



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

9/22/2015 Board Meeting

8-3

Subject

Appropriate \$19.8 million; and award \$16.64 million contract to Kiewit Infrastructure West Co. for canal improvements on the Colorado River Aqueduct (Approp. 15438)

Executive Summary

This action awards a construction contract to install parapet walls along portions of the Colorado River Aqueduct (CRA) to prevent overtopping of the canal. Deteriorated concrete side panels will also be replaced, and flow monitoring stations will be installed.

Timing and Urgency

There are several reaches along the CRA's trapezoidal concrete canal which have insufficient vertical distance between the maximum water surface and the upper edge of the canal sidewall. During periods of high flow through the aqueduct, water can overtop the sidewalls and erode the soils beneath the canal. In addition, several concrete panels along the canal's floor and sidewalls have deteriorated over time. Large cracks have developed in the concrete panels, permitting seepage that similarly erodes soils beneath the canal. Installation of parapet walls along the top of the canal will contain CRA water during high flow conditions, and along with repair of the concrete panels, will enhance CRA reliability.

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

Details

Background

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews in Riverside County. The CRA consists of five pumping plants; 124 miles of tunnels, siphons, and reservoirs; 63 miles of canals; and 55 miles of conduits. The aqueduct was constructed in the late 1930s and was placed into service in 1941. The open canals are trapezoidal concrete-lined structures with sloping sidewalls that are supported by earthen embankments. Most reaches of the canal are 20 feet wide at the invert and 55 feet wide at the top, with a height of 11.75 feet.

When the CRA began operating, the maximum flowrate of the system was 600 cubic feet per second (cfs), based on the original number of pumps at each pumping plant. The installation of additional pumps in 1959 permitted an increase in the maximum flowrate to 1,605 cfs. At that capacity, the depth of water in the canal is approximately 10.25 feet, leaving a freeboard of 1.5 feet below the top of the canal wall. Freeboard is defined as the vertical distance between the maximum water surface and the top of the canal sidewall. Freeboard protects the canal by preventing water from spilling over the concrete panel and onto the earthen embankment.

During the mid-1980s, the CRA pumps were refurbished and upgraded, which increased the system's peak flowrate to 1,750 cfs under specific conditions. When operating at this capacity, the canal freeboard is reduced to less than one foot. At certain locations, the potential for water to overtop the canal sidewalls is increased,

particularly due to wind-driven waves. These locations are typically found along curves where the velocities are high, at locations where sedimentation occurs, or at low spots where the canal sidewalls may have settled. Overtopping can undermine the structural integrity of canal sidewalls by eroding the adjacent soil embankment. Such overtopping of the canal sidewalls has been observed at numerous locations between Copper Basin Reservoir and Iron Mountain Pumping Plant.

The planned work includes installation of 18-inch-tall concrete parapet walls at the top of the existing canal sidewalls over a combined length of 28 miles of the aqueduct. These walls will provide additional freeboard and reduce erosion of the adjacent soil materials. Site grading will be performed to improve local drainage, and approximately 9,100 square feet of concrete panels downstream of Copper Basin Reservoir will be replaced to minimize water seepage through the floor and sidewalls of the canal. Five flow monitoring stations will be installed to provide real-time information on the water surface elevation within the canal at peak flowrates. Flow measurements from the monitoring stations will be transmitted through Metropolitan's Supervisory Control and Data Acquisition (SCADA) system to the Operations Control Center at Eagle Rock, enabling conditions to be monitored and alarmed.

In May 2014, Metropolitan's Board authorized final design of the CRA canal improvements. Final design has been completed, and staff recommends proceeding with construction at this time.

