



Fact Sheet

Water Supply and Demand Assessments

Document includes background information, supply and demand modeling and watershed selections

The State Water Resources Control Board's Division of Water Rights is developing tools to better understand water supply and demand in select watersheds across California. The project involves three pilot watersheds and entails collecting and logging information to identify additional watersheds for this effort.

Background

The Division of Water Rights is responsible for allocating surface water through California's water rights priority system. Watershed-specific supply information from year to year is generally lacking, which makes water management planning difficult, especially in times of water shortage. Repeated recent droughts (2014-2016, 2021-2023) have highlighted the need for specialized data and tools to assess water availability and demand and to evaluate the allocation of limited water resources.

In 2021, in response to the drought emergency in Sonoma and Mendocino Counties, the State Water Board developed tools and information to better understand water supply and demand in the Russian River watershed. Division staff developed a water supply model and evaluated water diversion data to estimate watershed demand. Staff also used a tool to allocate water to right holders based on the modeled available surface water supply, water demand data and water right priorities. The supply and demand data, when integrated into the water allocation tool, was a key component in the board's implementation of drought emergency actions in the watershed.

The board established the Supply and Demand Assessment Unit in 2022 to develop supply models and demand assessments for new watersheds using an approach similar to the one used for the Russian River during the most recent drought. This effort will enable the board to prepare for future dry conditions in other watersheds and provide data to help local water managers better understand supply constraints, develop local responses and plan for droughts. The work could also inform future curtailments, if needed.

Water Supply and Demand Modeling

Evaluation of the water supply and demand of a watershed allows you to understand the difference between the available water in the system and the demands associated with different water uses. The board has established a contract with Paradigm



Environmental, Inc. to develop water supply (or hydrologic) models that assess surface water availability in select watersheds. Staff has also created a standard procedure to process to improve the accuracy of annual water use data reported by water right holders. Reported water use data often contains errors related to missing or duplicate reporting, unit conversions and multiple owners. Once this data is cleaned up, it can be used to represent water demand in a watershed.

Watershed-specific scenarios can be developed to inform water availability based on available surface water, water demands, and water right priority. This information can be used to support local water management planning. All data and tools developed under this effort will be open source and available to the public so interested parties can assess water conditions and evaluate potential water management options.

Pilot Watersheds

The water supply modeling tasks are underway in the Butte Creek (tributary to the Sacramento River), the Navarro River, and the Napa River watersheds. These watersheds were selected to help identify data needs (precipitation, climate, other water models, diversion data, etc.), provide a range of watershed characteristics and conditions that will likely be encountered in future work, and establish outreach and engagement protocols. Lessons learned from these pilot watersheds will help inform work in additional selected watersheds and create a more efficient long-term process.

Details about the specific watersheds include the following:

BUTTE CREEK: Butte Creek is critical habitat for the largest spring-run Chinook salmon population in the Central Valley and is critical to their survival. The creek has substantial surface water diversion and use. Additionally, it receives imported water associated with the DeSabra-Centerville hydroelectric project and has a large groundwater basin that covers about half of the watershed.

NAVARRO RIVER: The Navarro River watershed has many small surface water diversions and is an important habitat for coho salmon and steelhead trout. Total Maximum Daily Load analyses performed by the North Coast Regional Water Quality Control Board indicate excessive sediment deposition and high water temperatures in the river. The increase in sediment deposition and water temperature are critical issues for water quality and aquatic habitats and often relate to low flows and/or changes in the flow regime.

NAPA RIVER: The board received numerous reports of critically low (or no) flows in the Napa River watershed during the recent drought. Numerous surface diversions affect water availability and flows. Low flows can result in high water temperatures during the summer, which can impact water quality and aquatic species. The watershed also has a large groundwater basin.

The diverse characteristics associated with the pilot watersheds will help inform the overall scope of the modeling work.

Outreach for Preliminary Watershed Selection

Division staff has identified a set of preliminary watershed selections, based on the factors listed below, where low flows and drought conditions may threaten water supplies, impair critical habitat and create uncertainty for water users. For the development of water supply modeling (see Figure 1 below), staff proposes the following preliminary watersheds: Tomales-Drake Bay, Gualala River, Salmon Creek, Mattole River, South Fork Trinity, Carmel River and Upper Putah Creek.

Staff considered the following factors when selecting potential additional watersheds for this program:

- Surface water demand: Streamflow is highly influenced by the amount of surface water diverted from the waterbody. Developing tools similar to those used in the Russian River watershed (water supply modeling and demand analyses) will help inform management of limited supplies and/or protection of species and habitat.
- Ecological significance: Determining whether the watershed contains areas of salmonid habitat or other important fisheries is significant.
- Location: The North Coast, San Francisco Bay and Central Coast are geographic regions of specific interest due to lack of previous investments and engagement and the presence of critical salmonid habitat and refugia. Watersheds are not required to be located in these regions and staff will consider other geographic locations on a case-by-case basis.
- Water rights complexity: The number of known surface water diverters is important to understand how changes in water rights management may impact flow and other related conditions in a watershed.
- Existing efforts: Whether the watershed is in a region where staff is already engaged in other drought or flow development efforts with modeling efforts underway is a consideration, including whether modeling work at a sub-watershed level would accelerate efforts.

