

Staff Report

for the Regular Meeting of the Board of Directors, April 26, 2017

TO: Honorable Board of Directors

FROM: Keane Sommers, PE, Hydroelectric Manager 
Phil Nedved, Hydroelectric Maintenance Superintendent 

DATE: April 19, 2017

SUBJECT: Dutch Flat Afterbay Fish Flow Valve Replacement

HYDROELECTRIC

RECOMMENDATION:

Award a sole source contract in the amount of \$406,285.00 to Syblon Reid General Engineering Contractors (SRC) for Phase 2 of the Dutch Flat Afterbay Fish Release Valves Replacement Project and authorize the General Manager to execute the necessary documents.

BACKGROUND:

The Dutch Flat Afterbay is a critical component of the Yuba-Bear Project. The facility acts as the afterbay for the Dutch Flat #2 Powerhouse and the diversion for the Chicago Park Powerhouse. The two powerhouses combined are responsible for seventy nine percent of the District's generating capacity. Three existing 12-inch valves (in series) controlling the fish flow release in the Bear River below the Dutch Flat Afterbay outlet tunnel have been found to be malfunctioning and are in various stages of failure. If the downstream partially-functioning butterfly valve fails, it could lead to an uncontrolled release of the reservoir water or a violation of the required minimum instream flow.

On July 27, 2016 the Board of Directors awarded a contract to SRC to perform a dive investigation to identify accessibility issues, evaluate the general condition of the concrete tunnel plug at the bottom of the dam, and design/specify the replacement valves. As part of this phase of the project, diving services for the investigation were competitively bid and the low bidder, Underwater Resources Incorporated (URI) of San Leandro, CA, was selected to complete the dive work.

During the reconnaissance dive multiple complications were noted. An abandoned vehicle blocking the intake was removed and significant sedimentation in the reservoir slowed the dive operation. The divers were able to make entry into the tunnel and determined that the plug and intakes to the low level outlet and fish release pipes were in good condition. Access to the low level outlet valves is complicated requiring both diving 125 feet deep, removing bars on the existing trash rack, and traversing several hundred feet of tunnel, an entering through a downstream tunnel portal which requires specialized tunnel entry and confined space procedures to be followed.

Following the investigation, Staff considered multiple options for repairing or replacing the valves including draining the reservoir, plugging the outlet from the downstream end, and abandoning the existing valves in place and adding new valves to the end of the existing outlet. Staff determined that the most cost effective, long term, lowest risk, and environmentally conscious solution was to plug the upstream end of the fish release pipe intake then remove and replace the existing valves.

This phase of the work includes fabrication and installation of a custom tunnel plug, removal of the existing fish release valves, and installation of the new valves and associated operating equipment. A cost breakdown for the project is included in the following table.

Item	Description	Bid Price
1	Mobilize/Set Up	\$47,478.00
2	Install/Remove Temporary Plug	\$270,507.00
3	Demolition	\$13,768.00
4	Install New Valves	\$58,704.00
5	Clean Up and Demobilization	\$15,828.00
Total		\$406,285.00

Based on the cost and recommended sole source nature of this contract, Staff completed a detailed review of the calculations and assumptions that made up the above bid. Costs for this project are driven by:

- **Damaged seals on the existing fish release valves.** Two of the three existing valves are not operational and will not seal, meaning a custom plug must be fabricated that allows divers to deploy the plug from a safe distance.
- **Confined space requirements on both sides of the dam plug.** Both divers and workers on the downstream side of the plug must follow strict confined space and tunnel safety entry procedures. Mobilization and set up costs are higher than normal due to the requirement that a temporary forced air ventilation system must be installed in the tunnel. Additionally, two divers must be in the water at all times while underwater work in a confined space is being completed. The two diver requirement results in significantly

higher dive support equipment including a floating barge and an onsite crane.

- **Work required on existing intake trash rack.** In order to install the custom tunnel plug, portions of the existing trash rack must be removed and reinstalled resulting in additional work and cost.

Staff believes that based on completion of the first phase of this project the SRC/URI team has unique knowledge that will be critical for the successful completion of the project. The extensive diving requirements for this work are the driving factor in the overall cost. Staff believes that since the dive costs for the first phase were competitively bid they represent the best value to the District.

BUDGETARY IMPACT:

A total of \$500,000 was budgeted for this project in 2017. Approximately \$96,000 of the budget has been spent to procure the replacement valves.

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