CRA Canal Improvements – Construction (\$19,800,000)

Specifications No. 1796 for canal improvements on the CRA was advertised for bids on June 30, 2015. As shown in [Attachment 2](#), seven bids were received and opened on August 18, 2015. The apparent low bidder requested to be relieved from its bid in accordance with provisions of the California Public Contract Code, due to an inadvertent clerical error made during the bid process which materially changed its bid. Upon review of the request and documentation submitted, Metropolitan released the firm from its bid. The second low bid from Kiewit Infrastructure West Co. in the amount of \$16.64 million complies with the requirements of the specifications. The five higher bids ranged from approximately \$17.4 million to \$25 million, while the engineer's estimate was \$17.8 million. For this contract, Metropolitan established a Small Business Enterprise (SBE) participation level of at least 25 percent of the bid amount. Kiewit Infrastructure West Co. has committed to meet this level of participation. The subcontractors for this contract are listed in [Attachment 3](#).

This action appropriates \$19.8 million and awards a \$16.64-million construction contract to Kiewit Infrastructure West Co. for canal improvements on the CRA. In addition to the amount of the contract, the appropriated funds include \$351,000 for Metropolitan force activities, which include SCADA programming, sequential shutdowns of the CRA, and start-up and testing of the flow monitoring stations. The requested funds also include \$1,748,000 for construction inspection; \$192,000 for submittals review, technical support, and preparation of record drawings by Lee & Ro, Inc., as discussed below; \$407,000 for environmental monitoring and project management; and \$462,000 for remaining budget.

Metropolitan staff will perform inspection of the construction. For this project, the anticipated cost of inspection is approximately 10.3 percent of the total construction cost. Engineering Services' goal for inspection of construction contracts greater than \$3 million is 9 to 12 percent. For this project, the total cost of construction is \$16,991,000, which includes the amount of the contract (\$16.64 million) and Metropolitan force activities (\$351,000).

The total cost to complete the CRA canal improvements, including the amount appropriated to date and current funds requested, is \$20.9 million.

Technical Support During Construction (Lee & Ro, Inc.) – No Action Required

Lee & Ro, Inc. performed design of the CRA canal improvements under an existing on-call agreement for engineering services that was previously authorized by Metropolitan's Board. As the Engineer of Record, Lee & Ro, Inc. will provide technical support during construction under a new project-specific agreement that will be awarded under the General Manager's Administrative Code authority. The planned services include review of submittals, responding to requests for information from the contractor, advising staff on technical issues as they may arise, and preparing record drawings. The estimated cost for these services is \$192,000.

For this agreement, Metropolitan has established an SBE participation level of 18 percent. Lee & Ro, Inc. is an SBE firm, and thus achieves 100 percent SBE participation. No subconsultants are planned under this agreement.

This project is included within capital Appropriation No. 15438, the CRA Reliability Appropriation – FY 2006/07 Through FY 2011/12, which was initiated in fiscal year 2006/07. With the present action, the total funding for Appropriation No. 15438 will increase from \$43,144,000 to \$62,944,000.

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, [Attachment 2](#) for the Abstract of Bids, [Attachment 3](#) for the listing of Subcontractors for Low Bidder, and [Attachment 4](#) for the Location Map.

Project Milestone

February 2017 – Completion of construction

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

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, 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. In addition, the proposed project involves minor modifications in the condition of land, water, and/or vegetation which does not involve removal of healthy, mature, scenic trees. Accordingly, the proposed action qualifies under Class 1, Class 2, Class 3, and Class 4 Categorical Exemptions (Sections 15301, 15302, 15303, and 15304 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under four Categorical Exemptions (Class 1, Section 15301; Class 2, Section 15302; Class 3, Section 15303; and Class 4, Section 15304 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 categorically exempt, and

- a. Appropriate \$19.8 million; and
- b. Award \$16.64 million contract to Kiewit Infrastructure West Co. for canal improvements on the Colorado River Aqueduct.

Fiscal Impact: \$19.8 million in capital funds under Approp. No. 15438

Business Analysis: This option will protect Metropolitan assets and reduce the risk of costly urgent repairs for canal portions of the CRA.

Option #2

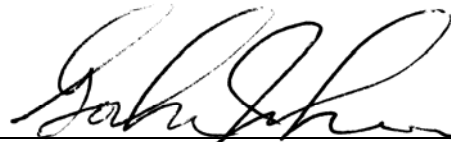
Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: Under this option, the maximum flowrate through the CRA may be limited to prevent water from overtopping the canal.

