



- Board of Directors  
*Engineering and Operations Committee*

8/20/2019 Board Meeting

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**8-3**

## **Subject**

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Award \$32,946,000 contract to J.F. Shea Construction, Inc. for installation of discharge line isolation coupling assemblies at each Colorado River Aqueduct pumping plant; the proposed action is in furtherance of a project that the General Manager has determined is exempt or otherwise not subject to CEQA

## **Executive Summary**

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This action awards a construction contract to install 44 discharge line isolation coupling assemblies at Metropolitan's five Colorado River Aqueduct (CRA) pumping plants. Staff has initiated a long-term comprehensive program to rehabilitate all 45 main pumps and their support systems in order to extend their service life and maintain reliability. The current board action will support the planned Pump Rehabilitation Program by installing isolation couplings, which will allow individual pumps to be taken off-line for inspection and rehabilitation, while maintaining full 8-pump flow capability throughout the CRA system.

## **Details**

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### **Background**

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews. It consists of five pumping plants, 124 miles of tunnels, 63 miles of canals, and 55 miles of conduits, siphons, and reservoirs. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

Each of Metropolitan's five pumping plants has nine main pumps that were installed in four stages between 1941 and 1959. In the mid-1980s, a major effort was undertaken to rehabilitate and refurbish all 45 main pumps. Since that time, Metropolitan staff have performed regular maintenance on these 45 units. While all pump units continue to operate reliably, recent inspections have identified that the pumps and their related equipment are showing signs of wear and deterioration. Staff has initiated a long-term comprehensive program to rehabilitate the pumps, their motors, and ancillary support systems in order to extend the service life and maintain overall reliability of the CRA system.

This project will provide flexibility and an efficient manner to remove one pump unit at a time from service for major rehabilitation as described above, regular maintenance or other repairs to the pump or pump discharge valve. The current practice for isolation of an individual pump unit requires three pumps at a pump plant to be removed from service at one time. Significant cutting and welding activities are required to install a steel bulkhead in one pump's 6-foot diameter discharge line, and subsequently return two of the three pumps back into service. The sequence of activities must be repeated to return the one pump to service following maintenance or repair work. The existing process is difficult and time-consuming and requires lengthy flow reductions on the CRA. The installation of discharge line coupling assemblies under this project will eliminate the cutting and welding process required to isolate a pump unit, reduce impacts to overall CRA pumping and conveyance capacity, and facilitate the efficient execution of the Pump Rehabilitation Program. Installation of pump discharge line isolation couplings is one of the first components of the overall CRA main pumps rehabilitation program.

In January 2016, Metropolitan's Board authorized design for the installation of 45 discharge line isolation coupling assemblies. In April 2017, the Board authorized construction of a demonstration project at Gene Pumping Plant, which included procurement and installation of a discharge line coupling for a single pump.

The demonstration project was successfully completed, and enabled staff to evaluate design parameters of the coupling assembly, test for pressure transients in the discharge line, and confirm sequences and timing for the installation procedure. Staff incorporated the information gathered from this initial work into the design for the remaining 44 discharge couplings. The design for the installation of the 44 couplings is now complete, and the construction contract is ready to proceed at this time.

In October 2018, the Board appropriated funds and authorized the General Manager to initiate or proceed with work on all capital projects identified in the Capital Investment Plan (CIP), subject to any limits on the General Manager's authority and CEQA requirements. This project has been reviewed with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the Colorado River Aqueduct Reliability Program.

In accordance with the October 2018 action, the General Manager will authorize staff to proceed with the installation of discharge line isolation coupling assemblies at each CRA pumping plant, pending board award of the contract described below. Funds for the work to be performed pursuant to the subject contract during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2018/19 and 2019/20 (Appropriation No. 15509). Funds required for work performed after fiscal year 2019/20 will be appropriated after the adoption of the next biennial budget.

