THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- Board of Directors
  Engineering and Operations Committee

5/13/2014 Board Meeting

7-7

Subject

Appropriate $1.7 million; and authorize two projects to enhance water supply reliability in the West Valley area (Approp. 15488)

Executive Summary

This action authorizes two projects which are elements of Metropolitan's coordinated response to the current drought conditions in California: (1) final design to rehabilitate the Greg Avenue Pump Station; and (2) final design and construction of flow control modifications to the outlet of the Joseph P. Jensen Water Treatment Plant.

Timing and Urgency

In January 2014, the California Department of Water Resources (DWR) issued a zero allocation to State Water Project (SWP) contractors for 2014, including Metropolitan, due to the current statewide drought. Although this allocation was recently increased to five percent, the drought continues to have direct impacts on supply reliability and water quality in Metropolitan's conveyance and distribution system.

For the West Valley area, which depends on raw water deliveries from the West Branch of the SWP, the only backup capability is via the Greg Avenue Pump Station. This facility can pump Colorado River Aqueduct (CRA) water treated by the F. E. Weymouth Water Treatment Plant into the Jensen plant's service area. The first project in this action will improve reliability of the mechanical and electrical equipment at the Greg Avenue Pump Station. While regular inspections and maintenance have been performed by Metropolitan staff, the equipment is at the end of its service life and needs to be replaced.

Blending treated water from the SWP and CRA within the West Valley area requires that the Jensen plant and Greg Avenue Pump Station be operational simultaneously. In order for the flows from these two sources to balance hydraulically, an outlet gate at the Jensen Finished Water Reservoir No. 1 must remain partially opened. However, because the gate was not designed for flow control, the partially open gate vibrates excessively. The second project will modify the outlet at the Jensen plant by adding a hydraulic orifice plate to dissipate excess energy without damaging the gate.

Moving forward with these drought-response projects will provide greater flexibility in delivering limited supplies throughout Metropolitan's service area. These projects have been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria, and are categorized as Supply Reliability/System Expansion projects. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2013/14.

Details

Project No. 1 – Greg Avenue Pump Station Rehabilitation – Preliminary and Final Design ($1,200,000)

The Greg Avenue Pump Station was originally constructed in the early 1960s to pump treated CRA water from the Weymouth plant into the West Valley area. Upon completion of the Jensen plant in 1972, Metropolitan commenced delivery of treated water from the SWP into the West Valley area via West Valley Feeder No. 1, and into Metropolitan's Central Pool via the East Valley Feeder.

The Greg Avenue Pump Station was modified in the mid-1970s to include hydroelectric power generation up to one megawatt by replacing one of the pumps with a pump/turbine. Since that time, the remaining original pump at this facility was operated intermittently during operational tests or when the Jensen plant was out of service. While regular inspections and maintenance have been performed by Metropolitan staff, the pump and pump/turbine need to be replaced. Over the past year, significant cracks have developed on one of the pump's mounting brackets and at the support gussets. In addition, upgrades to the electrical and control systems are required because the pump station's electrical system operates at an obsolete voltage. Additional improvements are needed to meet current fire codes and environmental regulations.

This project will improve reliability of the Greg Avenue Pump Station by replacing the existing pump and pump/turbine, and by upgrading the electrical and control systems. The planned design phase activities include: conceptual feasibility studies and selection of new equipment; hydraulic modeling and design of a surge protection system; conducting a condition assessment of the electrical and control systems; preparation of equipment procurement documents; permitting; preparation of drawings and specifications for construction; development of a construction cost estimate and receipt of bids; and all other activities in advance of award of a construction contract. The investigations and final design are recommended to be performed by Black and Veatch, as discussed below.

This action appropriates $1.2 million and authorizes final design to rehabilitate the Greg Avenue Pump Station. The requested funds include $290,000 for field investigations and hydraulic modeling; $618,000 for final design; $189,000 for permitting, receipt of bids, environmental documentation, and project management; and $103,000 for remaining budget.

The cost of final design is approximately 10.3 percent of the estimated construction cost. Engineering Services' goal for design of projects with construction cost greater than $3 million is 9 to 15 percent.

This work is included within Capital Appropriation No. 15488, the Water Delivery System Improvements Appropriation, which was initiated in 2014. The total estimated cost to complete this project, including the current funds requested and future procurement construction costs, is anticipated to range from $7 million to $9 million.

Project No. 2 - Jensen Flow Control Modifications – Final Design and Construction ($500,000)

The Jensen plant was placed into service in 1972 with an initial capacity of 400 million gallons per day (mgd). The plant was expanded to its current capacity of 750 mgd in the early 1990s. The Jensen plant treats water from the West Branch of the SWP and delivers it to the Central Pool and to exclusive service areas on the west side of the distribution system.