Staff Recommendation

Option #1



9/8/2015

Gordon Johnson
Manager/Chief Engineer
Engineering Services

Date



9/10/2015

Jeffrey Lightlinger
General Manager

Date

- Attachment 1 – Financial Statement**
- Attachment 2 – Abstract of Bids**
- Attachment 3 – Subcontractors for Low Bidder**
- Attachment 4 – Location Map**

Ref# es12638562

Financial Statement for CRA Reliability Appropriation – FY 2006/07 Through FY 2011/12

A breakdown of Board Action No. 30 for Appropriation No. 15438 for the CRA Canal Improvements project¹ is as follows:

	Previous Total Appropriated Amount (Apr. 2015)	Current Board Action No. 30 (Sep. 2015)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 2,505,800	\$ -	\$ 2,505,800
Final Design	5,118,900	-	5,118,900
Owner Costs (Program mgmt., envir. monitoring.)	3,844,090	272,000	4,116,090
Submittals Review & Record Drwgs.	730,600	135,000	865,600
Construction Inspection & Support	2,515,500	1,748,000	4,263,500
Metropolitan Force Construction	4,214,600	351,000	4,565,600
Materials & Supplies	2,995,405	-	2,995,405
Incidental Expenses	138,800	-	138,800
Professional/Technical Services	3,607,000	-	3,607,000
Lee & Ro, Inc.	394,000	192,000	586,000
Equipment Use	25,505	-	25,505
Contracts	15,591,237	16,640,000	32,231,237
Remaining Budget	1,462,563 ²	462,000	1,924,563
Total	\$ 43,144,000	\$ 19,800,000	\$ 62,944,000

Funding Request

Appropriation Name:	CRA Reliability Appropriation – FY 2006/07 Through FY 2011/12		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15438	Board Action No.:	30
Requested Amount:	\$ 19,800,000	Budget Page No.:	292
Total Appropriated Amount:	\$ 62,944,000	Total Appropriation Estimate:	\$ 64,826,000

¹ The total amount expended to date on the CRA Canal Improvements project is approximately \$786,000. The total estimated cost to complete this project, including the amount appropriated to date and current funds requested, is \$20.9 million.

² Includes previous allocation of \$259,000 from Remaining Budget to the CRA Canal Improvements for field survey of concrete panel cracks and canal cross sections along 63 miles of canal.

The Metropolitan Water District of Southern California
Abstract of Bids Received on August 18, 2015 at 2:00 P.M.
Specifications No. 1796
CRA Erosion Protection Curbing

The work consists of installing 28 miles of concrete curbing; replacing concrete panels; furnishing and installing communication, solar power, electrical equipment and enclosures; constructing water level monitoring wells; and performing civil site work.

Engineer's Estimate: \$17,800,000

Bidder and Location	Total	SBE \$	SBE %	Met SBE¹
Tobo Construction, Inc. ² Los Angeles, CA	\$10,825,000	-	-	-
Kiewit Infrastructure West Co. Santa Fe Springs, CA	\$16,640,000	\$4,177,153	25	Yes
Myers and Sons Construction, LP Sacramento, CA	\$17,392,500	-	-	-
Granite Construction Inc. Indio, CA	\$17,835,566	-	-	-
Reyes Construction Inc. Pomona, CA	\$19,820,255	-	-	-
Steve P. Rados, Inc. Santa Ana, CA	\$22,000,000	-	-	-
J. F. Shea Construction, Inc. Walnut, CA	\$24,987,500	-	-	-

¹ SBE (Small Business Enterprise) participation level was established at 25 percent for this contract.

² Tobo Construction Inc., requested to be relieved from its bid in accordance with provisions of the California Public Contract Code, due to an inadvertent clerical error which materially changed its bid for the project. Upon review of the request and documentation submitted, Metropolitan released Tobo Construction, Inc. from its bid.

The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

**Specifications No. 1796
CRA Erosion Protection Curbing**

Low Bidder: Kiewit Infrastructure West Co.

Subcontractor and Location
Big Bear Electric, Big Bear City, CA
Fence Corp. Inc., Riverside, CA

Location Map

