THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- Board of Directors
  Engineering and Operations Committee

11/8/2011 Board Meeting

8-6

Subject

Appropriate $2.28 million; and award $1,784,495 contract to Abhe & Svoboda, Inc. for repairs to three siphons on the Colorado River Aqueduct (Approp. 15438)

Description

This action awards a construction contract for the repair of cracks in three siphons on the Colorado River Aqueduct (CRA). These siphons have been in service for over 50 years. The repairs include installation of new internal seals at multiple locations along the siphons to prevent leakage.

Timing and Urgency

Repairs are needed on the CRA's Freda, Perris Valley, and Mile Marker (MM) 19.58 siphons. Multiple leaks were detected on the Freda siphon during a 19-day shutdown of the CRA in February 2011, while multiple cracks with the potential for leakage were identified on the Perris Valley and MM 19.58 siphons during an inspection in 2007. The leaks and cracks do not immediately jeopardize the structural integrity of the aqueduct. However, leakage over time could erode soil, undermine the siphons, and cause extensive damage to the siphon structures. This project will repair the approximately 15 recently discovered leaks, along with the approximately 50 previously identified cracks. Given the CRA's importance to Metropolitan's water deliveries, staff recommends moving forward with the repairs at this time.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria, and is categorized as an Infrastructure Upgrade project. The project is budgeted within Metropolitan's CIP for fiscal year 2011/12.

Background

The CRA is a 242-mile-long water conveyance system that was placed into service in 1941. It consists of five pumping plants, 124 miles of tunnels, 63 miles of canals, and 55 miles of conduits, siphons and reservoirs. As the aqueduct traverses the desert, it must cross numerous drainage channels, ravines, and other natural depressions. At each crossing, the aqueduct's open channel transitions into a buried conduit (an inverted siphon) which drops below ground and passes beneath the natural surface feature. At the downstream end of the siphon, water re-emerges into the open aqueduct. Typically, siphons are cast-in-place reinforced concrete conduits which vary in length from 150 feet to 5 miles. Siphons comprise about 12 percent of the aqueduct's total length.

In February 2011, 15 wet spots were observed on the ground surface above the 3-mile-long Freda siphon, which is located 20 miles east of Iron Mountain Pumping Plant. The leakage is likely due to unusually cold weather that produced an extended period of cold water temperatures. Cold water can cause the concrete conduit to shrink, leading to development of hairline cracks. Staff completed temporary repairs to the siphon in March 2011. At that time, the siphon was excavated and the cracks were filled with a rubber sealant as a temporary measure. However, permanent repairs are required to prevent future leaks.

During a 2007 inspection, numerous cracks were identified in the Perris Valley and MM 19.58 double barrel-type siphons, which are located 10 miles east of Lake Mathews and 19 miles west of Intake Pumping Plant,

respectively. The Perris Valley siphon is 1.5 miles long, while the MM 19.58 siphon is 1,600 feet long. Numerous internal circumferential cracks were observed, which varied from 6 to 42 inches long, with crack widths from 1/16 inch to 1 inch. Based on the observed wet spots on the ground surface above the Freda siphon and the cracks observed within the Perris Valley and MM 19.58 siphons, staff estimates that approximately 65 cracks will need to be repaired.

When the siphons were constructed in the 1930s, expansion joints were not included in the original design. Expansion joints are now typically designed to accommodate length changes caused by thermal expansion and contraction of siphon conduits, which reduces the susceptibility to cracking. While the cracks in the liners do not compromise the structural integrity of the conduits, over time the cracks may propagate through the siphon walls and leak, which could cause damage to the siphons.

In May 2011, Metropolitan's Board authorized final design to repair 65 cracks along the CRA. Final design is now complete and staff recommends proceeding with construction at this time. This work is planned to be completed during an upcoming CRA shutdown in February 2012.

Colorado River Aqueduct Internal Seal Installation – Construction ($2,280,000)

Specifications No. 1708 for Internal Seal Installation on the Colorado River Aqueduct was advertised for bids on August 11, 2011. As shown in **Attachment 2**, eight bids were received and opened on September 15, 2011. The low bid from Abhe & Svoboda, Inc., in the amount of $1,784,495, complies with the requirements of the specifications. The seven higher bids ranged from $2,049,111 to $3.92 million. The engineer's estimate was $1,683,000. Staff investigated the difference between the low bid and the engineer's estimate and attributes the difference to logistical challenges due to the remoteness of the job site. For this contract, Metropolitan established an SBE participation level of at least 18 percent of the bid amount. Abhe & Svoboda, Inc. has committed to meet this level of participation.

This action appropriates $2.28 million in budgeted funds and awards a $1,784,495 contract to Abhe & Svoboda, Inc. for installation of internal seals along the CRA's Freda, Perris Valley, and MM 19.58 siphons. In addition to the amount of the contract, the appropriated funds include $46,505 for support by Metropolitan forces, which include dewatering at three locations, establishment of access safety clearances, and return of the aqueduct to service. Requested funds also include: $249,000 for construction inspection; $21,000 for submittals review and technical support by Metropolitan design staff; $8,000 for preparation of record drawings; $62,000 for environmental monitoring and project management; and $109,000 for remaining budget.

Metropolitan staff will perform inspection of the construction contract. For this project, the anticipated cost of inspection is approximately 13.6 percent of the total construction cost. Engineering Services' goal for inspection of construction contracts less than $3 million is 9 to 15 percent. For this project, the estimated total cost of construction is $1,831,000.

This work has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2011/12 capital budget. This project is included within capital Appropriation No. 15438, the CRA Reliability Program - Phase 2, which was initiated in fiscal year 2006/07. Past work authorized under Appropriation No. 15438 includes the CRA 6.9 kV Fault Current Protection Upgrades, the Eagle Mountain Standby Generator Replacement, and the CRA 230 kV Disconnect Switches Replacement. The total appropriated amount for this program will increase from $26,331,000 to $28,611,000. See **Attachment 1** for the Financial Statement, **Attachment 2** for the Abstract of Bids, and **Attachment 3** for the Location Map.

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

Project Milestones

March 2012 – Completion of CRA shutdown

June 2012 – Completion of construction

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The project was previously determined to be categorically exempt under the provisions of CEQA and State CEQA Guidelines. The repair of three siphons on the Colorado River Aqueduct was found to be exempt under Class 1, Section 15301; Class 2, Section 15302; and Class 4, Section 15304 of the State CEQA Guidelines on June 21, 2011. A Notice of Exemption (NOE) was filed on the project at that time and the statute of limitations has ended. With the current board action, there is no substantial change proposed to the project since the original NOE was filed. Hence, the previous environmental documentation in conjunction with the project fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act with regards to the proposed action.

The CEQA determination is: Determine that the proposed action has been previously addressed in the 2011 NOE (Class 1, Section 15301; Class 2, Section 15302; and Class 4, Section 15304 of the State CEQA Guidelines) and that no further environmental analysis or documentation is required.

CEQA determination for Option #2

None required

Board Options

Option #1

Adopt the CEQA determination and

a. Appropriate $2.28 million; and
b. Award $1,784,495 contract to Abhe & Svoboda, Inc. for repairs to three siphons on the Colorado River Aqueduct.

Fiscal Impact: $2.28 million in budgeted funds under Approp. 15438

Business Analysis: This option will enhance CRA reliability and reduce the risk of unplanned outages and costly emergency repairs.

Option #2

Do not award the construction contract and readvertise in an attempt to receive more favorable bids.

Fiscal Impact: None

Business Analysis: This option may or may not result in more favorable bids, and would forego an opportunity to repair the siphons during a scheduled shutdown. Deferral of the repairs could result in additional leakage and damage to the siphons.

Staff Recommendation

Option #1

10/17/2011
Gordon Johnson *Date*
Manager/Chief Engineer,
Engineering Services

10/25/2011
Jeffrey Kightlinger *Date*
General Manager

Attachment 1 – Financial Statement

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

Ref# es12613962

Financial Statement for CRA Reliability Program - Phase 2

A breakdown of Board Action No. 16 for Appropriation No. 15438 for the repair of three siphons on the Colorado River Aqueduct[1] is as follows:

	Previous Total Appropriated Amount (Sept. 2011)	Current Board Action No. 16 (Nov. 2011)	New Total Appropriated Amount
Labor			
Studies & Investigations	$ 1,261,800	$ -	$ 1,261,800
Final Design	1,948,900[2]	-	1,948,900
Owner Costs (Envir. monitoring, project mgmt.)	2,286,390	62,000	2,348,390
Submittals Review & Record Drawings	357,100	29,000	386,100
Construction Inspection & Support	1,597,000	249,000	1,846,000
Metropolitan Force Construction	2,659,700	32,000	2,691,700
Materials & Supplies	2,291,405	-	2,291,405
Incidental Expenses	110,800	10,000	120,800
Professional Services	1,607,000	-	1,607,000
Equipment Use	-	4,505	4,505
Contracts	11,151,945	1,784,495	12,936,440
Remaining Budget	1,058,960[2]	109,000	1,167,960
Total	**$ 26,331,000**	**$ 2,280,000**	**$ 28,611,000**

Funding Request

Program Name:	CRA Reliability Program - Phase 2		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15438	**Board Action No.:**	16
Requested Amount:	**$** 2,280,000	**Capital Program No.:**	15438-I
Total Appropriated Amount:	**$** 28,611,000	**Capital Program Page No.:**	290
Total Program Estimate:	**$** 67,891,000	**Program Goal:**	I-Infrastructure Reliability

[1] The total amount expended to date on the CRA Siphon Repair project is approximately $180,000.
[2] Includes previous allocation of $362,000 from remaining budget to final design for the Eagle Mountain Standby Generator Replacement to reflect value engineering recommendations which reduced overall project cost and will simplify future maintenance.

The Metropolitan Water District of Southern California

Abstract of Bids Received on September 15, 2011 at 2:00 P.M.

Specifications No. 1708
CRA Internal Seals Installation

The project consists of the installation of internal seal bands at 65 locations on the Colorado River Aqueduct's Freda, Perris Valley, and Mile Marker 19.58 siphons.

Engineer's Estimate: $1,683,000

Bidder and Location	Total	SBE $	SBE %	Met SBE*
Abhe & Svoboda, Inc., Prior Lake, MN	**$ 1,784,495**	**$398,675**	**22%**	**Yes**
Mehta Mechanical Co. Inc. dba MMC, La Palma, CA	$ 2,049,111	-	-	-
J. F. Shea Construction, Inc., Walnut CA	$ 2,171,700	-	-	-
Gantry Constructors, Inc., Clarkdale, AZ	$ 2,670,000	-	-	-
Steve P. Rados, Inc., Santa Ana, CA	$ 2,685,000	-	-	-
Mladen Buntich Construction Co. Inc., Upland, CA	$ 3,417,000	-	-	-
Garcia Juarez Construction Inc., Brea, CA	$ 3,600,000	-	-	-
Colich & Sons, L. P., Gardena, CA	$ 3,920,000	-	-	-

*SBE (Small Business Enterprise) participation was established at 18% for this contract

Location Map