



SUMMARY REPORT

Agenda Date: 6/6/2023

To: Board of Directors, Sonoma County Water Agency
Department or Agency Name(s): Sonoma County Water Agency
Staff Name and Phone Number: John Mendoza 707-547-1929
Vote Requirement: 4/5th
Supervisory District(s): Countywide

Title:

Engineering Support for Forecast-Informed Reservoir Operations Phase II

Recommended Action:

- A) Authorize Sonoma County Water Agency's General Manager or designee to enter into an agreement with the Regents of the University of California, Scripps Institution of Oceanography's Center for Western Weather and Water Extremes for engineering support for Forecast-Informed Reservoir Operations Phase II through December 31, 2023, in the not-to-exceed amount of \$266,100 (Center for Western Weather and Water Extremes is paying Sonoma County Water Agency) in a form approved by County Counsel.
- B) Adopt a Resolution authorizing adjustments to the Board Adopted Budget for FY 2022/2023 for the Sonoma Water General Fund and the Russian River Projects Fund each in the amount of \$88,600. (4/5th Vote Required)

Executive Summary:

Since 2014, Sonoma Water has partnered with several federal, state, and local agencies; universities; and others to develop and test Forecast Informed Reservoir Operations (FIRO) at Lake Mendocino. FIRO is an innovative management strategy that uses data from watershed monitoring and modern weather and water forecasting to help water managers selectively retain and release water from reservoirs in a manner that reflects current and forecasted conditions. As FIRO matures for Lake Mendocino and transfers to other reservoir systems, the need to leverage key Sonoma County Water Agency (Sonoma Water) engineering expertise has become apparent for the success for the larger program. University of California, Scripps Institution of Oceanography's Center for Western Weather and Water Extremes (CW3E) has requested engineering support services to expand FIRO in the Western U.S. and elsewhere. Under the agreement, Sonoma Water will provide engineering support for FIRO Phase II to CW3E.

Discussion:

HISTORY OF ITEM/BACKGROUND

FIRO is a proposed strategy of incorporating hydrometeorological forecasts into reservoir operations. Available storage for many existing multi-purpose reservoirs is allocated according to static storage guide curves (also called "rule curves"), which balance the need for water supply, flood protection, and dam safety. Guide curves were developed using seasonal runoff patterns and basin hydrologic characteristics from data available at the time of reservoir construction and are often overly conservative for flood protection at the expense of water supply storage. FIRO is a novel approach to reservoir management that could improve water

supply reliability while also improving downstream flood protection for many multi-purpose reservoirs.

Lake Mendocino was selected for a pilot study to evaluate FIRO as a management strategy. It is a dual-use reservoir located in the Russian River basin in northern California, is owned and operated for flood control by the U.S. Army Corps of Engineers (Corps), and is operated by Sonoma Water for water supply. The Corps operates Lake Mendocino in accordance with operational rules to meet the reservoirs' congressionally mandated purposes. To explore potential implementation of FIRO, the Lake Mendocino FIRO Steering Committee, a collaborative partnership that consists of water managers and scientists from several federal, state, and local agencies, and universities, submitted an initial deviation request in 2018 for completing studies that are consistent with Corps procedures and protocols, and pursuing interim deviations to the Water Control Manual (WCM) to test and evaluate FIRO strategies before WCM changes are proposed. Since the initial request, deviation requests have been submitted and approved in each subsequent year and currently Lake Mendocino is operating under a 5-year deviation that expires in the 2025. The Corps is currently in the process of updating the WCM for Lake Mendocino to incorporate FIRO operational strategies.

Why is this important for Sonoma Water? What is the benefit?

The FIRO initiative is a partnership of federal, state and local agencies, universities, and other stakeholders across the Western U.S. In order to prove its value and effectiveness, FIRO must be tested and demonstrated at multiple locations and in different environments, and this work requires the collaboration of the partnership.

FIRO implementation at multiple sites allows improvement to Sonoma Water's model, with those benefits resulting in improved results for FIRO implementation at Lake Mendocino. Successful implementation of FIRO at additional sites will increase support for funding of other reservoirs including Lake Sonoma. Implementing FIRO at Lake Sonoma is an important additional objective because it supports the goal of modifying the WCM for Lake Sonoma, which will result in significant improvements in how the reservoir is managed for both water supply and flood control.

FIRO Partnership and Collaboration

Since 2014, Sonoma Water has partnered with several federal, state, and local agencies; universities; and others to develop and test FIRO at Lake Mendocino. FIRO is an innovative management strategy that uses data from watershed monitoring and modern weather and water forecasting to help water managers selectively retain and release water from reservoirs in a manner that reflects current and forecasted conditions. The effort to develop FIRO has been led by Sonoma Water and CW3E.

