THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- **Board of Directors**
  Engineering, Operations, and Technology Committee

5/9/2023 Board Meeting

8-2

Subject

Award a $5,266,000 contract to Leed Electric Inc. to install 12 flow monitoring stations along the Colorado River Aqueduct conveyance system; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Operation of the Colorado River Aqueduct (CRA) at full capacity with an eight-pump flow for extended periods presents operational challenges, as the higher water elevations in the canal and conduits/tunnels reduce hydraulic freeboard. Under these operating conditions, water can spill in certain canal sections, and there is the potential to over-pressurize the cut-and-cover conduits, especially in summer months when biological fouling in the canal reduces the hydraulic capacity of the aqueduct. Currently, flow monitoring of the aqueduct is conducted at the CRA pumping plants which are continually staffed. However, monitoring of water level conditions in the remaining portions of the aqueduct requires staff to access remote locations to make visual observations. This action awards a construction contract to install 12 in-line flow monitoring stations along the CRA's conveyance system, which will allow staff to remotely monitor the water levels in real-time to provide for better control and regulation of water flows through the CRA system.

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 cut-and-cover conduits. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

Each of the five pumping plants has nine main pumps. These pumps were installed in several phases over time to meet increasing water demands. When all pumps were originally installed, the hydraulic capacity of the CRA totaled 1,605 cubic feet per second (cfs). Under a rehabilitation program completed in 1992, pump unit performance was improved by enlarging the impeller diameters and modifying the angle of the vanes at the impeller discharge. At the present time, the hydraulic capacity of the CRA pumps is upwards of 1,700 cfs. Although the pump capacity now exceeds the initial design capacity of the conduits and canals, staff has been able to operate the system at the higher flows with additional monitoring, close coordination, and increased maintenance.

The CRA conveyance system is routinely and thoroughly cleaned during the annual shutdown in February to ensure that delivery capabilities of the aqueduct system are maintained. However, with warmer aqueduct temperatures, biological fouling of concrete surfaces decreases velocity due to increased friction, which results in higher water elevations. When the aqueduct is operating at maximum capacity, water levels in the aqueduct are at their highest level, and it becomes challenging to manage flows at these higher water elevations, especially in those portions of the aqueduct that are either open canals or buried cut-and-cover conduits. The higher water elevation reduces hydraulic freeboard and can result in water spill in canal sections and potentially cause over-pressurization of the cut-and-cover conduits. The cut-and-cover conduits are unreinforced and not designed to operate under pressurized conditions.

Over the last several years, when allocations from the State Water Project were extremely limited, the CRA operated at its maximum capacity more frequently and for longer durations than at any time during its operational history. Staff recommends that in-line flow monitoring facilities be installed along the CRA to allow staff to better monitor and control flows and plan for aqueduct algae control and cleaning operations. This project will install 12 flow monitoring stations along the CRA's conveyance system that will be integrated into Metropolitan's Supervisory Control and Data Acquisition (SCADA) system to provide real-time flow data, enabling water surface elevations to be continuously monitored and alarmed. The installation of monitoring equipment will allow staff to monitor and regulate flows more accurately in the aqueduct to maintain uniform and steady state flow conditions. This type of controlled operation will help to prevent spills in the canal sections and avoid over-pressurization of the unreinforced conduit sections of the conveyance system, thus providing safe and reliable water deliveries.

Budget Impact

In accordance with the April 2022 action on the biennial budget for fiscal years 2022/23 and 2023/24, the General Manager authorized staff to proceed with construction of the CRA Conveyance Flow Monitoring Stations, pending board approval of the contract described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the CIP Appropriation for Fiscal Years 2022/23 and 2023/24 (Appropriation No. 15525). This project anticipates an expenditure of $7.75 million in capital funds. Approximately $6.65 million will be incurred in the current biennium and has been previously authorized. The remaining funding required from this action will be accounted for and appropriated under the next biennial budget. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the CRA Reliability Program.

CRA Conveyance System Flow Monitoring Stations - Construction

The scope of the construction contract consists of installing 12 flow monitoring stations along the conveyance system of the CRA. The planned work includes: (1) installation of precast concrete buildings, antenna poles to support the transmitter and solar panels, and electrical duct banks; (2) control system integration; (3) rehabilitation of deteriorated accessways for the conduits; and (4) site grading. Metropolitan forces completed installation of the transducers last month during the annual 2023 CRA shutdown. This will allow a contractor to complete all remaining work while the CRA is in operation and commission the flow monitoring stations in a timely manner. Metropolitan forces will provide access, coordinate clearances with the contractor during construction, and perform SCADA integration programming.

A total of $7,750,000 is allocated for this work. In addition to the amount of the contract described below, other funds to be allocated include: $650,000 for construction management and inspection; $252,000 for Metropolitan force activities, as described above; $25,000 for technical support during construction, review of electrical submittals, and preparation of record drawings by Lee & Ro Inc.; $387,000 for submittals reviews; $466,000 for contract administration, environmental monitoring, and project management; and $704,000 for remaining budget. **Attachment 1** provides the allocation of the required funds. The total estimated cost to complete the installation of the flow monitoring stations project, including the amount appropriated to date, and funds allocated for the work described in this action is $9.15 million.

