California WATER COMMISSION

Water Storage Investment Program Concept Paper Form

Please complete the questions below and return your completed concept paper by email to cwc@water.ca.gov by 5:00 p.m. on March 31, 2016. Completed concept papers should not exceed four pages.

Contact Information

Contact Name: Jason Gianquinto	
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Agency/Organization Name: Semitropic Water Storage District	
Agency Type (select one):	☒ Public Agency ☐ Nonprofit Organization ☐ Public Utility ☐ Tribe ☐ Mutual Water Company ☐ Local Joint Powers Authority ☐ Other:

Project Information

Project Name: Tulare Lake Storage and Floodwater Protection Project	
Project Type:	☐ CALFED Surface Storage ☒ Groundwater Storage ☐ Groundwater Contamination Prevention or Remediation ☒ Conjunctive Use ☐ Reservoir Reoperation ☒ Local Surface Storage ☒ Regional Surface Storage ☐Other:
Estimated Project Cost: $500,000,000	
Estimated WSIP Funding Request: $250,000,000	

Please describe your project, including location, water source, facilities, and operations:

The Tulare Lake Storage and Floodwater Protection Project (Project) is being proposed by Semitropic Water Storage District (SWSD or District) to provide local, regional and statewide public benefits to meet California's water storage and supply reliability challenges. This important Project will develop additional surface water storage and expand groundwater conjunctive use capacity south of the Sacramento-San Joaquin Delta (Delta) adjacent and connected to the California Aqueduct. The Project will provide the following benefits:

- Improved local water supply reliability from unallocated floodwaters from the Kings River system and Tulare Lake tributaries.
- Operational flexibility at the State level to meet near and long-term water supply and Delta ecosystem needs.
- Regional flood reduction benefits in the Tulare Lake basin and along the lower Kings River and upper San Joaquin River.
- Wildlife habitat and recreational opportunities in Tulare Lake lakebed.
- Water quality improvements within the District.

The Project will include the construction of new south of Delta surface storage located along the western perimeter of Tulare Lake with an intertie to the California Aqueduct and expansion of the existing Semitropic Groundwater Bank (Water Bank). This new storage capacity will facilitate the capture and regulation of Kings River, Tulare Lake tributary floodwaters and surplus Delta flows into the already existing Water Bank, where it can be conjunctively managed for local, regional or statewide benefits. Water captured and banked from the Kings River will be managed by the District to meet local water supply demands, mitigate groundwater declines, stabilize land subsidence, and improve

sustainability of local groundwater resources. High flows captured from the Delta will be stored in the Water Bank providing the California Department of Water Resources (DWR) a water supply and the operational flexibility to meet Delta ecosystem needs in future periods.

The main features of the Project are the Tulare Lake Storage Facilities, Tulare Lake Intertie and the Water Bank. The Tulare Lake Storage Facilities will be created by constructing three leveed impoundments within Tulare Lake, interconnect via the Blakeley Canal. The current Project concept includes approximately 39,080 acres, of which about 27,900 acres will be developed into three main storage impoundments. The remaining acres will be used for conveyance, support facilities, mitigation areas, or remain as open lands. Levee heights for the storage impoundments range from 6 to 7.5 feet, respectively creating storage capacities of 85,770 to 127,100 acre-feet (af). The Tulare Lake Intertie will connect the California Aqueduct to the Tulare Lake Storage Facilities. The intertie will connect the California Aqueduct to the Blakeley Canal via a small regulating reservoir immediately adjacent to the canal. The intertie will have a capacity of up to 1,200 cubic-feet-per-second (cfs) to convey water into or out of the Blakeley Canal and storage facilities.

Water made available by the Project may be stored long-term in the Water Bank, an existing operational project located within SWSD's service area. The Water Bank began operation in the early 1990's, and as one of the largest groundwater banks in operation, with an approved storage capacity of at least 1.65 million af. Since 1990 over 1.68 million af has been stored and 1.05 million af has been recovered on behalf of the Water Bank's Banking Partners. The Stored Water Recovery Unit (SWRU) of the Water Bank was developed by SWSD to expand the recharge and recovery capacity of banked water for the benefit of existing and future Banking Partners and for SWSD. The SWRU has been evaluated under CEQA and approved by SWSD to include increased banking capacity through the addition of up to 12,000 acres of in-lieu recharge facilities, an additional firm recovery capacity of up to 150,000 af per year for the recovery of banked groundwater and enhanced capability to deliver recovery water to the Banking Partners via the Aqueduct or to SWSD.