FIRO engages experts and stakeholders in civil engineering, hydrology, meteorology, biology, economics, and climate from several federal, state, and local agencies; universities; and others. There is significant interest and support for developing FIRO at other appropriate locations in the Western U.S. and elsewhere.

Based on the success to date of the Lake Mendocino demonstration pilot project, the potential application of FIRO is being evaluated for several additional reservoir sites in California, including Prado Dam, Yuba-Feather River, Howard Hanson Dam, Seven Oaks Dam and other sites yet to be determined. This larger effort is being led by CW3E with funding provided by the Corps.

Agreement

The need to leverage Sonoma Water's engineering expertise has been identified as necessary for the success of expanding FIRO to new reservoir sites. Consequently, Sonoma Water proposes entering into an agreement with CW3E to continue providing hydrologic and engineering support for research and development efforts associated with FIRO at these new reservoir sites. Sonoma Water's contributions will include scoping and developing selection criteria for additional reservoir sites, as well as required data collection, processing, and evaluation of candidate sites. In addition, Sonoma Water will provide engineering support to transition the FIRO model, developed by Sonoma Water, from a research application to an operation's model domain.

Services to be Performed by Sonoma Water

Under the agreement, CW3E will pay Sonoma Water to provide FIRO engineering support including work for Lake Mendocino, Lake Sonoma, Prado Dam, Yuba-Feather River, Howard Hanson Dam, Seven Oaks Dam, and as-yet-to-be-determined reservoir sites, as well as water management engineering research and FIRO transferability.

Sonoma Water will invoice CW3E up to \$150,000 of the total project costs. CW3E will reimburse Sonoma Water for direct costs (salary, benefits, and travel) with an additional 17.5% mark-up. Remaining costs of \$116,100 will come equally from Sonoma Water General Fund and the Russian River Projects Fund.

This agreement covers services rendered from January 1, 2023, to December 31, 2023.

CW3E's budget procedures require agreements to be limited to one year. Sonoma Water is negotiating with CW3E for future work and expects to return to the Board for additional agreements in 2024, and 2025.

The agreement includes authorization for Sonoma Water's General Manager to make changes to lengthen time schedules or make minor modifications to the scope of work, which do not increase the amount paid under the agreement, in a form approved by County Counsel.

The agreement includes two options for Sonoma Water to extend the term for a period of one year each by providing written notice to CW3E thirty days in advance of the expiration date of the agreement and of the first extension option. The extension will be formalized in an amended agreement or amendment signed by Sonoma Water and CW3E.

County of Sonoma Strategic Plan Alignment:

N/A

Racial Equity:

Was this item identified as an opportunity to apply the Racial Equity Toolkit?

No

Sonoma Water Strategic Plan Alignment

Water Supply and Transmission System, Goal 1: Protect drinking water supply and promote water-use efficiency.

By improving management of Sonoma Water's reservoirs to increase water supply reliability, this agreement aligns under Goal 1 to protect the drinking water supply.

Prior Board Actions:

01/14/20: Approved agreement between Sonoma Water and Regents of the University of California, Scripps Institution of Oceanography's Center for Western Weather and Water Extremes for engineering support for FIRO. Cost \$240,278; term end August 14, 2020.

12/17/19: Approved agreement between Sonoma Water and Orange County Water District for FIRO engineering support. Cost \$32,000 (Orange County Water District paid Sonoma Water \$20,000); term end June 30, 2020.

05/20/14: Approved Agreement for Scientific and Educational Cooperation between the Regents of the University of California on behalf of Scripps Institution of Oceanography, and Sonoma Water.

FISCAL SUMMARY

Expenditures	FY 22-23 Adopted	FY23-24 Projected	FY 24-25 Projected
Budgeted Expenses		\$88,900	
Additional Appropriation Requested	\$177,200		
Total Expenditures	\$177,200	\$88,900	
Funding Sources			
General Fund/WA GF	\$38,600	\$19,450	
State/Federal			
Fees/Other	\$138,600	\$69,450	
Use of Fund Balance			
Contingencies			
Total Sources	\$177,200	\$88,900	

Narrative Explanation of Fiscal Impacts:

Additional appropriations of \$177,200 are required to process this expense. With Board approval of the attached budgetary resolution, FY 2022/2023 appropriations of \$88,600 each will be made in the Sonoma Water General Fund and the Russian River Projects Fund, with \$50,000 for each fund from the Regents of the University of California funds to offset costs.

Appropriations of \$44,450 each in the Sonoma Water General Fund and Russian River Projects Fund will be made in FY 2023/2024, with \$25,000 for each fund from the Regents of the University of California to offset costs.

Staffing Impacts:			
Position Title (Payroll Classification)	Monthly Salary Range (A-I Step)	Additions (Number)	Deletions (Number)

Agenda Date: 6/6/2023

Narrative Explanation of Staffing Impacts (If Required):

N/A

Attachments:

Resolution

Related Items “On File” with the Clerk of the Board:

None.