

Sonoma County Water Agency

Supplement to the October 2022 Temporary Urgency Change Petitions

The Sonoma County Water Agency (Sonoma Water) seeks temporary urgency changes to its four water-right permits used to provide wholesale water to cities and water districts in Sonoma and Marin Counties. These changes are necessary to ensure that the water supply condition and corresponding minimum instream flow requirements in the Russian River watershed are aligned with actual watershed hydrologic conditions. This is essential to maintain sustainable reservoir and river operations to protect municipal water supply and listed salmon species in the Russian River.

Based on Sonoma Water's water right permits' terms established under State Water Resources Control Board (State Water Board) Decision 1610, the water supply condition for the Russian River is determined using cumulative inflow into Lake Pillsbury as the hydrologic index. Lake Pillsbury is a storage reservoir located in the Eel River watershed for Pacific Gas & Electric Company's (PG&E) Potter Valley Hydroelectric Project (PVP), which transfers water into the East Fork of the Russian River. The Federal Energy Regulatory Commission (FERC) license for the PVP expired on April 14, 2022, and the PVP now operates on an annual license. PG&E has elected to surrender the operating license and decommission the PVP and developed a plan and schedule that was approved by FERC on July 29, 2022. Per PG&E's schedule, a final license surrender application and decommissioning plan will be submitted by January 29, 2025. FERC's license-surrender proceedings will likely take several years before PVP operations and long-term rules governing any imports to the Russian River watershed are resolved.

Notwithstanding these long-term issues, the suitability of using Lake Pillsbury cumulative inflow as a hydrologic index for the Russian River has diminished due to the recent transformer bank failure at the PVP powerhouse. This failure caused PVP hydropower generation to cease and, with it, the associated discretionary transfers of Eel River water to the East Fork of the Russian River. PG&E informed

the Drought Working Group in October 2021 of the failure and the anticipated repair requirements that would take up to two years at a cost of five to ten million dollars. PG&E announced its intent to make the necessary repairs and restart power generation, but the status of this project is unknown at this time.

The PVP has a rated design flow rate up to 240 cubic feet per second (cfs) through the powerhouse for power generation. The bypass for the PVP powerhouse can pass flow rates up to 135 cfs to meet FERC license requirements for minimum instream releases into the East Fork of the Russian River and water supply contract requirements with the Potter Valley Irrigation District (PVID).

Currently, the PVP is operating under a FERC order that approved a temporary variance on the license flow requirements on July 27, 2022. The order effectively reduced the minimum instream releases into the East Fork of the Russian River from 75 cfs to 5 cfs. PG&E's current transfer obligation under the FERC variance and the PVID contract from now until April 14, 2023, is 10 cfs. The variance is expected to be terminated after Lake Pillsbury storage reaches 36,000 acre-feet. Upon termination, PG&E transfer obligations will total 45 cfs until April 14, 2023. On April 15, 2023, the transfer requirement to the East Fork of the Russian River will be reassessed based on the water supply condition under the FERC license.

PG&E has indicated that without the ability to generate hydropower, PG&E will not likely make discretionary transfers through the PVP above its FERC license and contract obligations. Discretionary transfers to generate hydropower can occur up until early April if hydrologic conditions on the Eel River and at Lake Pillsbury are met. Without the discretionary transfer of Eel River water to generate hydropower, the total transfer through the PVP will be reduced by up to 456 acre-feet per day.

Under these PVP operating conditions, the influence of the Eel River water imports on downstream hydrologic conditions in the Russian River will be greatly diminished. Therefore, there will be little to no correlation between cumulative inflow into Lake Pillsbury and the hydrologic conditions in the Russian River watershed. Consequently, Sonoma Water requests that storage thresholds in Lake Mendocino be used as the hydrologic index to determine the water supply condition in the Russian River watershed on which minimum instream requirements are based. A similar approach using storage thresholds was requested by Sonoma Water in prior Temporary Urgency Change Petitions

(TUCP) filed in December 2013, January 2021, and November 2021; and approved by the State Water Board in orders issued on December 31, 2013, February 4, 2021, and December 10, 2021, respectively. Under the current TUCP request, the storage thresholds have been updated to incorporate the current operational conditions present in the Russian River (see Section 4.0).

The current drought that began in the spring of 2020 has contributed to Sonoma Water filing five TUCPs. Projected critically low storage levels in Lake Mendocino were major drivers for the TUCPs. These low storage levels were due to the combination of dry watershed conditions and reduced transfers of Eel River water through the PVP as a result of variances filed with FERC by PG&E. With water conservation, water rights curtailments and actions under the recent Temporary Urgency Change Orders, Lake Mendocino water levels were sustained to allow continuous reservoir releases and are in a significantly improved condition from one year ago. Lake Sonoma, however, remains at its second lowest level for this time of year since filling in 1986. Consequently, it is critical that the water supply condition and corresponding minimum instream flows in the Russian River be determined by a hydrologic index representative of the Russian River watershed.

1.0 BACKGROUND

Sonoma Water controls and coordinates water supply releases from Lake Mendocino and Lake Sonoma to implement the minimum instream flow requirements as established in Decision 1610, which the State Water Board adopted on April 17, 1986. Decision 1610 specifies minimum instream flow requirements for the Upper Russian River, Dry Creek and the Lower Russian River.¹ These minimum flow requirements vary based on hydrologic conditions, which are also specified in Decision 1610. The Decision 1610 requirements for the Upper Russian River and Lower Russian River are contained in Term 20 of

¹ The Upper Russian River is the stream reach from the confluence of the East Fork of the Russian River and West Fork of the Russian River to the Russian River's confluence of Dry Creek. The Lower Russian River is the stream reach from the confluence of Dry Creek and the Russian River to the Pacific Ocean.

Sonoma Water's water-right Permit 12947A (Application 12919A). The Decision 1610 requirements for the Lower Russian River are contained in Term 17 of Sonoma Water's water-right Permit 12949 (Application 15736) and Term 17 of Sonoma Water's water-right Permit 12950 (Application 15737). The Decision 1610 requirements for Dry Creek and the Lower Russian River are contained in Term 13 of Sonoma Water's water-right Permit 16596 (Application 19351).

Sonoma Water's operations are also subject to the Russian River Biological Opinion issued by the National Marine Fisheries Service on September 24, 2008, and the consistency determination issued by the California Department of Fish and Wildlife on November 9, 2009.