As discussed above, the outlet gate at Jensen Finished Water Reservoir No. 1 needs to be partially opened in order to hydraulically balance Jensen treated water with flow from the Greg Avenue Pump Station. Since the reservoir gate was designed to isolate the reservoir and not to control flow, the partially open gate vibrates excessively. While the outlet gate mechanism can operate with this excessive vibration for short durations, an extended period of strong vibration would damage the gate mechanism and the Jensen plant's ability to control flows. Installation of a new hydraulic orifice plate at one of the reservoir outlet gates will dissipate the energy otherwise exerted on the partially opened gate, yet still provide flow control.

This project will design, fabricate, and install an 8-foot by 8-foot, stainless-steel multi-nozzle flow control plate on the outlet gate of Jensen Finished Water Reservoir No. 1. Final design and construction activities for the modification include: hydraulic modeling; machine design and preparation of fabrication drawings; procurement of materials; and fabrication and installation of the plate and mounting system. All activities will be performed by Metropolitan staff.

This action appropriates $500,000 and authorizes final design and construction for flow control modifications at the Jensen plant. The requested funds include $59,000 for final design; $61,000 for procurement of materials; $364,000 for fabrication and installation; and $16,000 for remaining budget.

The cost of final design is approximately 13.8 percent of the estimated construction cost. Engineering Services' goal for design of projects less than $3 million is 9 to 15 percent of the total construction cost. The total estimated cost to complete this project is $500,000.

Engineering Design Services (Black & Veatch) – No action required

Design of the Greg Avenue Pump Station modifications is recommended to be performed by Black & Veatch under an existing board-authorized agreement. The planned scope of work includes conceptual and final design; hydraulic modeling; preparation of drawings and specifications; and bidding phase support. The estimated cost for these services is $720,000.

In August 2013, Metropolitan's Board authorized a five-year agreement with Black & Veatch, in an amount not to exceed $2 million per year, to provide engineering services in support of board-authorized capital projects. Black & Veatch was selected through a competitive solicitation process via Request for Qualifications No. 1032. For the Greg Avenue Pump Station Rehabilitation project, Black & Veatch was selected due to its combination of mechanical, electrical, and civil engineering expertise, and its experience conducting the feasibility study for the improvements. Metropolitan has established a Small Business Enterprise (SBE) participation level of 18 percent for this agreement. Black & Veatch has agreed to meet this level of participation.

Summary

This action appropriates $1.7 million and authorizes two drought-response projects to enhance water supply reliability and water quality in Metropolitan's service area. These projects have been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2013/14 capital expenditure plan. See **Attachment 1** for the Financial Statement and **Attachment 2** for the Location Map.

Project Milestones

June 2014 – Completion of construction of Jensen flow control modifications

November 2014 – Completion of final design to rehabilitate the Greg Avenue Pump Station

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed actions are categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed projects involve the funding; final design; and minor alterations, reconstruction or replacement of existing public facilities along with the construction of minor appurtenant structures with no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed actions qualify 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 actions qualify under three Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; Class 3, and Section 15303 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 from CEQA, and

a. Appropriate $1.7 million;
b. Authorize final design to rehabilitate the Greg Avenue Pump Station; and
c. Authorize final design and construction of flow control modifications at the Jensen plant.

Fiscal Impact: $1.7 million in capital funds under Approp. 15488

Business Analysis: The projects will enhance Metropolitan's ability to reliably serve Colorado River Aqueduct water to portions of the distribution system which are presently exclusively dependent on State Water Project water.

Option #2

Do not authorize the two projects at this time.

Fiscal Impact: None

Business Analysis: This option would forgo an opportunity to increase the flexibility of Metropolitan's system and reduce water supply risks associated with California's drought.