Award of Construction Contract (Leed Electric Inc.)

Specifications No. 2042 for the installation of flow monitoring stations was advertised on February 10, 2023. As shown in **Attachment 2**, two bids were received and opened on March 28, 2023. The low bid from Leed Electric Inc., in the amount of $5,266,000, complies with the requirements of the specifications. The higher bid was $6,659,550, while the engineer's estimate for this project was $4.27 million. Staff investigated the difference between the low bid and the engineer's estimate and attributes the difference to increased costs associated with mobilization and demobilization at the 12 remote locations along the 80-mile project boundaries, increased electrical craft worker costs in desert regions, contractor's risk, and the limited bidding pool.

For this contract, Metropolitan established a Small Business Enterprise (SBE) participation level of at least 25 percent of the bid amount. Leed Electric, Inc., is an SBE firm and thus achieves 100 percent SBE participation. The subcontractors for this contract are listed in **Attachment 3**.

As described above, Metropolitan staff will perform construction management and inspection. Engineering Services' performance metric goal for inspection of projects with construction greater than $3 million is 9 to 12 percent. For this project, the performance metric for inspection is 11.8 percent of the total construction cost.

Alternatives Considered

During planning and design of this project, staff considered several alternatives for housing of the equipment that will be installed aboveground. One alternative considered was to install all equipment in the open with shade canopies and an enclosed fence to protect the equipment; however, due to increased theft and vandalism experienced in remote locations, staff decided to forego this alternative. The selected alternative of installing all equipment within a precast building will provide comprehensive security and protect all equipment from the harsh desert environment increasing its service life. Additionally, the new installations will be similar to the existing flow monitoring stations that are already in service, standardizing the equipment and making maintenance more cost-effective.

Summary

This action awards a $5,266,000 construction contract to install 12 flow monitoring stations along the CRA. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, **Attachment 3** for the Listing of Subcontractors for the Low Bidder, and **Attachment 4** for the Location Map.

Project Milestone

July 2024 – Complete construction of flow monitoring stations

Policy

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

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/2023 and 2023/2024.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action involves operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. Additionally, the proposed action involves construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. Finally, the proposed action consists of public or private alterations 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 3 and Class 4 Categorical Exemptions (Sections 15301, 15303 and 15304 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Award a $5,266,000 contract to Leed Electric Inc. to install 12 flow monitoring stations along the CRA conveyance system.

Fiscal Impact: Expenditure of $7.75 million in capital funds. Approximately $6.65 million will be incurred in the current biennium and has been previously authorized. The remaining funding required from this action will be accounted for and appropriated under the next biennial budget.

Business Analysis: This option will enhance the safety and reliability of the CRA conveyance system.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to enhance the reliability of the CRA and maintain reliable water deliveries.

Staff Recommendation

Option #1

4/17/2023

John V. Bednarski *Date*
Chief Engineer/Group Manager
Engineering Services

4/25/2023

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Subcontractors for Low Bidder

Attachment 4 – Location Map

Ref# es12691758

Allocation of Funds for Installation of CRA Conveyance Flow Monitoring Stations

	Current Board Action (May 2023)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	466,000
Submittals Review & Record Drwgs.	387,000
Construction Inspection & Support	650,000
Metropolitan Force Construction	180,000
Materials & Supplies	52,000
Incidental Expenses	20,000
Professional/Technical Services	
Lee & Ro, Inc.	25,000
Right-of-Way	-
Equipment Use	-
Contracts	
Leed Electrical, Inc.	5,266,000
Remaining Budget	704,000
Total	**$ 7,750,000**

The total amount expended to date for the installation of CRA conveyance system flow monitoring stations is approximately $1.4 million. The total estimated cost to complete, including the amount appropriated to date and funds allocated for the work described in this action, is $9.15 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on March 28, 2023, at 2:00 P.M.

Specifications No. 2042
Colorado River Aqueduct Conveyance System Installation of Flow Monitoring Stations

The work includes installation of 12 flow monitoring stations along the conveyance system of the CRA. The planned work includes: (1) installation of precast concrete buildings, antenna poles to support the transmitter and solar panels, and electrical duct banks; (2) control system integration; (3) rehabilitation of deteriorated accessways for the conduits; and (4) site grading.

Engineer's estimate: $4.27 million

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
Leed Electric Inc. Santa Fe Springs, CA	**$5,266,000**	**$5,266,000**	**100%**	**Yes**
R2Build dba R2B Engineering Laguna Hills, CA	$6,659,550	-	-	-

[1] Small Business Enterprise (SBE) participation level established at 25% for this contract.

The Metropolitan Water District of Southern California

Subcontractor for Low Bidder

Specifications No. 2042
Colorado River Aqueduct Conveyance System Installation of Flow Monitoring Stations

Low bidder: Leed Electric, Inc.

Subcontractor	Service Category; Specialty
316 Engineering and Construction Co. Inc. Rosemead, CA	Civil, mechanical, and structural work

Location Map