1.1 Minimum Flow Requirements

Decision 1610 requires a minimum flow of 25 cubic feet per second (cfs) in the East Fork of the Russian River from Coyote Valley Dam to the confluence with the West Fork of the Russian River under all water supply conditions. From this point to Dry Creek, terms adopted by Decision 1610 require minimum Russian River flows as follows: from April through August, 185 cfs, and from September through March, 150 cfs, during *Normal* water supply conditions; 75 cfs during *Dry* conditions; and 25 cfs during *Critical* conditions. Decision 1610 further specifies two variations of the *Normal* water supply condition, commonly known as *Dry Spring 1* and *Dry Spring 2*. These conditions provide for lower required minimum flows in the Upper Russian River during times when the combined storage in Lake Pillsbury and Lake Mendocino on May 31 is unusually low. *Dry Spring 1* conditions exist if the combined storage in Lake Pillsbury and Lake Mendocino is less than 150,000 acre-feet on May 31. Under *Dry Spring 1* conditions, the required minimum flow in the Upper Russian River between the confluence of the East Fork and West Fork and Healdsburg is 150 cfs from June through March, with a reduction to 75 cfs during October through December if Lake Mendocino storage is less than 30,000 acre-feet during those months. *Dry Spring 2* conditions exist if the combined storage in Lake Pillsbury and Lake Mendocino is less than 130,000 acre-feet on May 31. Under *Dry Spring 2* conditions, the required minimum flows in the Upper Russian River are 75 cfs from June through December and 150 cfs from January through March.

From Dry Creek to the Pacific Ocean, the required minimum flows in the Lower Russian River are 125 cfs during *Normal* water supply conditions, 85 cfs during *Dry* conditions, and 35 cfs during *Critical* conditions.

In Dry Creek below Warm Springs Dam, the required minimum flows are 75 cfs from January through April, 80 cfs from May through October and 105 cfs in November and December during *Normal* water supply conditions. During *Dry* and *Critical* conditions, these required minimum flows are 25 cfs from April through October and 75 cfs from November through March.

Figure 1 shows all of the required minimum instream flows specified in Decision 1610 by river reach, the gauging stations used to monitor compliance, and the definitions of the various water supply conditions.

1.2 Water Supply Conditions

There are three main water supply conditions that are defined in Decision 1610, which set the minimum instream flow requirements for the Russian River system based on the hydrologic conditions. These water supply conditions are determined based on criteria for the calculated cumulative inflow into Lake Pillsbury from October 1 to the first day of each month from January to June. Decision 1610 defines cumulative inflow for Lake Pillsbury as the algebraic sum of releases from Lake Pillsbury, change in storage and lake evaporation.

Dry water supply conditions exist when cumulative inflow to Lake Pillsbury from October 1 to the date specified below is less than:

- 8,000 acre-feet as of January 1;
- 39,200 acre-feet as of February 1;
- 65,700 acre-feet as of March 1;
- 114,500 acre-feet as of April 1;
- 145,600 acre-feet as of May 1; and
- 160,000 acre-feet as of June 1.

Under Decision 1610, *Critical* water supply conditions exist when cumulative inflow to Lake Pillsbury from October 1 to the date specified below is less than:

- 4,000 acre-feet as of January 1;
- 20,000 acre-feet as of February 1;
- 45,000 acre-feet as of March 1;
- 50,000 acre-feet as of April 1;
- 70,000 acre-feet as of May 1; and
- 75,000 acre-feet as of June 1.

Normal water supply conditions exist whenever a *Dry* or *Critical* water supply condition is not present. As indicated above, Decision 1610 further specifies three variations of the *Normal* water supply condition based on the combined storage in Lake Pillsbury and Lake Mendocino on May 31. These three variations of the *Normal* water supply condition determine the required minimum instream flows for the Upper Russian River. This provision of Decision 1610 does not provide for any changes in the required minimum instream flows in Dry Creek or the Lower Russian River. A summary of the required minimum flows in the Upper Russian River for *Normal*, *Normal — Dry Spring 1* and *Normal — Dry Spring 2* water supply conditions is provided here:

1. *Normal*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year exceeds 150,000 acre-feet or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through August 31	185 cfs
From September 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

2. *Normal-Dry Spring 1*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year is between 150,000 acre-feet

or 90 percent of the estimated water supply storage capacity of the reservoirs, whichever is less, and 130,000 acre-feet or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through March 31	150 cfs
From April 1 through May 31	185 cfs
If from October 1 through December 31, storage in Lake Mendocino is less than 30,000 acre-feet	75 cfs

3. *Normal-Dry Spring 2*: When the combined water in storage in Lake Pillsbury and Lake Mendocino on May 31 of any year is less than 130,000 acre-feet or 80 percent of the estimated water supply storage capacity of the reservoirs, whichever is less:

From June 1 through December 31	75 cfs
From January 1 through March 31	150 cfs
From April 1 through May 31	185 cfs

2.0 WATER SUPPLY CONDITIONS

On May 31, 2022, the cumulative inflow for the water year (starting October 1) into Lake Pillsbury was 228,109 acre-feet and combined storage in Lake Pillsbury and Lake Mendocino was 106,803 acre-feet. Consequently, the water supply condition is categorized as *Normal Dry Spring 2* for the remainder of 2022. Sonoma Water is currently managing the Russian River as authorized by the State Water Board amended temporary urgency change order dated October 11, 2022. The amended order modified the original order dated June 17, 2022, that approved Sonoma Water’s May 2022 TUCP. The approved changes authorized a reduction in minimum instream flow requirements to *Critical* water supply condition levels for the Upper and Lower Russian River. These changes were necessary because of the critically dry hydrology and very low storage at Lake Mendocino and Lake

Sonoma. The State Water Board's October 11, 2022 amended order expires after December 13, after which the minimum instream flow requirements would return to a *Normal Dry Spring II* water supply condition for the Upper and Lower Russian River. For the remainder of the year, the corresponding minimum instream flow requirements would increase from 25 cfs to 75 cfs on the Upper Russian River and from 35 cfs to 125 cfs on the Lower Russian River.

Without an additional temporary urgency change order approving the requested changes, the hydrologic index based on cumulative inflow into Lake Pillsbury will be misaligned with actual Russian River watershed conditions and storage levels at Lake Mendocino and Lake Sonoma. This would require releases from the two reservoirs to meet minimum instream flow requirements that would further exacerbate the depletion of the reservoirs to potentially severely low levels.

2.1 Potter Valley Hydroelectric Project

The PVP, owned and operated by PG&E, is located on the East Fork of the Russian River and the Eel River in Mendocino and Lake Counties. PVP's Lake Pillsbury is impounded by Scott Dam. Eel River natural flows and releases from Scott Dam can be diverted downstream at Cape Horn Dam through PG&E's generation facilities. Those generation facilities then release that water to the East Fork of the Russian River.

As discussed above, the PVP powerhouse is inoperable for the foreseeable future, which will severely reduce the transfer of Eel River water through the PVP. PG&E has indicated that it plans to repair the facility even though it is preparing a license surrender application and decommissioning plan as required by FERC. However, PG&E has not released a plan or schedule for repairing the transformer bank.