Staff Recommendation

Option #1

4/23/2014

Gordon Johnson *Date*
Manager/Chief Engineer
Engineering Services

4/25/2014

Jeffrey Kightlinger *Date*
General Manager

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12630297

Financial Statement for Water Delivery System Improvements Appropriation

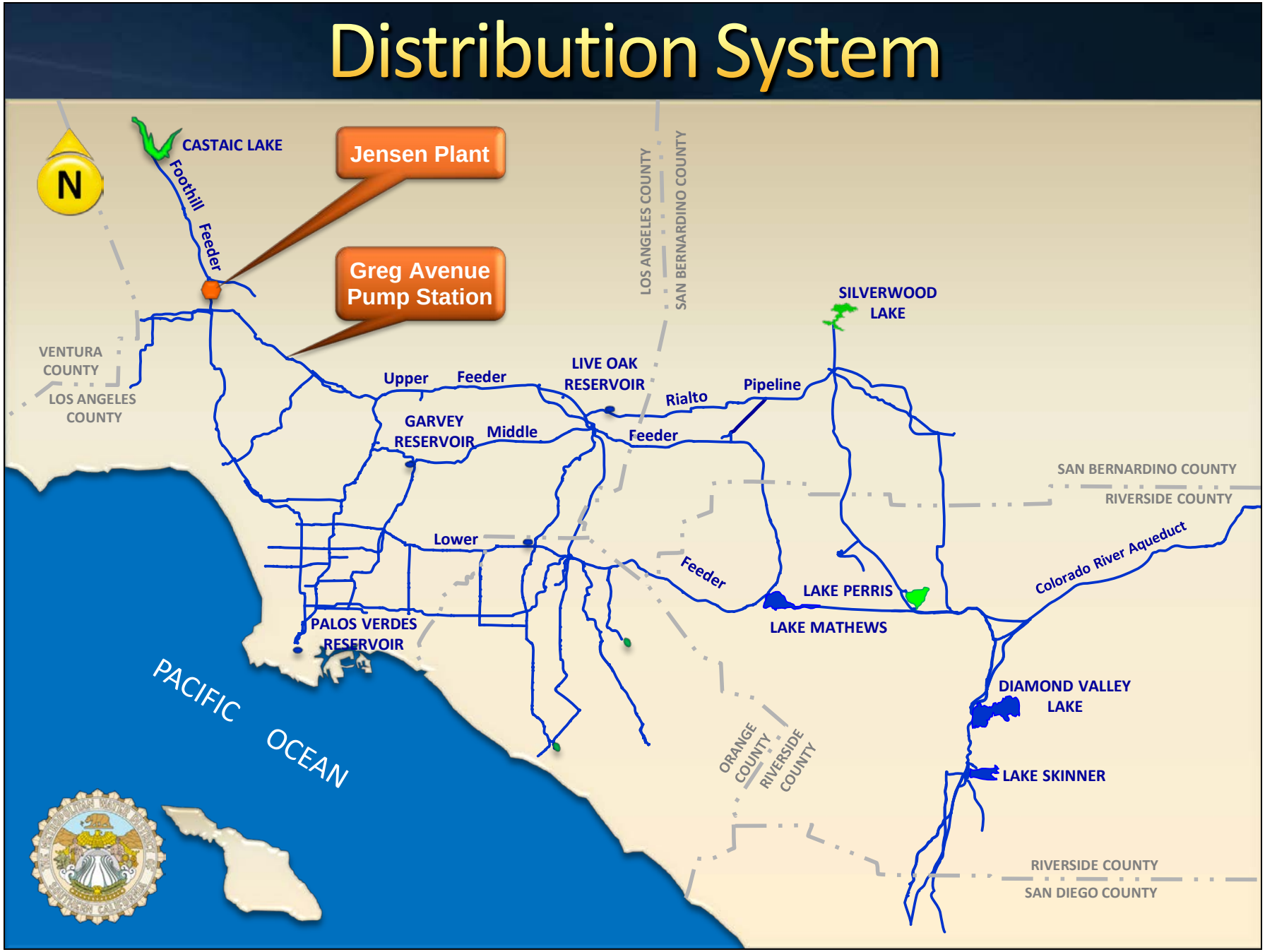
A breakdown of Board Action No. 2 for Appropriation No. 15488 for the Greg Avenue Pump Station Rehabilitation and Jensen Plant Flow Control Modifications[1] is as follows:

	Previous Total Appropriated Amount (April 2014)	Current Board Action No. 2 (May 2014)	New Total Appropriated Amount
Labor			
Studies & Investigations	$ 785,000	$ 90,000	$ 875,000
Final Design	154,000	157,000	311,000
Owner Costs (Program mgmt. & permitting)	-	189,000	189,000
Submittals Review & Record Drwgs	-	-	-
Construction Inspection & Support	-	-	-
Metropolitan Force Construction	-	364,000	364,000
Materials & Supplies	-	61,000	61,000
Incidental Expenses	6,000	-	6,000
Professional/Technical Services	75,000	-	75,000
Black & Veatch	-	720,000	720,000
Equipment Use	-	-	-
Contracts	-	-	-
Remaining Budget	80,000	119,000	199,000
Total	**$ 1,100,000**	**$ 1,700,000**	**$ 2,800,000**

Funding Request

Appropriation Name:	Water Delivery System Improvements		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15488	**Board Action No.:**	2
Requested Amount:	**$** 1,700,000	**Budget Page No.:**	177
Total Appropriated Amount:	**$** 2,800,000	**Total Appropriation Estimate:**	$ 31,000,000

[1] This is the initial action for both the Greg Avenue Pump Station Rehabilitation and Jensen plant flow control modifications. The total estimated cost to complete the first project, including the current funds requested and future procurement and construction costs, is anticipated to range from $7 million to $9 million. The total estimated cost for the Jensen plant flow control modifications is $500,000.


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Jensen Plant
Greg Avenue Pump Station
VENTURA COUNTY
LOS ANGELES COUNTY
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
LIVE OAK RESERVOIR
Upper Feeder
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY