections 21060.3 and 21080(b)(2) and (4) of the California Public Resources Code and Section 15269 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under statutory exemptions (Sections 21060.3 and 21080(b) of the California Public Resources Code and Section 15269 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 statutorily exempt, and

- a. Appropriate \$1.1 million; and
- b. Authorize final design of urgent PCCP repairs at two locations on the Sepulveda Feeder.

Fiscal Impact: \$1.1 million in capital funds under Approp. 15471

Business Analysis: This project will protect Metropolitan’s assets, enhance delivery reliability to member agencies, and reduce the risk of emergency repairs of PCCP lines.

Option #2

Do not proceed with the PCCP repairs at this time.

Fiscal Impact: None

Business Analysis: This option would forgo an opportunity to enhance reliability and extend the service life of the Sepulveda Feeder. This option could lead to higher repair costs, more extensive repairs, and unplanned shutdowns.

Staff Recommendation

Option #1



Gordon Johnson
Manager/Chief Engineer
Engineering Services

12/23/2015

Date



Jeffrey Knightlinger
General Manager

12/23/2015

Date

[Attachment 1 – Financial Statement](#)

[Attachment 2 – Location Map](#)

Financial Statement for Sepulveda Feeder PCCP Rehabilitation Appropriation

A breakdown of Board Action No. 1 for Appropriation No. 15496 for PCCP on the Sepulveda Feeder¹ is as follows:

	Current Board Action No. 1 (Jan. 2016)
Labor	
Studies & Investigations	\$ 20,000
Final Design	668,000
Owner Costs (Program mgmt., permitting, envir doc., bidding, outreach)	252,000
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	10,000
Professional/Technical Services	-
Right-of-way	-
Equipment Use	-
Contracts	-
Remaining Budget	150,000
Total	\$ 1,100,000

Funding Request

Appropriation Name:	Sepulveda PCCP Rehabilitation		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15496	Board Action No.:	1
Requested Amount:	\$ 1,100,000	Budget Page No.:	308
Total Appropriated Amount:	\$ 1,100,000	Total Appropriation Estimate²:	760,000,000

¹ This is the initial action for the PCCP repairs on the Sepulveda Feeder. The total estimated cost to complete the urgent repairs, including the current funds requested and future construction costs, is anticipated to range from \$13 million to \$15 million.

² This amount is the total appropriation estimate to rehabilitate all PCCP portions of the Sepulveda Feeder.

Distribution System