2.2 Lake Mendocino

As of October 24, 2022, the water supply storage level in Lake Mendocino was 38,563 acre-feet (AF). This storage level is approximately 49 percent of the available water conservation pool for this time of year. This corresponds to approximately the 20th percentile storage level for this time of year. Figure 2 shows observed storage in Lake Mendocino for 2014 through October 24, 2022.

Lake Mendocino is operating under a Planned Major Deviation (Deviation) of the Coyote Valley Dam/Lake Mendocino Water Control Manual that was approved by the U.S. Army Corps of Engineers (USACE) in February 2021. The Deviation was approved to remain in effect through Water Year (WY) 2026 at the request of the Lake Mendocino Forecast Informed Reservoir Operations (FIRO) Steering Committee. The Deviation allows USACE flood control managers to store up to an additional 11,650 acre-feet of water in the flood control pool at their discretion. Furthermore, it authorizes USACE flood control managers to leverage a Decision Support Model (DSM) developed by Sonoma Water as part of the tools and protocols USACE uses to manage reservoir operations at Lake Mendocino. Based on an operational hydrologic ensemble of streamflow forecasts provided by the California-Nevada River Forecast Center, current reservoir storage, and current and anticipated downstream conditions, the DSM provides a recommended release to help inform operational decisions. Unfortunately, drought conditions since March 2020 have resulted in storage levels at Lake Mendocino that are well below the flood control pool. Hence, the FIRO DSM has not been able to improve storage levels.

2.3 Lake Sonoma

As of October 24, 2022, the water supply storage level in Lake Sonoma was 105,599 acre-feet. This storage level is approximately 43 percent of the available water conservation pool. This is the lowest storage level for this time of year since Lake Sonoma filled in 1986. The second lowest level on record was last year, which was over 10,000 acre-feet higher. Figure 3 shows observed storage in Lake Sonoma for 2014 through October 24, 2022.

3.0 CRITERIA FOR APPROVING TEMPORARY URGENCY CHANGE TO PERMITS 12947A, 12949, 12950, AND 16596

As required by Water Code section 1435, subdivision (b), the Board must make the following findings before issuing a temporary change order:

1. The permittee or licensee has an urgent need to make the proposed change;

2. The proposed change may be made without injury to any other lawful user of water;
3. The proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses; and
4. The proposed change is in the public interest.

3.1 Urgency of the Proposed Change

Under Water Code section 1435, subdivision (c), an urgent need to make a proposed change exists when the State Water Board concludes that the proposed temporary change is necessary to further the constitutional policy that the water resources of the State be put to beneficial use to the fullest extent of which they are capable and that waste of water be prevented.

For these petitions, an urgent need exists to implement the proposed change due to the drastic reduction of potential Eel River water imports through the PVP resulting from the inoperability of the powerhouse for the foreseeable future. The volume of imported Eel River water that can be transferred with the powerhouse being inoperable results in little or no correlation between cumulative inflow into Lake Pillsbury and the hydrologic condition in the Russian River. Without the proposed changes, the applicable minimum instream flow requirements may require releases of water from Lake Mendocino and Lake Sonoma at levels that would risk significant depletions of storage to severely low levels. Such depletions in storage could cause serious impacts to human health and welfare and reduce water supplies needed for fishery protection.

3.2 No Injury to Any Other Lawful User of Water

If this petition is approved, Sonoma Water still will be required to maintain specific minimum instream flows in the Russian River. Because these minimum flows will be present, all other legal users of water still will be able to divert and use the amounts of water that they may legally divert and use. Accordingly, granting this petition will not result in any injury to any other lawful user of water.

3.3 No Unreasonable Effect upon Fish, Wildlife, or Other Instream Beneficial Uses

If these petitions are approved, monthly storage thresholds in Lake Mendocino would determine the water supply condition that sets the Russian River minimum instream flow requirements. This change would align Sonoma Water's reservoir operations and the applicable minimum streamflows with the Russian River watershed's hydrology. The change therefore could result in lower instream flows in the Russian River. Any effects associated with such flow reductions would not be unreasonable, considering the potential catastrophic impacts to fish, wildlife and other instream beneficial uses that could occur under minimum instream flow requirements that the Russian River watershed and reservoirs cannot sustain.

3.4 The Proposed Change is in the Public Interest

Approval of these petitions would provide alternative criteria for determining minimum instream flow requirements for the Russian River that would be based on a more accurate assessment of water supply conditions in the Russian River watershed. This would result in minimum instream flow requirements that more likely can be sustained with releases from Lake Mendocino and Lake Sonoma without severely depleting storage. It is in the public interest to manage these water supplies based on an index that is more reflective of the hydrologic conditions of the Russian River watershed.

4.0 REQUESTED TEMPORARY URGENCY CHANGE TO PERMITS 12947A, 12949, 12950, AND 16596

To address the inoperability of the PVP powerhouse and corresponding loss of Eel River water imports through the PVP, Sonoma Water is filing these petitions requesting that the State Water Board make the following temporary changes to the Decision 1610 requirements:

Starting December 14, 2022, the minimum instream flow requirements for the Russian River will be established using an index based on water storage in Lake Mendocino, rather than the current index based on cumulative inflow into Lake Pillsbury. This temporary change is requested to ensure that the water supply

condition for the Russian River is determined by an index that is reflective of actual watershed conditions. Specifically, Sonoma Water proposes that the storage values listed below be used, in lieu of cumulative Lake Pillsbury inflow, to determine the water supply conditions that determine which minimum instream flow requirements in Term 20 of Permit 12947A, Term 17 of Permits 12949 and 12950, and Term 13 of Permit 16596 will apply to the Russian River:

- a. *Dry* water supply conditions will exist when storage in Lake Mendocino is less than:

45,000 acre-feet as of January 1
60,000 acre-feet as of February 1
71,000 acre-feet as of March 1
75,000 acre-feet as of March 16
77,000 acre-feet as of April 1
76,500 acre-feet as of April 16
76,000 acre-feet as of May 1
75,500 acre-feet as of May 16
75,000 acre-feet as of June 1

- b. *Critical* water supply conditions exist when storage in Lake Mendocino is less than:

31,000 acre-feet as of January 1
41,000 acre-feet as of February 1
53,500 acre-feet as of March 1
56,000 acre-feet as of March 16
56,500 acre-feet as of April 1
56,000 acre-feet as of April 16
55,000 acre-feet as of May 1
54,000 acre-feet as of May 16
53,500 acre-feet as of June 1

- c. *Normal* water supply conditions exist in the absence of defined *Dry* or *Critical* water supply conditions.

Because the proposed criteria for determining the applicable minimum instream flow requirements would be tied to Lake Mendocino storage, they would more accurately reflect the hydrologic conditions in the Russian River and would adjust through June 1 if the remainder of the winter and spring yields improvements in the hydrologic conditions. The proposed criteria, therefore, mimic the logic underlying the year types and associated streamflow requirements of Decision 1610. It would shift the criteria for establishing hydrologic conditions in the Russian River watershed to local conditions rather than inflows to Lake Pillsbury in the Eel River watershed, which no longer are representative of Russian River hydrologic conditions.

These storage thresholds in Lake Mendocino were developed by Sonoma Water engineering staff using its Russian River Simulation Model. The modeling scenarios assume: (1) current Russian River system losses; (2) WY 1911 to WY 2017 unimpaired flow hydrology, and (3) Potter Valley Project operations based on the Reasonable and Prudent Alternatives contained in the 2004 Potter Valley Project Biological Opinion. The thresholds were developed to approximately replicate the frequency of occurrence of the water supply conditions of Decision 1610, with an 86 percent occurrence of *Normal* conditions, a 10 percent occurrence of *Dry* conditions, and a 4 percent occurrence of *Critical* conditions from January to June. A detailed description of the hydrologic analysis is presented in Attachment A.

5.0 PROPOSED ACTIONS BY SONOMA WATER

To inform State Water Board staff and interested stakeholders in the Russian River watershed regarding reservoir and watershed conditions, Sonoma Water will prepare a weekly hydrologic status report that contains the following information:

- Current reservoir levels and reservoir storage hydrographs for Lake Mendocino and Lake Sonoma;
- The daily rate of change in storage, inflow and reservoir release for Lake Mendocino and Lake Sonoma; and
- Cumulative rainfall plot for current water year versus historical

precipitation range for Ukiah. Cumulative rainfall forecasts for 3-day, 7-day and 16-day.

These reports will be made available on Sonoma Water's website during the term of the order approving Sonoma Water's requested temporary changes.

6.0 WATER CONSERVATION ACTIVITIES

The following water conservation activities reflect the efforts of Sonoma Water and the Sonoma-Marín Saving Water Partnership (Partnership). The Partnership represents 13 North Bay water utilities in Sonoma and Marin counties that have joined together to provide regional solutions for water use efficiency. The utilities (Partners) are: the Cities of Santa Rosa, Rohnert Park, Petaluma, Sonoma, Cloverdale, Cotati, Healdsburg; North Marin, Valley of the Moon, and Marin Municipal Water Districts; California American Water Company - Larkfield; the Town of Windsor, and Sonoma Water. The Partnership was formed to identify and recommend water use efficiency projects and to maximize the cost-effectiveness of water use efficiency programs in our region.

Sonoma and Mendocino were the first counties placed under a region-specific drought state of emergency on April 21, 2021, by Gov. Gavin Newsom. The Sonoma County Board of Supervisors took action on April 27, 2021, proclaiming a local emergency due to drought conditions in support of actions needed to mitigate the adverse environmental, economic, health, welfare and social impacts of the drought. As required by Government Code section 8630, the Board of Supervisors must review the proclamation of local emergency every 60 days and determine if there is a need for continuing the local emergency. The Sonoma County Board of Supervisors has approved the continuation of the drought emergency conditions every 60 days since April 2021, with the most recent extension occurring September 13, 2022. It is expected that drought emergency conditions will remain in effect through 2022.

Since the summer of 2021, Sonoma Water and its contractors have continued to implement shortage response actions consistent with those adopted for a shortage level of up to twenty percent (Level 2). These actions match the requirements of the Governor's Executive Order N-7-22 and are also consistent with the actions

detailed in Sonoma Water's and the contractors' annual Water Shortage Assessment reports submitted to the California Department of Water Resources prior to July 1, 2022. Sonoma Water's report concluded there was sufficient water supply to meet projected demands from July 2022 through June 2023 if the following year were to be dry. Given ongoing drought conditions, however, Sonoma Water and its contractors agreed that meeting a 20 percent reduction in diversions from the Russian River was appropriate from July 2022 through October 2022 in order to preserve water supply in Lake Sonoma should drought conditions continue into a fourth year.

Sonoma Water and its customers are achieving a 30.5 percent reduction in Russian River diversions for the period July 1 through October 24, 2022, as compared to the same period in 2020. Consequently, it is expected that the 20 percent diversion reduction goal through October will be met or exceeded. Shortage response actions are anticipated to continue after October, however, given current dry conditions and the applicability of the Governor's ongoing Executive Order. Sonoma Water and its contractors will be undertaking work on next year's Annual Water Supply and Demand Assessment starting in December, to include monitoring and early forecasting of water supply conditions and to develop updated demand forecasts for the next two years. As was done last winter into spring and summer, this annual process will be relied on to determine appropriate shortage response actions in consideration of any precipitation received this winter.

Outreach Campaign

Sonoma Water, its contractors, and the other member agencies of the Partnership continue to run a multi-media drought outreach campaign to maintain customer awareness of low reservoir levels and the need for continued water savings due to a third consecutive dry year. The campaign emphasizes reducing water waste by adhering to statewide water waste prohibitions and local restrictions on irrigation and other non-essential uses of water. As previously mentioned, drought restrictions have been in effect continuously since summer of 2021.

The Partnership outreach campaign being implemented this fall and winter includes topical advertising for installing drip irrigation systems, how to care for trees during drought, greywater systems, rainwater harvesting, information on

water smart plants, and timely reminders to turn off irrigation systems for winter. This advertising utilizes streaming content online, print and digital ads, videos, social media placements, and radio. A weekly graphic showing current reservoir storage levels is ongoing in the Santa Rosa Press Democrat print and online news publications and on Sonoma Water's and the Partnership's websites. Sonoma Water has also been conducting monthly Drought Town Hall meetings hosted by a member of the Sonoma County Board of Supervisors / Sonoma Water Board of Directors, with guest presenters providing the latest information on drought conditions. The next Drought Town Hall meeting is scheduled for November 3, 2022.

A drought outreach subcommittee of the Partnership continues to meet monthly to coordinate development of new advertising and to finalize outreach plans through the fall and winter period. The Partnership recently completed a series of Saving Water Summer Pop-Up events, culminating at the Fiesta de Independencia held at the Luther Burbank Center for the Arts on September 18, 2022. In total, the Partnership hosted 27 pop-ups over the summer to share drought information and water saving tools with participants. Six pop-ups occurred simultaneously on August 20, 2022, in collaboration with home improvement stores throughout Sonoma and Marin counties, where total customer engagement numbered in the thousands. Overall, the ongoing drought outreach campaign continues to be effective in meeting the Governor's call for a 15% reduction as compared to 2020 use. For the July 2021 through August 2022 period, the Partnership is maintaining a 21% reduction in total water production as compared to the same period in 2020.

