



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

October 13, 2009 Board Meeting

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**7-1**

**Subject**

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Appropriate \$140,000; and authorize final design of the Lower Feeder Erosion Protection project (Approp. 15441)

**Description**

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This action authorizes final design of a project for the Lower Feeder pipeline to mitigate damage caused by the recent Santiago Wildfire. This project will construct erosion protection along a one-mile stretch of the Lower Feeder to protect the pipeline and its access road from damage as a result of storm runoff.

**Timing and Urgency**

This project will address a vulnerability to Metropolitan's Lower Feeder pipeline, which delivers Colorado River Aqueduct water to the western sections of Riverside and San Bernardino Counties, the northern section of Orange County, and the southern and western sections of Los Angeles County. Recent fires have exposed erosion gullies, which over successive winter seasons/storms will undercut the Lower Feeder and could lead to an unplanned shutdown and repair of the pipeline. This project will construct erosion measures to redirect storm flows and stabilize existing gullies.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria, and is categorized as an Infrastructure Rehabilitation Project. This project is budgeted within Metropolitan's CIP for fiscal year 2009/10.

**Background**

The Lower Feeder, which was constructed in 1956, originates at Lake Mathews and extends 46 miles to its interconnection with the Middle Feeder at the Rio Hondo Pressure Control Structure. Flow is controlled and diverted to six connecting pipelines through several pressure control facilities, including the Santiago Control Tower. Staff regularly employs access roads constructed along the pipeline rights-of-way to patrol and monitor the condition of the pipelines, to perform maintenance of control facilities and sectionalizing valves, and for manual operation of facilities during an emergency or power outage.

In November 2008, the Santiago Wildfire burned vegetation across a 4,500-foot-long Metropolitan access road that lies over the Lower Feeder and leads to the Santiago Control Tower, a flow meter, and a sectionalizing valve. The road is located in Yorba Linda along steep rolling hills that previously had thick vegetation along either side of the road. Hillsides are more prone to accelerated rates of erosion after fires because the soil, once cleared of vegetation, is easily dislodged and carried away by storm flows. The Santiago Wildfire denuded the area around the Santiago Control Tower and exposed two erosion gullies on either side of the access road. The erosion gullies were caused by concentrated storm runoff flows that caused significant deep cutting of the soil. One gully located 30 feet from the pipeline is approximately 30 feet wide by 20 feet deep, and it extends approximately 50 feet down the canyon. This gully threatens to undercut the access road and to expose the pipeline. A smaller gully is located 60 feet from the pipeline. An inspection of the pavement on the access road also shows wear and tear due to increased traffic loads, and cracking caused by saturated subgrades from poor drainage and standing water.

**Lower Feeder Erosion Protection - Final Design Phase (\$140,000)**

In January 2008, Metropolitan's Board authorized preliminary design of improvements to the Lower Feeder access road. Preliminary design was completed in October; however final design was delayed to reduce and postpone expenses during the ongoing economic crisis. However, at the discovery of the erosion gullies, an engineering assessment determined that the potential risks to the system outweigh the savings of postponement. Staff now recommends moving forward with final design in order to protect the Lower Feeder and to maintain reliable deliveries to member agencies. This project will consist of refurbishing the existing asphalt road, grading the access road to eliminate concentrated flows, constructing erosion protection measures, and installing a mechanically stabilized earth wall that will be placed within the eroded gully 30 feet from the pipeline, in order to prevent exposure of the Lower Feeder.

This action appropriates \$140,000 and authorizes final design phase activities for the Lower Feeder Erosion Protection project. The scope of work includes detailed engineering design, preparation of plans and specifications, permitting, the bidding process, and all other activities in advance of award of a construction contract. Metropolitan staff will perform all design activities. Requested funds include \$62,250 for final design; \$59,750 for program management, environmental permitting and bidding process; and \$18,000 for remaining budget. The cost of final design is approximately 15 percent of the estimated construction cost. Engineering Services' goal for design of projects with estimated construction cost less than \$3 million is 9 to 15 percent of the total construction cost. The construction cost for this project is anticipated to range from \$360,000 to \$420,000.

Staff will return to the Board at a later date for award of a construction contract. See [Attachment 1](#) for the Financial Statement, [Attachment 2](#) for the Location Map, and [Attachment 3](#) for a photo of the erosion gully near the Lower Feeder.