Under this Project, the District proposes to construct the in-lieu recharge portion of the SWRU and approximately 71,400 af per year of additional recovery facilities under the authorized CEQA. This will enhance the District's ability to capture and store available water supplies through the addition of roughly 12,000 acres of in-lieu recharge facilities, increasing the District's recharge capacity to approximately 400,000 af per year. The District's recharge capability may be further enhanced through the opportunistic flooding of agricultural lands. The Project's utilization of available SWRU storage and recovery capacity will expand conjunctive use opportunities within the District, allowing for more storage and conservation of water in wet years and greater utility of banked water in dry periods including banked Delta water for the benefit of the Delta ecosystem.

Per Water Code section 79753, the Commission may only fund the public benefits of water storage projects. Further, ecosystem improvements must make up 50% of the funded public benefits (Water Code section 79756(b)). What public benefits does your project provide? (select all that apply):

☒ Ecosystem Improvements ☒ Water Quality Improvements ☒ Flood Control
☒ Emergency Response ☒ Recreation

Please describe the magnitude of the public benefits and how the project will be operated to provide the public benefits:

<u>Ecosystem Improvements</u>

The Project will provide new surface water storage, increasing DWR's capacity to export surplus flood flows from the Delta. This water could be stored for DWR in the existing Water Bank where DWR could recover approximately 20,000 acre-feet pre year of previously banked water. Through exchange with SWSD's Table A entitlement, recovered water could be made available by exchange for release from

Lake Oroville on the Feather River, Shasta Lake on the Sacramento River, Millerton Lake on the San Joaquin River or other future reservoirs connected to the State and federal water projects. This exchanged water could be used to increase water flow and quality along the respective main stem river and into the Delta. DWR could time water releases to potentially increase attraction flows during the upstream migration period to reduce straying of anadromous species, increase survival of salmonid eggs and fry, and/or improve conditions for in-river rearing habitat for salmonid juveniles. Water release timing and amount may also be used to provide low salinity habitat for Delta smelt, longfin smelt and other estuarine fishes in the Delta.

Water Quality Improvements Benefits

In addition the potential ecosystem water quality benefits described above, the Project has the potential to provide water quality improvements to the SWP deliveries south of the Project. By importing surface water flows that originate in the Sierra Nevada into the California Aqueduct, the Project can dilute SWP water from the Delta, which is generally of lower quality.

Flood Control Benefits

The Project will provide flood reduction benefits to agricultural lands in the Tulare Lake lakebed, communities surrounding Tulare Lake, areas downstream on the North Fork of the Kings River and to the City of Firebaugh on the San Joaquin River. The capacity to divert up to 1,600 cfs of unregulated floodwaters into approximately 127,000 af of storage will reduce the extent and frequency of flooding in the Tulare Lake lakebed and areas downstream of the Project. The Kings, Kaweah and Tule rivers and other Tulare Lake tributaries have all contributed to flooding in the Tulare Lake region, primarily impacting agricultural lands, however, subsidence is increasing the risk of flooding to local communities such as Corcoran.

Emergency Response

The Project will provide emergency response benefits by allowing DWR to recover banked water supplies to meet critical water needs in the event of a Delta failure that disrupts exports.

Recreational Purposes

The Project will provide opportunities for recreational activities by incorporating wildlife viewing areas and other wildlife related recreation. The Project is anticipated to attract waterfowl and other wetland species in large numbers and will provide birdwatching and wildlife photography opportunities.

Water Code section 79752 requires that funded projects provide measurable improvements to the Delta ecosystem or to the tributaries of the Delta. Please describe how your project provides ecosystem improvements in the Delta or tributaries to the Delta:

As described by the California Water Commission, developing new surface water or groundwater storage is fundamental to water management in California. This Project, as proposed by SWSD, will provide DWR an opportunity to participate in a surface and groundwater storage program to develop a flexible water supply for a large variety of in-Delta or Delta tributary ecosystem benefits.

The Project proposes that, by the acquisition of funding through the WSIP, DWR acquires storage rights in the Water Bank and firm recovery capacity through the SWRU, as well as rights to use Tulare Lake Storage Facilities and Intertie to regulate surplus Delta flows into the Water Bank or other banking programs to which DWR may have access. DWR will be responsible for developing a water supply that can be banked in the Water Bank by exporting surplus Delta flows during periods when all other SWP demands have been fulfilled. These surplus exports will be delivered directly to the Water Bank or to the Tulare Lake Storage Facilities for reregulation to the Water Bank, allowing DWR to take advantage of high volume, short duration surplus Delta flows that are otherwise lost as Delta outflow.

Water delivered to the Water Bank will be held for DWR until such time that DWR determines that the water is needed to benefit the Delta or Delta tributary ecosystems. Banked water will be recovered through the exchange of the District's SWP entitlement. The current estimate for DWR's potential firm

recovery is approximately 20,000 af annually of previously banked water. This exchange will make water available for release from Lake Oroville, Shasta Lake, Millerton Lake on the San Joaquin River. Releases to satisfy a variety of ecosystem needs. This project may also enhance the benefit of other proposed projects.

Water Code sections 79755 and 79757 require the Commission to make a finding that a project will advance the long-term objectives of restoring ecological health and improving water management for beneficial uses in the Delta prior to allocating funding for a project. Please describe how your project could help advance the long-term objectives of restoring ecological health and improving water management for beneficial uses in the Delta:

Groundwater banking available to DWR or other entities deriving public benefits through this Project provide long-term operational flexibility for management of water supplies for Delta or Delta tributary benefits. Water captured by DWR from the Delta can be stored and made available at DWR's discretion when an ecosystem need arises by recovering previously banked water. The variety of benefits that may be derived from this project are listed below.

- Provide cold water at specific times and locations to increase the survival of salmonid eggs and fry.
- Enhance flows to improve habitat conditions for in-river rearing and downstream migration of juvenile salmonids.
- Maintain flows and appropriate ramping rates at times and locations that will minimize dewatering of salmonid redds and prevent stranding of juvenile salmonids in side channel habitat.
- Increase flows to improve ecosystem water quality.
- Increase flows to support anadromous fish passage by providing adequate dissolved oxygen and lower water temperatures.
- Increase attraction flows during the upstream migration period to reduce straying of anadromous species into non-natal tributaries.
- Increase Delta outflow to provide low salinity habitat for Delta smelt, longfin smelt and other estuarine fishes in the Delta, Suisun Bay, and Suisun Marsh.
- Enhance the temporal and spatial distribution and diversity of habitats to support all life stages of fish and wildlife species.
- Provide water to enhance seasonal wetlands, permanent wetlands, and riparian habitat for aquatic and terrestrial species on state and federal wildlife refuges and on other public and private lands managed for ecosystem values.

Please describe any other benefits provided by your project, such as water supply reliability benefits, and the potential beneficiaries:

<u>Water Supply Reliability Benefits</u>

Local water supply benefits for SWSD will be developed from the Kings River, tributaries to Tulare Lake, and surplus SWP allocations. A preliminary water supply analysis of the Project conservatively estimated an average yield of 24,000 to 38,000 af annually from Kings River floodwaters during wet year conditions, which occurs 13 years of the 40 year period of analysis (1976-2015).

<u>Local Ecosystem Benefits</u>

The Project has potential to seasonally create up to 27,000 acres of shallow open water habitat water associated with the storage facilities. These facilities could be managed to benefit migratory birds along the Pacific flyway. Resident wildlife would also benefit from the addition of shallow water habitat to the region, including potentially habitat for special-status species including nesting habitat for tri-colored blackbirds (*Agelaius tricolor*), and seasonal roosting habitat for greater sandhill cranes (*Grus canadensis*).