Figures

Cumulative inflow to Lake Pillsbury (acre-feet) from Oct 1 through

	1/1	2/1	3/1	4/1	5/1	6/1
NORMAL	≥8,000	≥39,200	≥65,700	≥114,500	≥145,600	≥160,000
DRY	<8,000	<39,200	<65,700	<114,500	<145,600	<160,000
CRITICAL	<4,000	<20,000	<45,000	<50,000	<70,000	<75,000

Water Supply Conditions Prevailing on 6/1 Apply Through 12/31

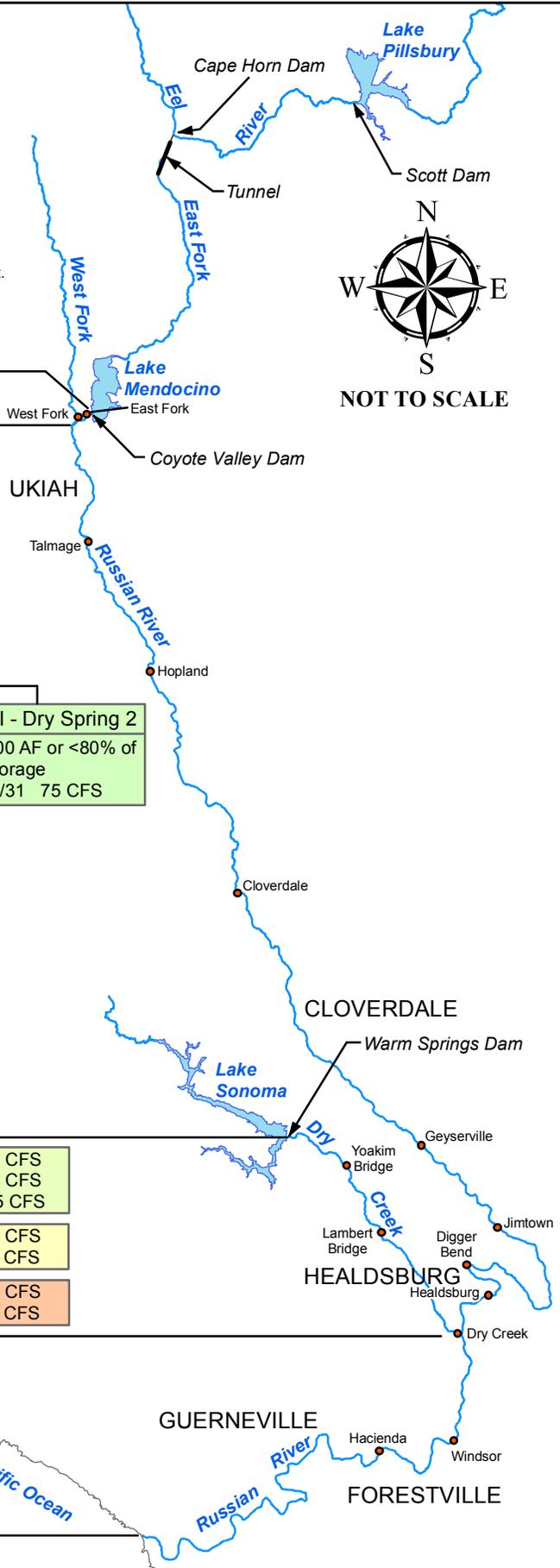
LEGEND

All flows are minimums, expressed in cubic feet per second.

* - Unless Lake Sonoma elevation is below 292.0, or if prohibited by the United States Government.

AF - Acre-Feet

● - USGS Stream Gage Compliance Points



East Fork	Coyote Dam	ALWAYS East Fork Russian River	25 CFS
	Mouth of East Fork Russian River	Coyote Dam to Russian River	25 CFS

NORMAL

1/1 - 3/31	150 CFS
4/1 - 5/31	185 CFS

If Combined Storage in Lake Pillsbury and Lake Mendocino on May 31 is

Normal	150,000 AF or >90% of Total Storage	6/1 - 8/31	185 CFS
		9/1 - 12/31	150 CFS
Normal - Dry Spring 1	130,000 - 150,000 AF or 80-90% of Total Storage whichever is less	6/1 - 12/31	150 CFS
Normal - Dry Spring 2	<130,000 AF or <80% of Total Storage	6/1 - 12/31	75 CFS
If Lake Mendocino <30,000 AF Storage		10/1 - 12/31	75 CFS

DRY

75 CFS

CRITICAL

25 CFS

Dry Creek	NORMAL	1/1 - 4/30	75 CFS
		5/1 - 10/31	80 CFS
		11/1 - 12/31	105 CFS
DRY		4/1 - 10/31	25 CFS
		11/1 - 3/31	75 CFS
CRITICAL		4/1 - 10/31	25 CFS
		11/1 - 3/31	75 CFS

Mouth of Dry Creek

NORMAL	125 CFS *
DRY	85 CFS *
CRITICAL	35 CFS *

Mouth of Russian River

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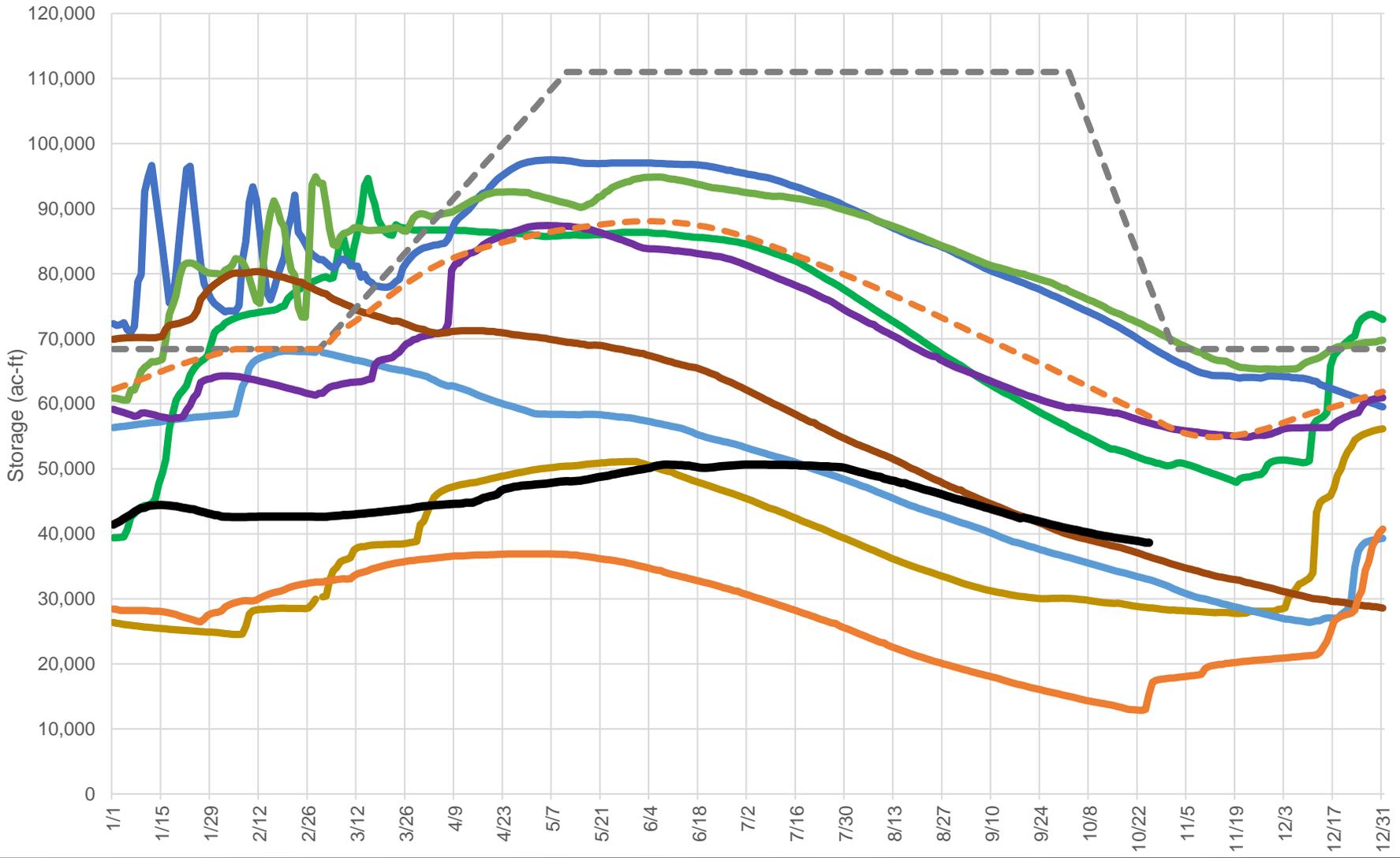


Russian River Basin Streamflow Requirements

Per State Water Resources Control Board Decision 1610, April 1986

Figure 1

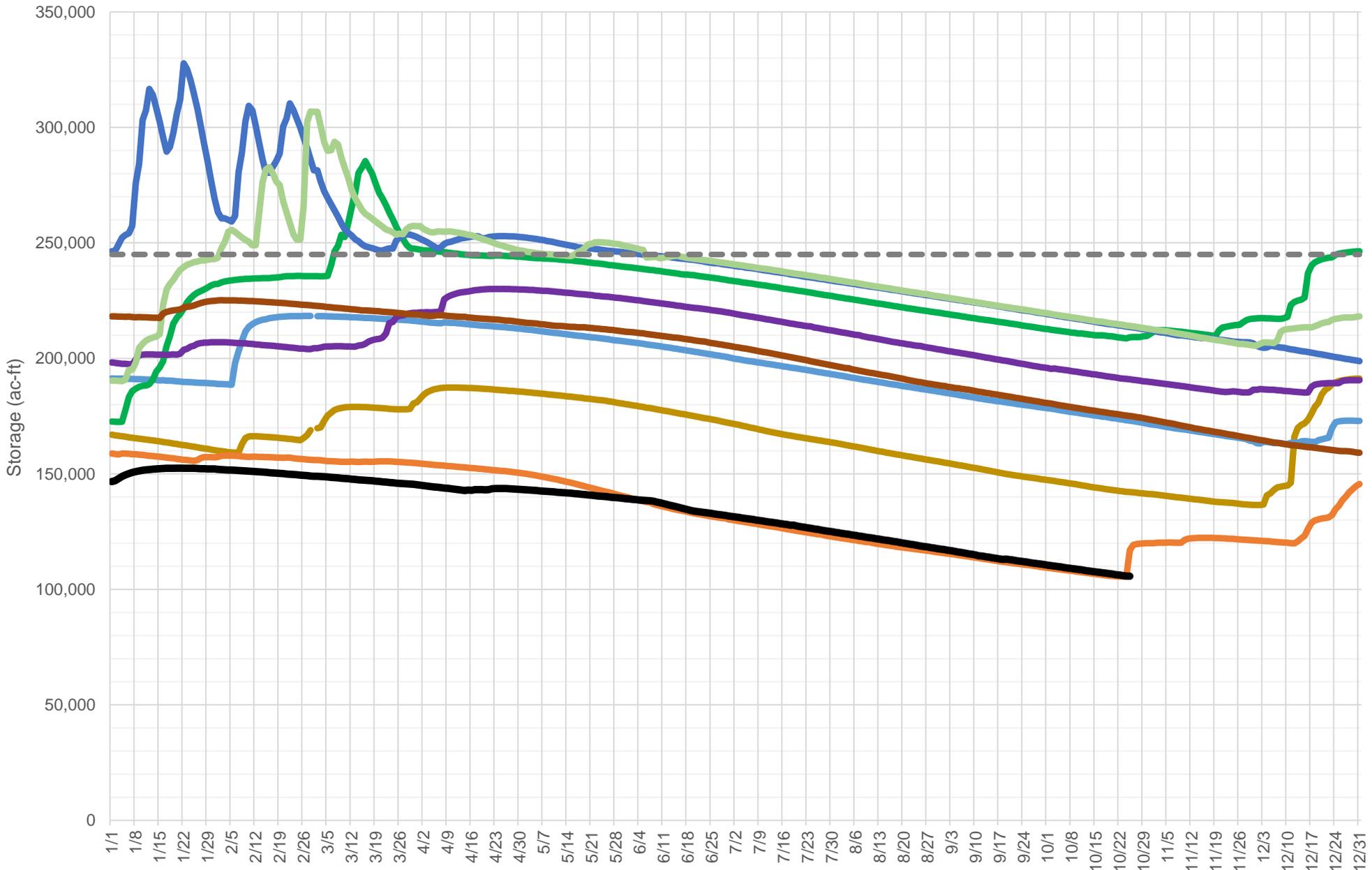
Lake Mendocino Storage



- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- Storage Curve
- Target Water Supply Storage Curve

Figure 2

Lake Sonoma Storage



— 2014
 — 2015
 — 2016
 — 2017
 — 2018
 — 2019
 — 2020
 — 2021
 — 2022
 - - - Storage Curve

Figure 3

Lake Mendocino Storage Thresholds

The Lake Mendocino storage thresholds were developed using Sonoma Water's Russian River System Model (RR ResSim). This model was developed using the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center (HEC) ResSim code and is used as a planning tool by Sonoma Water to simulate the effects of various climatic conditions, levels of demand and operational criteria on the water supply available to meet minimum instream flow requirements and demands by downstream users. RR ResSim calculates what releases must be made from Lake Mendocino and Lake Sonoma, taking into account USACE flood control operations criteria, minimum instream flow requirements and/or proposed alternatives to system operations.

The model incorporates 107 water years of hydrologic data (Water Years 1910 - 2017), represented as daily unimpaired tributary flows into the Russian River and Dry Creek. Unimpaired flows are the "natural" flows, unaffected by man-made influences, such as water demands, or reservoir operations. These unimpaired flows, which form the basis of the hydrology in the model, were synthetically derived by the U.S. Geological Survey using their Basin Characterization Model (BCM) using historical weather, climate and hydrologic data.

The RR ResSim model divides the Russian River and Dry Creek into 13 primary model junctions as presented in Figure 1. Model junctions correspond with important system features such as transfers from PVP, reservoir releases, major system tributaries and existing stream gage locations. Model reaches are defined as the length of river between each model junction. Gains associated with unimpaired flows and losses associated with municipal and industrial (M&I) diversions and/or other distributed demands are accounted for within each reach.

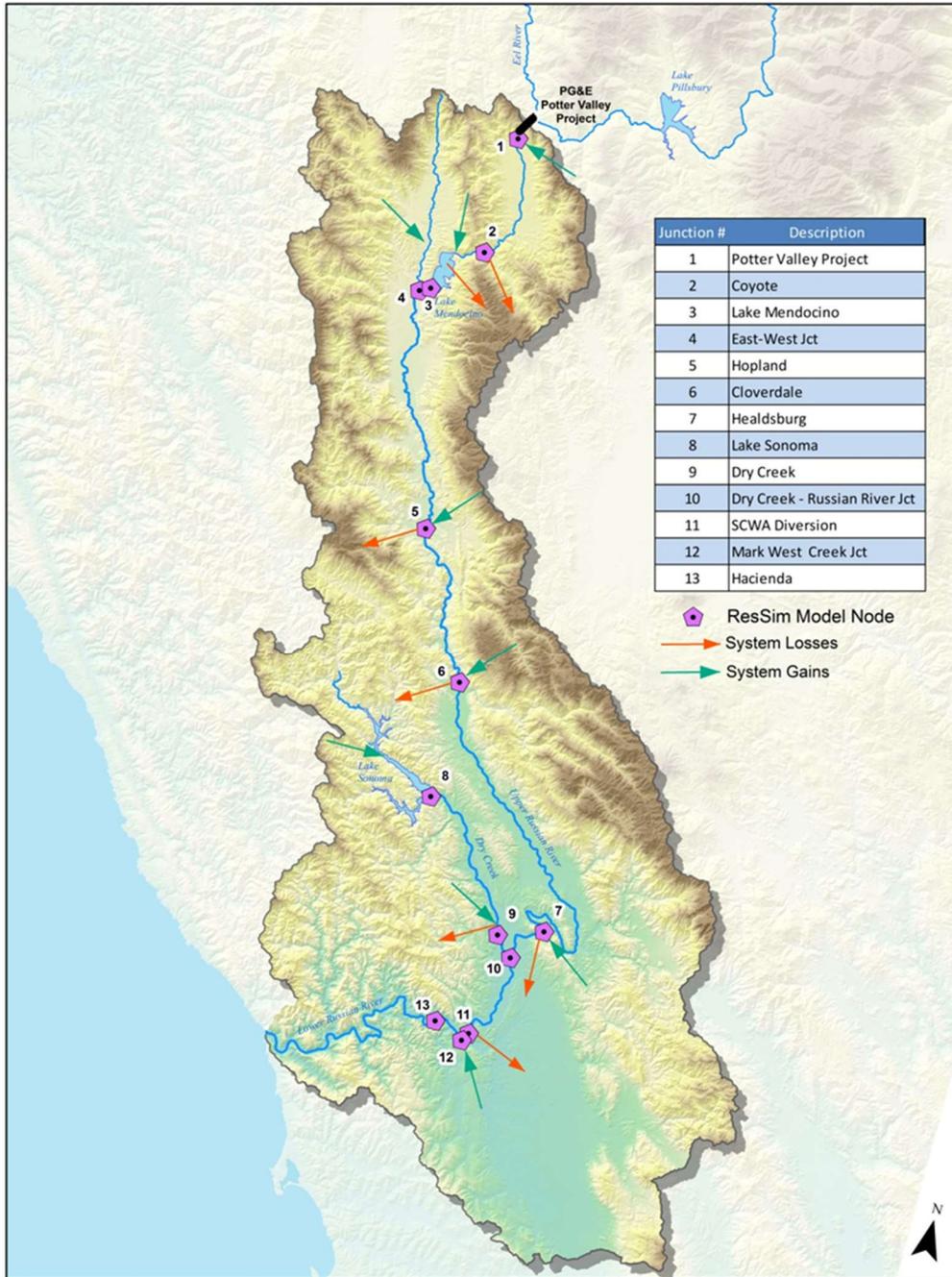


Figure 1: Russian River ResSim Model Schematic

The RR ResSim accounts for losses in the Russian River system that include Sonoma Water’s diversions, as well as all other depletions from the watershed including: evapotranspiration by riparian vegetation, aquifer recharge, agricultural diversions and other M&I diversions. The model aggregates system losses by reach between each junction. Sonoma Water’s model demands were estimated based on historical river

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diversions from 2005 to 2012, with an annual diversion of approximately 58,000 acre-feet per year. System losses not associated with the Sonoma Water’s diversions were estimated through an analysis of historical M&I data, flow gage data, unimpaired flow data and climate data from 2002 to 2013. Because the model calculates the reservoir releases necessary to meet minimum instream flow requirements, all water uses in the watershed are satisfied by simulated reservoir releases.

PVP diversions were simulated using the PVP ResSim model. The PVP ResSim model was developed by the Water Supply Working Group as part of Congressman Jared Huffman’s PVP Ad Hoc group to develop operational alternatives to PVP that met the Ad Hoc’s Two Basin objectives. The model encompasses the Lake Pillsbury watershed down to the outlet of Cape Horn Dam (Van Arsdale Reservoir) along the Eel River (Figure 2). The model simulates operations of Scott Dam and Cape Horn Dam, as well as the hydroelectric diversion given a set of physical and operational constraints. Just like the RR ResSim model, it incorporates daily hydrology from 1910 – 2017. The input hydrology was developed by Western Hydrologics using observed gage records at the reservoir outlets and the change in storage of the reservoirs.

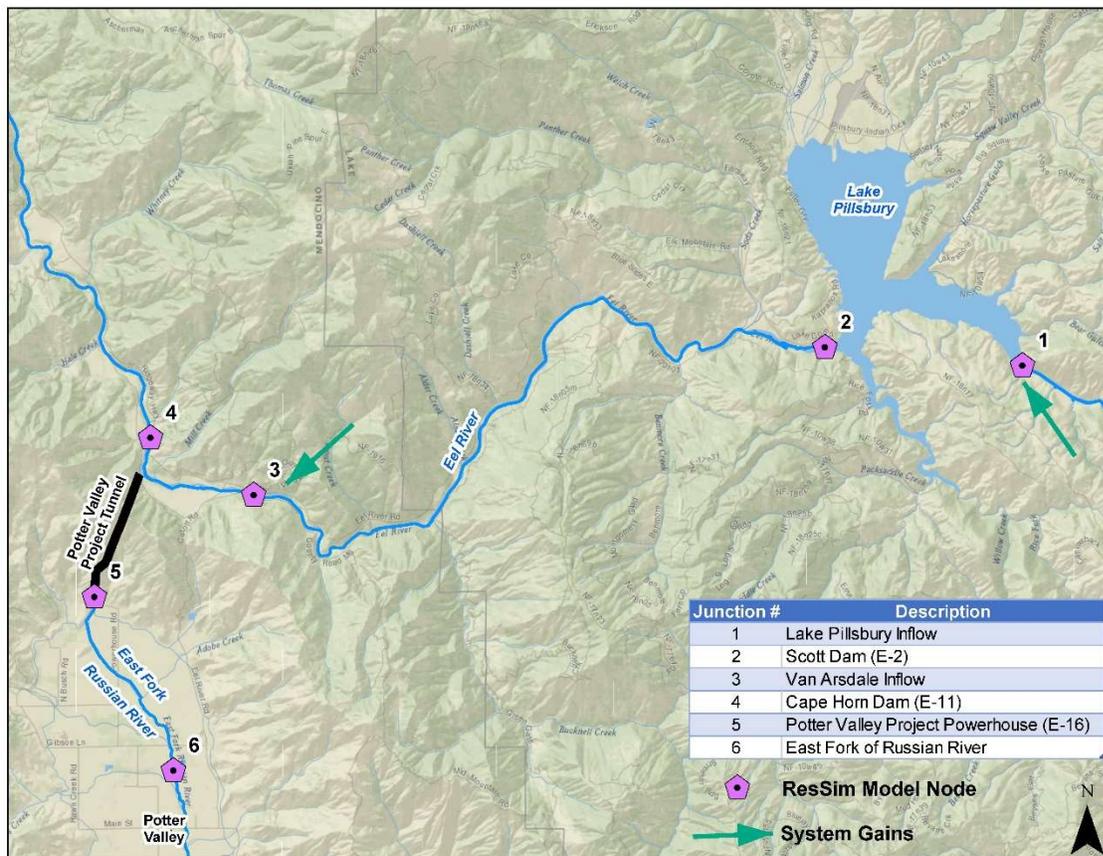


Figure 2: Potter Valley Project ResSim Model Schematic

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Simulation of PVP operations included modified operations of the project due to out of service transformer banks. The modified operation removes discretionary PVP transfers used for increased power production while Lake Pillsbury storage is high during late fall through early spring, which can reduce peak wet season PVP transfers by as much as 195 cfs.

Based on a historical analysis of cumulative inflow into Lake Pillsbury from 1910 through 2017, the average occurrence frequency of *Normal* water supply conditions is 86%, of *Dry* water supply conditions is 11% and of *Critical* water supply conditions is 4%. Sonoma Water used full period of record simulations (1910 – 2017) with the RR ResSim model to develop storage thresholds for Lake Mendocino to set the water supply condition and associated minimum instream flow requirements for the Russian River that are proposed for use from January through June 2023. These storage thresholds were designed to approximate the statistical occurrence of *Normal*, *Dry* and *Critical* water supply conditions defined in Decision 1610 from January to June. The percent occurrence of *Normal*, *Dry* and *Critical* water defined by Decision 1610 and the requested storage thresholds are shown in Table 1 below.

Date	D1610 LP ¹ Cumulative Inflow			LM ² Storage Thresholds		
	Normal	Dry	Critical	Normal	Dry	Critical
1-Jan	86.9	9.3	3.7	82.2	11.3	6.5
1-Feb	78.4	13.1	8.4	79.4	15.0	5.6
1-Mar	86.0	9.3	4.7	84.3	10.6	5.1
1-Apr	86.9	10.3	2.8	84.6	11.7	3.7
1-May	86.9	11.2	1.9	84.5	13.2	2.3
1-Jun	87.9	10.3	1.9	85.0	13.1	1.9
Average	85.5	10.6	3.9	84.2	12.8	3.0

Table 1: Percent Occurrence of Water Supply Conditions by Month for D1610 and the Proposed Lake Mendocino Storage Index

¹ Lake Pillsbury ² Lake Mendocino

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These storage thresholds were updated from the November 2021 Temporary Urgency Change Petitions to incorporate operational settings of the Russian River that are reflective of current conditions. These updates include: (1) flood operations at Lake Mendocino in accordance with the *Planned Major Deviation (Deviation) of the Coyote Valley Dam/Lake Mendocino Water Control Manual* approved by USACE in February 2021; and (2) PVP modified operations as described above. The Major Deviation allows the USACE to consider meteorological and hydrological forecasts when determining Lake Mendocino flood releases when storage is below 80,050 ac-ft. This could lead to an increase in diversions to storage as high as 11,650 ac-ft. Combined, these modified operations affect the water balance at Lake Mendocino and necessitated changes to the previous storage thresholds.

Sonoma Water proposes that the monthly storage values listed below be used, in lieu of cumulative Lake Pillsbury inflow, to determine the water supply condition that sets which minimum instream flow requirements in Term 20 of Permit 12947A, Term 17 of Permit 12949, Term 17 of Permit 12950, and Term 13 of Permit 16596 will apply in the Russian River:

- a. Dry water supply conditions will exist when storage in Lake Mendocino is less than:

- 45,000 acre-feet as of January 1
- 60,000 acre-feet as of February 1
- 71,000 acre-feet as of March 1
- 75,000 acre-feet as of March 16
- 77,000 acre-feet as of April 1
- 76,500 acre-feet as of April 16
- 76,000 acre-feet as of May 1
- 75,500 acre-feet as of May 16
- 75,000 acre-feet as of June 1

- b. Critical water supply conditions exist when storage in Lake Mendocino is less than:

- 31,000 acre-feet as of January 1
- 41,000 acre-feet as of February 1
- 53,500 acre-feet as of March 1
- 56,000 acre-feet as of March 16
- 56,500 acre-feet as of April 1
- 56,000 acre-feet as of April 16
- 55,000 acre-feet as of May 1

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54,000 acre-feet as of May 16

53,500 acre-feet as of June 1

- c. Normal water supply conditions exist in the absence of defined Dry or Critical water supply conditions.