Staff will host a series of public meetings, accompanied by a public comment period, to solicit input on the selection of watersheds. More information on the public meetings is available in the [Notice of Public Meetings](#) on Watershed Selection for Water Supply and Demand Assessment Program. Staff will also conduct outreach in watersheds where modeling efforts are conducted to collect potential data sources and other information that could assist this effort.

As additional watersheds are selected and assigned to Paradigm, an update will be provided on the [Supply and Demand Assessment webpage](#). Highlights of the effort will also be shared through email. To sign up to receive email updates, please [subscribe](#)¹ to the Water Rights' "Watershed Supply & Demand Allocations" email list.

¹ https://www.waterboards.ca.gov/resources/email_subscriptions/swrcb_subscribe.html

Map of watersheds considered for the development of water supply modeling and related categories

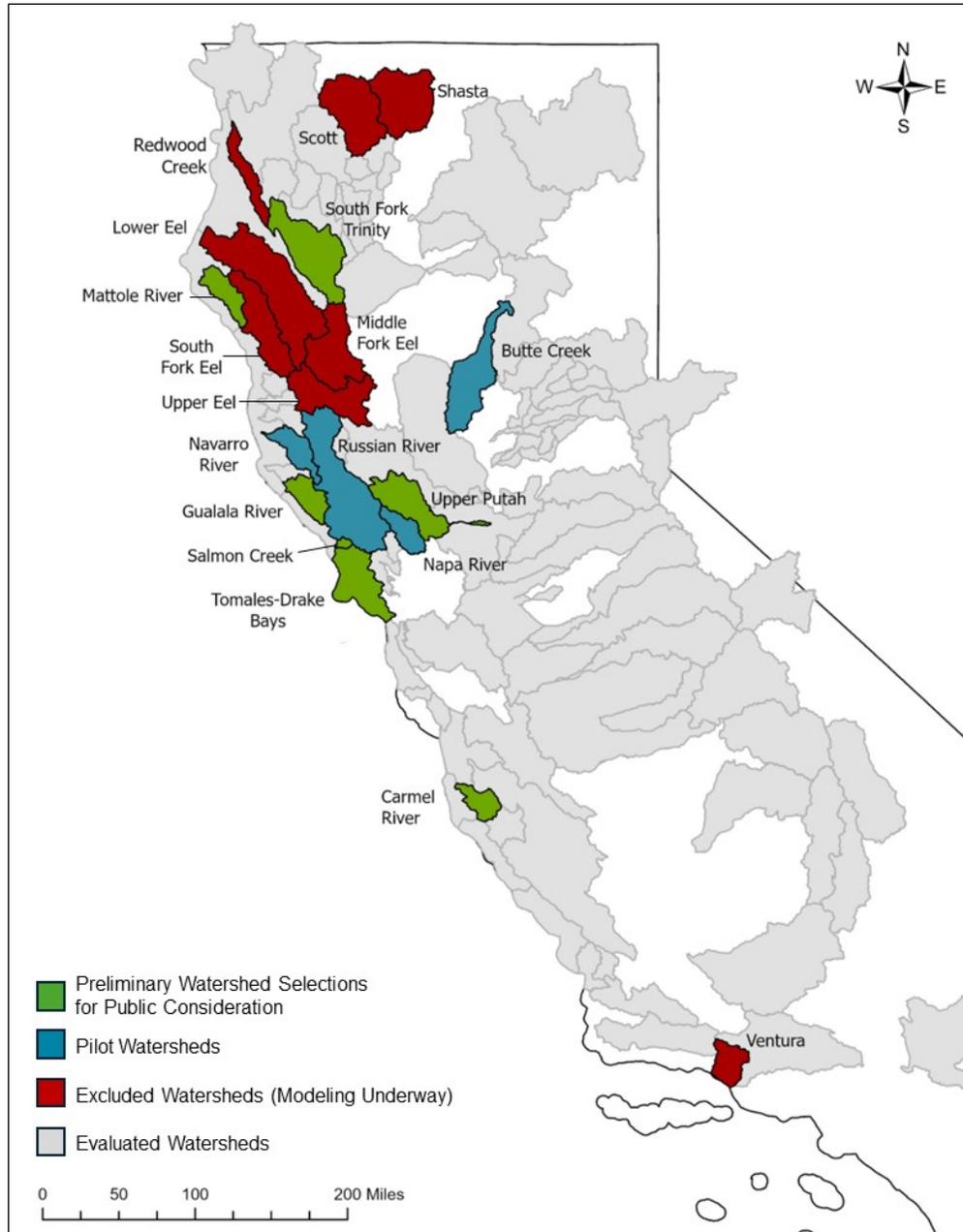


Figure 1. The light grey areas show the evaluated watersheds. The blue areas indicate the three pilot and Russian River watersheds that serve as a precursor to this effort. The green areas show the preliminary watershed selections that are out for public comment. The red areas show watersheds undergoing modeling efforts by other parts of the board.

Additional Resources

More information is available on the [Supply and Demand Assessment webpage](https://www.waterboards.ca.gov/sda/) (<https://www.waterboards.ca.gov/sda/>). For additional questions, please contact staff at DWR-SDA@waterboards.ca.gov