



## Legislation Details (With Text)

**File #:** 2022-0952  
**Type:** Consent Calendar Item **Status:** Agenda Ready  
**File created:** 8/16/2022 **In control:** Sonoma County Water Agency  
**On agenda:** 9/27/2022 **Final action:**  
**Title:** Forecast Informed Reservoir Operations Hydrometeorology Consulting Services  
**Sponsors:** Sonoma County Water Agency  
**Indexes:**  
**Attachments:** 1. Summary Report

Date	Ver.	Action By	Action	Result
9/27/2022	1	Board of Supervisors	Approved as recommended	Pass

**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:** Majority  
**Supervisory District(s):** Countywide

**Title:**  
Forecast Informed Reservoir Operations Hydrometeorology Consulting Services

### Recommended Action:

Authorize Sonoma County Water Agency's General Manager to execute the Third Amended Agreement for Forecast Informed Reservoir Operations Hydrometeorology Consulting Services with Robert K. Hartman, in a form approved by County Counsel. The amended agreement adds to the scope of work to include expanding Forecast Informed Reservoir Operations to Lake Sonoma on Dry Creek and extends the agreement term by three years at no additional cost to Sonoma County Water Agency for a new agreement end date of October 5, 2025.

### Executive Summary:

The Sonoma County Water Agency (Sonoma Water) currently works with the United States Army Corps of Engineers (Corps) to operate water storage facilities at the Lake Mendocino Coyote Valley Dam. In coordination with state and federal agencies, Sonoma Water is exploring methods to better balance flood control and water supply needs by utilizing modern rainfall observation and prediction technology to implement Forecast Informed Reservoir Operations (FIRO). The goal of this effort is to improve the water supply reliability of Lake Mendocino, but not increase the flood risk to communities downstream of Coyote Valley Dam. The subject amended agreement will allow continuation of services related to the assessment and implementation of FIRO operations, expand FIRO to Lake Sonoma on Dry Creek, and extend the term of the agreement to October 5, 2025.

### Discussion:

#### HISTORY OF ITEM/BACKGROUND

Lake Mendocino is located on the East Fork of the Russian River in Mendocino County, California. Created in

1958 by construction of the Coyote Valley Dam, it provides flood control, water supply, recreation, and stream flow regulation. The Corps owns and operates the dam in accordance with the Lake Mendocino Water Control Manual (Manual), 1959, revised in 1986. Sonoma Water is the local partner that manages water stored in Lake Mendocino for water supply. The Manual specifies elevations for an upper volume of reservoir storage that must be kept available for capturing storm runoff and reducing flood risk and a lower volume of storage that may be used for water supply. During a flood event, runoff is captured by the reservoir and released soon after to create storage space for another potential storm. The Manual is based on typical historical weather patterns-wet during the winter, dry otherwise.

The Manual utilizes gross estimates of flood potential to establish reservoir storage and release requirements. It does not account for changing conditions in the watershed such as increased variation in dry and wet-weather patterns and reductions to imported flows into Lake Mendocino that have occurred since 1986. Also, the Manual's reservoir operations procedures were developed decades ago, without the benefit of current science that more accurately predicts weather and streamflow.

Given reduced water supplies, changed hydrologic conditions, and technological advances, some adjustments to the current reservoir operating procedures may be possible to optimize the goals of maintaining flood control while bolstering water supply reliability for downstream users and the environment (e.g., to support recovery of endangered and threatened fish). FIRO is a proposed alternative management strategy that aims to use data from watershed monitoring and state of the art weather and water forecasting to adaptively manage reservoir storage levels by incorporating forecasts of available water to meet the goals of improving water supply reliability without impairing flood protection to downstream communities.

Lake Mendocino is the first pilot location to evaluate the feasibility of FIRO, which is led by an interagency Steering Committee consisting of members from the University of California San Diego, Scripps Institution of Oceanography, California Department of Water Resources, the Corps, National Oceanic and Atmospheric Administration, Bureau of Reclamation, United States Geological Services, and Sonoma Water. In July 2017, the Steering Committee completed a preliminary viability assessment (PVA) of FIRO for Lake Mendocino, which found that a forecast-based decision support system could be a viable solution to meet FIRO project goals. In October 2018, the Corps approved a major deviation request made by the Steering Committee to implement components of the PVA for water year 2019, and results of this limited implementation have supported the findings of the PVA. The Steering Committee developed the Final Viability Assessment (FVA), which built off of the studies completed for the PVA to further analyze the feasibility of FIRO for Lake Mendocino and potentially make recommendations for permanent modifications of the Manual.

