Legislation Text

File #: 2019-1908, **Version:** 1

To: Board of Directors, Sonoma County Water Agency
Department or Agency Name(s): Sonoma County Water Agency
Staff Name and Phone Number: Don Seymour / 547-1925
Vote Requirement: 4/5th
Supervisorial District(s): Countywide

Title:
Engineering Support for Forecast-Informed Reservoir Operations Phase II

Recommended Action:
In an ongoing effort to promote effective statewide water management by supporting implementation of Forecast-Informed Reservoir Operations for improved flood operations and water resource management:

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 Year 1 engineering support for Forecast-Informed Reservoir Operations Phase II through August 14, 2020, in the not-to-exceed amount of $240,278 (CW3E is paying Sonoma County Water Agency) in a form approved by County Counsel and, consistent with other agreements, authorize the General Manager to terminate the agreement with approval of County Counsel.

B) Authorize Sonoma County Water Agency's General Manager or designee to amend the agreement to extend the term and increase payment to Sonoma County Water Agency to complete Years 2 and 3 of the Statement of Work and to add time, scope, and payment for additional years, with approval of County Counsel.

C) Authorize Sonoma County Water Agency's General Manager or designee to execute a Memorandum of Understanding with the Regents of the University of California, Scripps Institution of Oceanography's Center for scientific and educational cooperation; there is no cost to either party; term is five years from date of execution.

D) Approve addition of 1 full time equivalent Water Agency Engineer IV to the Sonoma County Water Agency Engineering & Resource Planning Division to provide engineering support of water supply planning activities and operational support for Sonoma County Water Agency.

E) Adopt a Resolution authorizing adjustments to the Board Adopted Budget for FY 19-20 for the Sonoma County Water Agency General Fund in the Amount of $86,417 for Engineering Support for Forecast-Informed Reservoir Operations Phase II. (4/5th Vote Required)

F) Adopt a Resolution authorizing the addition of one full time equivalent Water Agency Engineer IV to the Sonoma Water Engineering & Resources Planning Section for Engineering Support for Forecast-Informed Reservoir Operations Phase II.

(4/5th Vote Required)

Executive Summary:
As Forecast-Informed Reservoir Operations (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. The knowledge and experience required to drive these efforts will result in Sonoma Water diverting engineering staff from existing planning and operational activities. Under the proposed agreement, Sonoma Water will provide engineering support for FIRO Phase II to CW3E. As a result, Sonoma Water requests the addition of 1 full time equivalent Water Agency Engineer IV to the Sonoma Water Engineering & Resource Planning Division to provide engineering support of water supply planning activities and operational support for Sonoma Water.

CW3E will pay Sonoma Water up to $240,278 for Year 1. Due to the CW3E's budget procedures, the agreement will need to be amended annually to extend the term and increase payment to Sonoma Water to complete Year 2 ($249,452) and Year 3 ($258,905). Sonoma Water's direct costs (salary, benefits, and incurred travel costs) will be fully reimbursed, as well as 17.5% overhead, representing overhead associated with the project. Sonoma Water's overhead rate will not be fully covered by the agreement. The program has multiple benefits to Sonoma Water. First, 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. Second, successful implementation of FIRO at additional sites will provide additional support for funding of other reservoirs including Lake Sonoma. Success of FIRO at multiple reservoirs provides continued support on a federal basis for FIRO programs, including at Lakes Sonoma and Mendocino.

Discussion:
BACKGROUND

General
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 needs 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. Lake Mendocino is a dual use reservoir located in the Russian River basin in northern California and is owned and operated for flood control by the U.S. Army Corps of Engineers (Corps) and is operated by the Sonoma Water for water supply. The Corps operates Lake Mendocino in accordance to operational rules to meet all of 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, has submitted a deviation request. This plan is closely coordinated with the Corps to follow the policies defined by their management and include: (1) completing studies that are consistent with Corps procedures and protocols and (2) pursuing interim deviations to the Water Control Manual (WCM) to test and evaluate FIRO strategies before the WCM changes are proposed.

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 different environments, and this work requires the collaboration of the partnership. As FIRO is tested at different sites and geographical locations, the FIRO knowledge base expands and the technology is continuously improved.

Implementing FIRO at Lake Sonoma is an important objective, because it supports the goal of modifying the WCM for Lake Sonoma, which will result in great improvements in how the reservoir is managed for both water supply and flood control. FIRO must be implemented by the whole partnership - it is not an initiative Sonoma Water alone can pursue successfully. It requires the cooperation of FIRO partnership.

Since the first FIRO demonstration site was at Lake Mendocino, it is important for the technology to be proven at other reservoirs sites with different environmental and regulatory issues. Collaborating with CW3E and the Corps on additional sites outside of Sonoma County will strengthen and improve FIRO technology, and Sonoma Water's continued support and participation in the partnership will eventually lead to FIRO implementation at Lake Sonoma.

FIRO Partnership and Collaboration
Since 2014 Sonoma Water has partnered with a number of 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 project, the potential application of FIRO is being evaluated for several additional reservoir sites in California. These new sites include Prado Dam, Yuba -Feather River, and additional 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 for the success for expanding FIRO to new reservoir sites. Consequently, Sonoma Water proposes entering into an agreement with CW3E to provide 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 operations model domain.

On December 10, 2019, Sonoma Water's Board of Directors approved an agreement between Orange County Water District and Sonoma Water. Under that agreement, Sonoma Water is providing initial FIRO engineering

support to Orange County Water District in the interim until CW3E funding is approved. Orange County Water District is in the initial stages of implementing FIRO at Prado Dam and has an immediate need for engineering support from Sonoma Water to keep technical work on schedule. This work will not duplicate efforts under the agreement with CW3E.