This project is consistent with Metropolitan's goal for sustainability by enhancing reliability of the existing conveyance and distribution system in order to maintain reliable water deliveries in the future.

***Project Milestones***

April 2010 - Completion of final design

**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 project involves the funding; final design; and minor alterations and reconstruction or replacement of existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. In addition, the proposed project involves minor modifications in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees. Accordingly, the proposed action qualifies under Class 1, Class 2, and Class 4 Categorical Exemptions (Sections 15301, 15302, and 15304 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 4, Section 15304 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 \$140,000; and
- b. Authorize final design of repairs to protect the Lower Feeder and improve drainage along its access road.

**Fiscal Impact:** \$140,000 in budgeted funds under Approp. 15441

**Business Analysis:** Protection of the Lower Feeder and repair of the access road will help maintain service reliability to member agencies, and reduce the risk of costly emergency repairs.

**Option #2**

Do not proceed with the Lower Feeder Erosion Protection project.

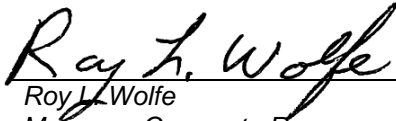
**Fiscal Impact:** Unknown

**Business Analysis:** This option would forego an opportunity to improve reliability by addressing erosion adjacent to the Lower Feeder. This option could lead to higher costs, more extensive future repairs, and possible emergency repairs.

**Staff Recommendation**

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Option #1

  
 Roy L. Wolfe  
 Manager, Corporate Resources

9/22/2009  
 Date

  
 Jeffrey Lightlinger  
 General Manager

9/28/2009  
 Date

[Attachment 1 – Financial Statement](#)

[Attachment 2 – Location Map](#)

[Attachment 3 – Photo of Erosion Gully Near Lower Feeder](#)

**Financial Statement for Conveyance and Distribution System Rehabilitation Program – Phase II**

A breakdown of Board Action No. 14 for Appropriation No. 15441 for the Lower Feeder Erosion Protection project\* is as follows:

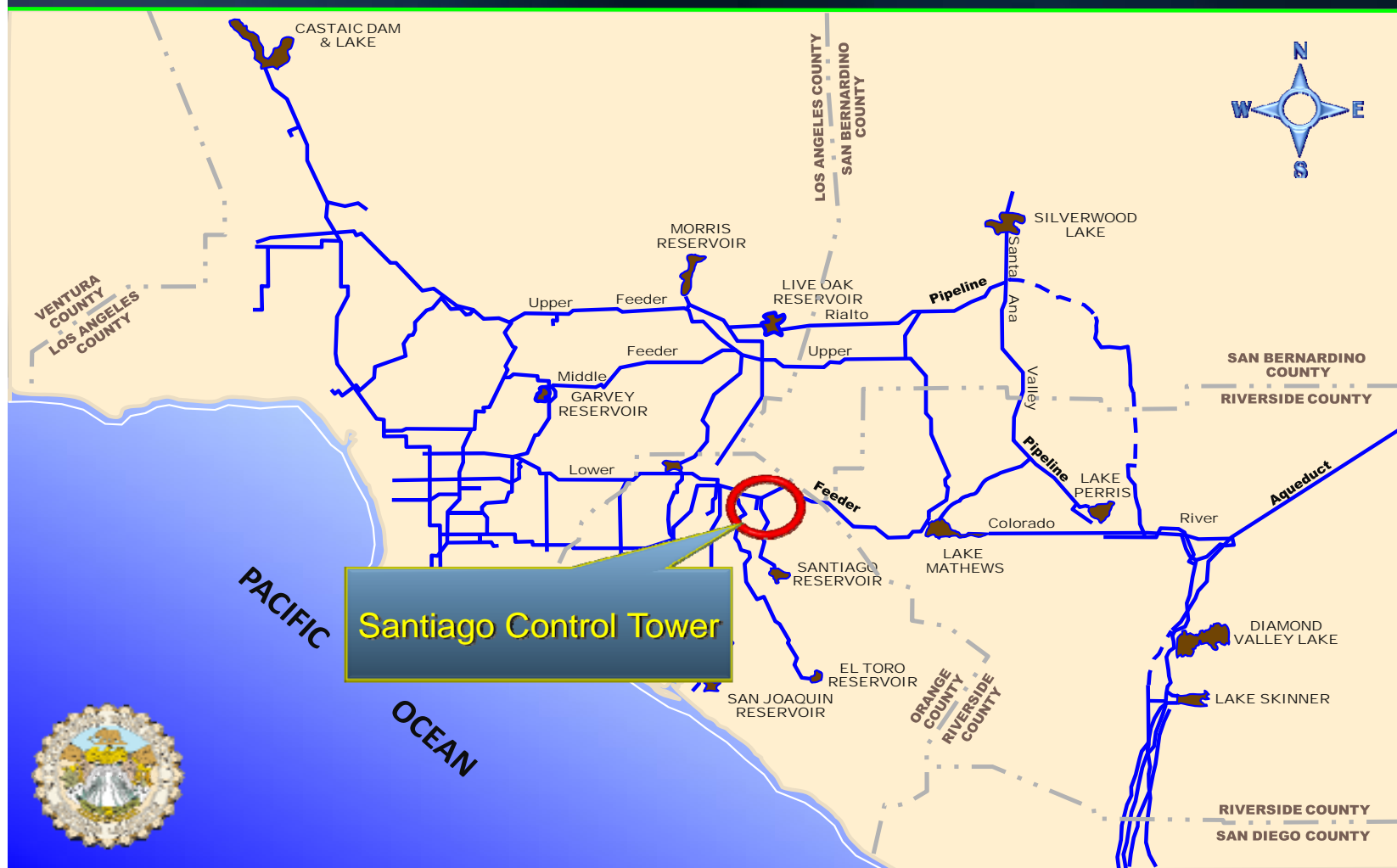
|                                     | <b>Previous Total<br/>Appropriated<br/>Amount<br/>(May 2009)</b> | <b>Current Board<br/>Action No. 14<br/>(Oct. 2009)</b> | <b>New Total<br/>Appropriated<br/>Amount</b> |
|-------------------------------------|--|--|--|
| Labor                               |  |  |  |
| Studies & Investigations            | \$ 658,500 **  | \$ -   | \$ 658,500                                   |
| Final Design                        | 1,290,800  | 62,250   | 1,353,050                                    |
| Owner Costs (Program mgmt, env doc) | 1,610,400  | 57,750   | 1,668,150                                    |
| Construction Inspection & Support   | 328,500  | -  | 328,500                                      |
| Metropolitan Force Construction     | 3,792,000  | -  | 3,792,000                                    |
| Materials and Supplies              | 620,100  | -  | 620,100                                      |
| Incidental Expenses                 | 487,500  | 2,000  | 489,500                                      |
| Professional/Technical Services     | 410,500  | -  | 410,500                                      |
| Equipment Use                       | 148,000  | -  | 148,000                                      |
| Contracts                           | 2,286,000  | -  | 2,286,000                                    |
| Remaining Budget                    | 1,239,700 **   | 18,000   | 1,257,700                                    |
| <b>Total</b>                        | <b>\$ 12,872,000</b>   | <b>\$ 140,000</b>                                      | <b>\$ 13,012,000</b>                         |

|                                   |  |                                  |               |
|-----------------------------------|--|----------------------------------|---------------|
| <b>Program Name:</b>              | Conveyance and Distribution System Rehabilitation Program – Phase II |                                  |               |
| <b>Source of Funds:</b>           | Revenue Bonds, Replacement and Refurbishment or General Funds        |                                  |               |
| <b>Appropriation No.:</b>         | 15441  | <b>Board Action No.:</b>         | 14            |
| <b>Requested Amount:</b>          | \$ 140,000   | <b>Capital Program No.:</b>      | 15441         |
| <b>Total Appropriated Amount:</b> | \$ 13,012,000  | <b>Capital Program Page No.:</b> | 277           |
| <b>Total Program Estimate:</b>    | \$ 53,850,000  | <b>Program Goal:</b>             | R-Reliability |

\* The total amount expended to date on the Lower Feeder Erosion Protection project is approximately \$88,000.

\*\* Reflects reallocation of \$28,000 from Remaining Budget to Studies & Investigation for Lower Feeder Erosion Protection project.

# Lower Feeder at Santiago Control Tower





### Erosion Gully Near Lower Feeder