### **CRA Discharge Line Isolation Coupling Assemblies – Construction**

The scope of the construction contract includes: (1) fabrication and installation of 44 isolation couplings with flow-through spool pieces in 6-foot diameter pump discharge pipes; (2) fabrication of ten removable bulkheads; (3) relining each of 6-foot discharge pipes with mortar lining; (4) demolition and replacement of concrete piers which support the discharge pipes; and (5) abatement and disposal of hazardous materials, including asbestos, coal tar enamel coating, and lead. Installation of the 44 coupling assemblies will occur over two scheduled CRA shutdowns during the winters of 2020 and 2021, to minimize disruptions to water deliveries.

A total of \$42 million is required to perform this work. In addition to the amount of the contract described below, other funds to be allocated include: \$3,600,000 for construction management and inspection; \$663,000 for Metropolitan force activities which include shutting down the pumping system, establishing clearances, and dewatering and re-watering the discharge lines; \$835,000 for submittals review, technical support during construction, responding to requests for information, and preparation of record drawings; \$747,000 for contract administration, environmental monitoring, and project management; and \$3,209,000 for remaining budget.

**Attachment 1** provides the allocation of the required funds. The total estimated cost to complete the CRA Discharge Line Isolation Coupling Assemblies project, including the amount appropriated to date and funds allocated for the work described in this action is anticipated to range from \$40.5 million to \$44.4 million. Approximately \$1.7 million has been expended on this project to date.

#### ***Award of Construction Contract (J.F. Shea Construction, Inc.)***

Specifications No. 1834 for installation of the CRA discharge line isolation coupling assemblies was advertised for bids on May 24, 2019. As shown in **Attachment 2**, three bids were received and opened on July 2, 2019. The low bid from J.F. Shea Construction, Inc. in the amount of \$32,946,000 complies with the requirements of the specifications. The other bids ranged from \$42,800,000 to \$43,700,000, while the engineer's estimate was \$28,700,000. Staff investigated the difference between the low bid and the engineer's estimate and attributes the difference to several factors: (1) the higher-than-expected cost for coal tar enamel removal and disposal; (2) the greater-than-anticipated challenges with performing work along steep rocky slopes at each pump plant site; and (3) the logistical challenges related to conducting around-the-clock work at multiple remote locations as required over two CRA shutdowns. For this contract, Metropolitan established a Small Business Enterprise participation level of at least 14 percent of the bid amount. J.F. Shea Construction, Inc. has committed to meet this level of participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards a \$32,946,000 contract to J.F. Shea Construction, Inc. for the installation of the discharge line isolation coupling assemblies at all five CRA pumping plants.

As described above, construction inspection will be performed by Metropolitan staff. Engineering Services' performance metric target range for inspection of projects with construction greater than \$3 million is 9 to 12 percent. For this project, the performance metric goal for inspection is 10.7 percent of the total

construction cost. The total cost of construction for this project is \$33,609,000, which includes the amount of the contract (\$32,946,000) and Metropolitan force activities (\$663,000).

### **Summary**

This action awards a \$32,946,000 contract to J.F. Shea Construction, Inc. for installation of the discharge line isolation coupling assemblies at all five CRA pumping plants. See **Attachment 1** for the Allocation of Funds, **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***

June 2021 – Completion of installation of the discharge line isolation couplings assemblies at all five CRA pumping plants

### **Policy**

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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 50357, dated January 1, 2016, the Board authorized design of two pump reliability projects at the Colorado River Aqueduct pumping plants.

By Minute Item 50783, dated April 11, 2017, the Board authorized installation of discharge line coupling at Gene Pumping Plant.

By Minute Item 51353 dated October 9, 2018, the Board appropriated a total of \$290 million for projects identified in the Capital Investment Plan for Fiscal Years 2018/19 and 2019/20.

### **California Environmental Quality Act (CEQA)**

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#### **CEQA determination for Option #1:**

The proposed action is in furtherance of a project that is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The project involves the funding, design, minor alterations and replacement of existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the project qualifies under Class 1 (Existing Facilities) and Class 2 (Replacement or Reconstruction) Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines). Therefore, the proposed action is exempt from CEQA.