New Position
Sonoma Water's expertise places its engineering staff on the front line of new water management strategies for the 21st century. Continued collaboration with federal, state, and local agencies; universities; and others will expand investigations into how weather forecast information can inform water management decisions such that a better balance between flood risk management, water supply, and ecological concerns can be realized and safely put into practice.

The knowledge and experience derived from the Lake Mendocino FIRO project by Sonoma Water engineering staff will be applied to support the development of FIRO projects throughout California in collaboration with CW3E and with the financial support of the Corps.

Sonoma Water's Engineering & Resource Planning Division's current workload is straining the available staff. The agreement with CW3E will result in Sonoma Water diverting engineering staff from existing planning and operational support activities. With staff redirected to support CW3E, there is a critical need for a new engineering position in this Division for Sonoma Water to meet workload demands.

Although the scope of the agreement with CW3E to support the initial work is for three years, FIRO initiatives will continue well into the next decade and require continued involvement and engineering support from Sonoma Water. Future work would include, but not be limited to, development of a FIRO project at Lake Sonoma, which would provide a significant water supply benefit to Sonoma Water and the region.

SERVICES TO BE PERFORMED UNDER AGREEMENT WITH CW3E
Under the proposed agreement, CW3E will pay Sonoma Water to provide FIRO engineering support including work for Lake Mendocino, Prado Dam, Yuba-Feather River, and a fourth reservoir site, as well as water management engineering research and FIRO transferability.

The proposed agreement reflects CW3E's Year 1 budget ($240,278 through August 14, 2020). Due to the CW3E's budget procedures, the agreement will need to be amended annually to extend the term and increase payment to Sonoma Water to complete Year 2 ($249,452) and Year 3 ($258,905) of the Statement of Work. The agreement may also need to be amended to add time, scope, and payment for additional years, if needed.

Sonoma Water will invoice CW3E in Year 1 up to $240,278 of the total Year 1 project cost, estimated to be $402,722. CW3E will reimburse Sonoma Water for Year 1 direct costs (salary, benefits, and travel) with an additional 17.5% mark-up. Remaining costs will come from Sonoma Water General Fund and Russian River Projects Fund.

MEMORANDUM OF UNDERSTANDING
The proposed Memorandum of Understanding (MOU) between Sonoma Water and the Regents of the University of California, Scripps Institution of Oceanography's Center, updates the prior MOU between the parties, which expired in 2019. The proposed MOU includes the same terms as the previous MOU and adds

areas of cooperation and coordination including FIRO, ensemble forecast operations model, advanced quantitative precipitation information, and decision support tools for water managers. There is no cost to Sonoma Water or Scripps under the MOU. The term is five years from execution.

Prior Board Actions:
12/17/19: Approved agreement between Sonoma Water and Orange County Water District for FIRO engineering support. Cost $32,000 (Orange County Water District pays 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 19-20 Adopted**	**FY20-21 Projected**	**FY 21-22 Projected**
Budgeted Expenses		408,000	423,000
Additional Appropriation Requested	86,417		
Total Expenditures	**86,417**	**408,000**	**423,000**
Funding Sources			
General Fund/WA GF		165,000	171,000
State/Federal			
Fees/Other	86,417	243,000	252,000
Use of Fund Balance			
Contingencies			
Total Sources	**86,417**	**408,000**	**423,000**

Narrative Explanation of Fiscal Impacts:
Additional appropriations are required to process FY 19-20 expense. A budgetary resolution has been submitted with this item to add annual prorated costs of $4,000 for travel and $82,417 for 1.0 full time equivalent Water Agency Engineer IV in Sonoma Water General Fund. Offsetting revenue in the amount of $86,417 will come from CW3E. Future appropriations will be budgeted in those fiscal years.

With Board approval of the requested additional appropriations, Sonoma Water's projected ending General Fund balance at the end of FY 19-20 is expected to be at or above target, consistent with prior years, and will not be negativity impacted by this Board item.

Adding 1.0 full time equivalent Water Agency Engineer IV allocation represents a total annual increase of $247, 250. FY 2019/2020 labor costs are expected to increase by $82,417 (annual amount of $247,250 prorated for 4 months). With Board approval, FY 2019/2020 appropriations will be budgeted pursuant to the attached budget resolution. For FY 2020/2021 and FY 2021/2022 the net increase for salary and benefits will be $254,688 and $262,308 respectively, assuming a 3% cost-of-living adjustment each year. FY 2020/2021 and FY 2021/2022 appropriations will be budgeted in those fiscal years. The cost of these positions were not factored into Sonoma Water's Fiscal Year 2019/2020 overhead rate due to timing, but will be incorporated into

its annual overhead rate in future fiscal years.

Staffing Impacts:			
Position Title (Payroll Classification)	**Monthly Salary Range (A-I Step)**	**Additions (Number)**	**Deletions (Number)**
Water Agency Engineer IV - 1032	$13,334.96		

Narrative Explanation of Staffing Impacts (If Required):
If approved, this request will increase Sonoma Water's allocation table as follows:
Water Agency Engineer IV allocations from 18 to 19.

Attachments:
1. Resolution for Budgetary Adjustment
2. Resolution for Position Allocation
3. Draft Agreement with Regents of University of California
4. Draft Memorandum of Understanding with Regents of University of California

Related Items "On File" with the Clerk of the Board:
None.