FIRO work at Lake Mendocino is ongoing, but the Lake Mendocino FIRO FVA is complete, a multi-year major deviation is in place, and the Manual update is underway. The Lake Mendocino FIRO Steering Committee has reformed as the Russian River FIRO Steering Committee and is now focusing on expanding FIRO throughout the Russian River watershed, specifically to Lake Sonoma on Dry Creek. The Steering Committee will undertake an evaluation to determine the viability of FIRO applications at Lake Sonoma.

Sonoma Water entered into an agreement for hydrometeorology and related services, dated October 5, 2016, in the amount of \$50,000.

A first amended agreement, approved by the Board on October 26, 2017, extended the term two years to October 5, 2019, added new tasks to the scope, and increased the amount by \$100,000 for a new agreement

total of \$150,000.

A second amended agreement, approved by the Board on September 19, 2019, increased the amount by \$200,000 and extended the agreement term three years for a new not-to-exceed agreement total of \$350,000 and end date of October 5, 2022.

The proposed third amended agreement broadens the scope of work to include expanding FIRO to Lake Sonoma on Dry Creek and extends the agreement term by three years at no additional cost to Sonoma Water for a new agreement end date of October 5, 2025.

#### SELECTION PROCESS

Robert K. Hartman (Consultant) was the only individual or firm contacted and was selected to perform the work based on his unique qualifications. Consultant served for 20 years as the Hydrologist-in-Charge for the National Weather Service California-Nevada River Forecast Center and has played a key role in the project as lead representative of the National Weather Service California-Nevada River Forecast Center and a member of the FIRO steering committee. Consultant has retired from the National Weather Service California-Nevada River Forecast Center but is working as an independent consultant. Consultant led the development of hindcast forecasts that are utilized to in the modeling studies that are evaluating the viability of FIRO.

Due to the specialized nature of the work, Consultant's expertise in hydrometeorology and his relationships within the National Weather Service, National Oceanic and Atmospheric Administration, National Weather Service California-Nevada River Forecast Center, Corps, and California Department of Water Resources is essential for the continued success of the FIRO project.

#### SERVICES TO BE PERFORMED

Under the proposed amended agreement, Consultant will continue to provide services related to the assessment and implementation of FIRO operations. In addition, this proposed amended agreement expands FIRO throughout the Russian River watershed, specifically to include Lake Sonoma on Dry Creek.

The third amended agreement extends the term by two years for a new end date of October 5, 2025. There are remaining funds from the second amended agreement for the additional work so there is no additional cost to Sonoma Water.

**County of Sonoma Strategic Plan Alignment:** N/A

#### **Sonoma Water Strategic Plan Alignment:**

Water Supply and Transmission System, Goal 2: Maintain and improve the reliability of the Water Transmission System.

Flood Protection, Goal 1: Provide efficient and effective flood protection programs.

The FIRO method conducted under the proposed amended agreement uses data from watershed monitoring and state-of-the-art weather and water forecasting to adaptively manage reservoir storage levels by incorporating forecasts of available water to meet the goals of improving water supply reliability without impairing flood protection to downstream communities.

#### **Prior Board Actions:**

09/17/2019: Approved second amended agreement between Sonoma Water and Robert K. Hartman for services related to the assessment and implementation of FIRO operations. Cost \$350,000; term end October 5, 2022.

10/26/2017: Approved first amended agreement between Sonoma Water and Robert K. Hartman for services related to the assessment and implementation of FIRO operations. Cost \$150,000; term end October 5, 2019.

#### FISCAL SUMMARY

Expenditures	FY 22-23 Adopted	FY23-24 Projected	FY 24-25 Projected
Budgeted Expenses			
Additional Appropriation Requested			
<b>Total Expenditures</b>			
<b>Funding Sources</b>			
General Fund/WA GF			
State/Federal			
Fees/Other			
Use of Fund Balance			
Contingencies			
<b>Total Sources</b>			

#### Narrative Explanation of Fiscal Impacts:

No fiscal impact. The amended agreement adds to the scope of work and extends the agreement term by three years at no additional cost to Sonoma Water.

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

#### Narrative Explanation of Staffing Impacts (If Required):

N/A

#### Attachments:

None

#### Related Items "On File" with the Clerk of the Board:

None