#### **CEQA determination for Option #2:**

None required

### **Board Options**

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#### **Option #1**

Award \$32,946,000 contract to J.F. Shea Construction, Inc. to install the discharge line isolation coupling assemblies at all five CRA pumping plants.

**Fiscal Impact:** \$42 million in capital funds

**Business Analysis:** This option will enable the rehabilitation program for the main CRA pumps to move forward without reducing pumping capacity of the CRA.

#### **Option #2**

Do not award a contract to install the discharge line isolation coupling assemblies at all five CRA pumping plants.

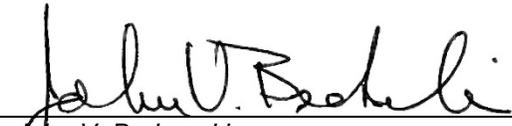
**Fiscal Impact:** None

**Business Analysis:** This option would extend the duration of the refurbishment of the main pumps and their related systems, which would forego an opportunity to reduce the risk of unplanned outages of the CRA.

**Staff Recommendation**

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Option #1

  
\_\_\_\_\_  
John V. Bednarski  
Manager/Chief Engineer  
Engineering Services

7/25/2019

Date

  
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Jeffrey Kightlinger  
General Manager

7/31/2019

Date

**Attachment 1 – Allocation of Funds**

**Attachment 2 – Abstract of Bids**

**Attachment 3 – Subcontractors for Low Bidder**

**Attachment 4 – Location Map**

Ref# es12663496

### Allocation of Funds for CRA Discharge Line Isolation Coupling Assemblies

	<b>Current Board Action (Aug. 2019)</b>
Labor	
Studies & Investigations	\$ -
Final Design	-
Owner Costs (Program mgmt., contr. admin. envir. monitoring)	747,000
Submittals Review & Record Drwgs.	835,000
Construction Inspection & Support	3,600,000
Metropolitan Force Construction	500,000
Materials & Supplies	-
Incidental Expenses	163,000
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
J.F. Shea Construction, Inc.	32,946,000
Remaining Budget	3,209,000
<b>Total</b>	<b>\$ 42,000,000</b>

The total amount expended to date for installation of Discharge Line Isolation Couplings Project is approximately \$1.7 million. The total estimated cost to complete this project, including the amount appropriated to date, and funds allocated for the work described in this action, is \$44.4 million.

**The Metropolitan Water District of Southern California**

**Abstract of Bids Received on July 10, 2019 at 2:00 P.M.**

**Specifications No. 1834**

**Colorado River Aqueduct Discharge Line Isolation  
Coupling Assemblies Installation**

The work consists of fabrication and installation of 44 isolation couplings with flow-through spool pieces in 6-foot diameter water discharge pipes; fabrication of ten removable bulkheads; relining of 6-foot discharge pipes with mortar lining; demolition and installation of concrete piers; abatement of asbestos, coal tar enamel coating, and lead; and all appurtenant work as specified and shown on the drawings.

Engineer's estimate: \$28,700,000

<b>Bidder and Location</b>	<b>Total</b>	<b>SBE \$</b>	<b>SBE %</b>	<b>Met SBE**</b>
<b>J.F. Shea Construction, Inc. Walnut, CA</b>	<b>\$ 32,946,000</b>	<b>\$5,997,620</b>	<b>14.9%</b>	<b>Yes</b>
Teichert Construction Roseville, CA	\$ 42,800,000	N/A	N/A	N/A
Kiewit Infrastructure West Co. Santa Fe Springs, CA	\$ 43,772,000	N/A	N/A	N/A

\*SBE (Small Business Enterprise) participation was established at 14% for this contract

**The Metropolitan Water District of Southern California**

**Subcontractors for Low Bidder**

**Specifications No. 1834  
Colorado River Aqueduct Discharge Line Isolation  
Coupling Assemblies Installation**

Low bidder: J.F. Shea Construction, Inc.

<b>Subcontractor and Location</b>
F. D. Thomas Medford, OR
Dean's Certified Welding Temecula, CA
L.A. Steel Services, Inc. Corona, CA
Environmental Construction Group, Inc. Signal Hills, CA

### Location Map

